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THE  
ARCHITECT  
AND  
CONTRACT REPORTER.  
VOL. LXVII.



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THE  
ARCHITECT  
AND  
Contract Reporter.  
A WEEKLY  
ILLUSTRATED JOURNAL  
OF  
ART,  
CIVIL ENGINEERING,  
AND  
BUILDING.

*The public at large has a claim over the architecture of a country. It is common property, inasmuch as it involves the national taste and character; and no man has a right to pass himself and his own barbarous inventions as a national taste, and to hand down to posterity his own ignorance and disgrace to be a satire and a libel on the knowledge and taste of his age.*

J. MACCULLOCH, LL.D.

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THE

# ARCHITECT.

## AND CONTRACT REPORTER.

A JOURNAL OF ART, CIVIL ENGINEERING & BUILDING.

### THE WEEK.

THE late Sir NOEL PATON is to be respected as having executed his life's work in a thorough way and with advantage to his countrymen. He was possessed, too, of the accompaniments of a happy old age, honour, love, obedience, troops of friends. His removal can therefore leave no discontent. When the circumstances of his youth are taken into account his success was remarkable. The son of a designer for damasks, in his fifteenth year he possessed enough technical skill to be employed as a draughtsman for embroidered muslin. But he endeavoured to strengthen his latent powers, and in his twenty-second year he had the courage to come to London in order to study at the Academy schools. He did not remain long there, and he might be numbered among the self-taught artists. A year or two afterwards he obtained a premium for a cartoon called the *Spirit of Religion*, sent in for the competition for the decoration of the Houses of Parliament. At the time SAMUEL CARTER HALL was one of the shrewdest judges of a painter's abilities, and by engaging PATON to design fairies and elves for Mrs. HALL'S "Midsummer's Eve," he recognised the class of work in which the artist was then most competent. Several fairy scenes were painted by PATON, and in the posing of the figures it was easy to perceive the influence of MACLISE. The chivalrous incidents showed tendency in the same direction. But the religious spirit was also strong with NOEL PATON, and if one of his sonnets can be taken as a revelation of his own mind, it is evident that he preferred FRA ANGELICO as a painter to RAPHAEL or MICHEL ANGELO. His numerous religious pictures are didactic, and, as they were exhibited in a great many towns, they made the artist's name known throughout the country. Some of them may be condemned as going beyond pictorial limits, but they were painted for "grave livers" like those abounding in Scotland rather than for the multitude. Sir NOEL PATON was an honour to his native land, and his name will long live among her famous sons.

AMERICAN artists have a chance from this week forwards of obtaining public patronage. The Act which was passed for the appropriation of funds to purchase works by American artists was doomed to be inoperative by the Tammany combination. Under the improved administration the intention of the Legislature will, it is hoped, be realised. By the Act first-class cities can expend 10,000% in a year on mural paintings, mosaics and stained glass, and second-class cities 5,000%. The works are to be selected by the Art Commission of each city, but will have to be approved by the Municipal Art Commission. There is a growing love of art in the United States, and many modern buildings have been enriched in consequence, but the paintings and sculpture were allowed as examples of architectural decoration, and in that way became part of the building. Under the new Act it will be possible to have adornment of a supplementary class.

WE published last week the clause relating to the deposit of elevations of buildings proposed to be erected which the Belfast Corporation had introduced in their "Omnibus" Bill. Owing, we presume, to the dread of opposition to a scheme which would constitute the surveyor

of Belfast and the Recorder the sole judges of architectural designs, a slight modification has been made in the Bill as deposited. It is now said, "The Corporation may disapprove of such elevations on the ground that the same are in their opinion objectionable, or that in any respect they are not in conformity with the requirements or provisions of the existing local Acts or by-laws of the Corporation," and any person "aggrieved by a decision of the Corporation as to such elevations may appeal to the Recorder against such decision, whose decision thereon shall be final." A comparison of the clause in its original and modified forms will show that the only alteration is the substitution of "Corporation" for "surveyor." We need not say that in reality the clause remains as it was first announced. The Corporation in such cases as the approval of designs would be guided by the report of the surveyor, and the disapproval, although nominally coming from the corporate body, would be expressive of the surveyor's notions about architectural design. We print in another column the opinion of counsel on the subject. It will be seen that Mr. MURRAY is of opinion that there can be no case made out by the Ulster Society of Architects, and they will be justified in opposing the Bill. But it will be better to remember that their action will be as architects of Belfast who are likely to suffer through the clause, for architects in other cities or towns would not be recognised as having a *locus standi* before a Parliamentary committee.

AMONG modern English etchers DAVID LAW, who died at Worthing on Saturday, held a prominent place. He was one of the few men who employed etching for original composition. DAVID LAW was a landscapist, and although deprived by his mode of representation of the advantages of colours, he produced many plates which were typical of English country districts. By birth he was a Scotsman, and some of his water-colour drawings were taken from northern landscapes. He produced some plates after TURNER, but he would have been the most successful translator of DAVID COX's works if he had made the experiment. He had a partiality for clouds, and was able to render them with more effect than any of his later contemporaries.

MASONRY bridges are now rarely constructed, especially in the form of single arches. Steel has taken their place. The Pont y Pridd, in Wales, which has a span of 140 feet, remained for many years a triumph of construction. BRUNEL endeavoured to equal it by a flat arch in brick, but he could only attain a span of 120 feet. The new bridge which was lately constructed at Luxembourg is 275 feet in span. In the course of the construction a professor of engineering construction in Switzerland deemed it his duty to announce that the working stresses in the arch were beyond the crushing limit of stone. The engineers, however, did not alter their sections, and they are sure that the span might have been increased without any risk to the public. The settlement on removing the centres was only about one-fifth of an inch. In appearance masonry bridges can be made superior to those constructed of iron and steel. But in most positions there is a difficulty about the rise, and greatly inclined roadways are less in favour since motor cars and traction engines came into use than formerly



## RIPON CATHEDRAL.

*See Illustration.*

RIPON is separated geographically from Chichester by several miles, but there is no unfitness in the illustrations of the former following those of the latter cathedral in our series. The reason is that both in a peculiar degree exemplify the marvellous activity of St. WILFRID in the seventh century. In him the spirit of the first Apostles appeared to have been revived. He is sometimes described as a descendant of a noble family, but according to GODWIN, "he was born of mean parentage in the North of England, and untaught till he arrived at the age of fourteen years; that then, not enduring the frowardness of his stepmother, he went to seek his fortune, in which adventure, meeting with certain courtiers who had been obliged to his father for some courtesies, they presented him to the queen, whom from his wit and beauty he was not unfit to serve, who, finding his inclination to learning, sent him to CHAD (formerly chamberlain to the king), then a monk at Lindisfarne, by whose dexterous instructions he became a great proficient in scholarship; where, affecting a monastic life, and being of a quick apprehension, he learned the Psalms and some other books, but was not shorn, though he much exceeded his ecclesiastical superiors in knowledge, being not a little notice taken of and esteemed for his humility and obedience. Having served many years in that monastery he resolved to go to Rome." It is probable that his voyage to Rome was in connection with the difficulty of determining the period of Easter, which was then a subject that seemed to be likely to become a war cry among ecclesiastics.

In Rome he received attention from the Pope, and, as might be expected, left the city with the determination to extend the Roman rule or principle of unity. On his way through France an effort was made to secure his services for the church in Lyons, but WILFRID felt that his mission was among the Saxons in Britain. A man who had visited Rome must have gained repute and be thought qualified to exercise authority in the seventh century, and therefore WILFRID soon obtained a grant of land from the King of NORTHUMBRIA for Ripon, where a monastery existed, in which he became abbot. In 661 WILFRID was ordained a priest within his monastery; he was afterwards in a position to take part in a conference that was held at Whitby in 664 concerning the Easter question. He opposed the clergy of Scotland and Ireland. The king was convinced of the narrowness of the Celtic theory, and resolved to adopt the Roman method. The bishopric of Northumbria, with its principal church in York, was then vacant and the young abbot was selected to be the bishop. He was consecrated by AGILBERT, who had ordained him, and who after serving as Bishop of the West Saxons had become Bishop of Paris. On his return from Paris WILFRID was driven by a storm on the Sussex coast, where he was attacked by wreckers, and until his vessel was able to be refloated he and his party had to sustain the murderous efforts of the barbarians.

WILFRID was not allowed to have peaceable possession of the chair in York. Those who were in favour of the old ways set up a rival, but WILFRID used the opportunity for visiting several parts of England, and it would seem as if Ripon thus became a missionary centre. From what he saw abroad he could not fail to be dissatisfied with the churches where he preached during his journeys. Accordingly, when York was restored to him he was at great pains to improve the cathedral. Nor was he forgetful of the claims of Ripon, and he there erected a church which at the time was regarded as a wonder. We may assume that in the seventh century the English churches were commonly of timber construction, and as it was likely that large pieces were employed, their appearance was very different from what we see in the poverty-stricken structures which in our time serve for temporary use. But like the calculation of Easter, wooden churches were, we have no doubt, regarded as signs of independence of Roman control. In the eyes of such a prelate as WILFRID they would be unorthodox, and he would endeavour to substitute another style of building which would recall Rome rather than Scandinavia, with its mythology that was not foreign to the Saxon mind. It is to be regretted that we

cannot do more than speculate about the character of the building at Ripon which exemplified WILFRID's ideas of a true Christian church. From what is said about the use of dressed stone, columns and arches, as well as from a crypt or confessor forming a part of it, and from its dedication to St. PETER, we can imagine it to be as close an approximation to a Roman church as could be attempted in so remote a district as Ripon.

It must have been a proud day for WILFRID when the dedication was held. On the occasion he presented to the monastery a copy of the Gospels, some books with tablets which were covered with gold and jewels. But WILFRID was not destined to remain in peace at Ripon or at York. A new division was made of ecclesiastical Northumbria without consultation with him, and in consequence he took another journey to Rome to assert his rights. This step displeased the king, and the bishop accepted the exile which followed for again undertaking a missionary tour. It was then he renewed his acquaintance with Sussex. He visited Selsea and there found a refuge. He brought his knowledge of practical life to bear on the inhabitants, and as became a Benedictine instructed the people in agriculture. He built a stone church or cathedral there also which was likewise dedicated to St. PETER. WILFRID was recalled to Ripon. The question of the division of the diocese, however, again arose, and again he had recourse to Rome. Eventually it was decided that he should become Bishop of Hexham, while still retaining authority in Ripon. In 709 he died in the monastery of Oundle, and his body was buried in Ripon Church. The building is now supposed to be dedicated to St. WILFRID as well as to St. PETER.

It was not to be expected that a church in such a district should have an immunity from the exactions of various Norman invaders. WILFRID's church must have suffered occasionally, but in the tenth century it found a protector in King ATHELSTANE, who allowed to it the privilege of sanctuary. The building endured until the middle of the tenth century, and then, as a punishment of the Archbishop of YORK, it was destroyed. It is not certain when the church was rebuilt. But as some if not all of the bones of WILFRID were assumed to be preserved, probably not many years were allowed to elapse before erecting a church to contain the shrine. A period followed in which there is no record of Ripon Church. At the time of the Conquest, THOMAS of Bayeux obtained the see of York, and he appears to have lived occasionally at Ripon.

The churches at that time could hardly have been satisfactory to the Norman prelates. Like WILFRID four centuries earlier, they were anxious to have stone buildings but of a mightier form, which would be in keeping with their own notions of authority. One of them, Archbishop ROGER of York, must always be connected with the history of Ripon. His name has been revived in modern times, for TENNYSON has introduced him as a prominent character in his "Becket." The Archbishops of Canterbury and York are represented as old enemies, for BECKET is made to say:—

Roger of York,  
When I and thou were youths in Theobald's house,  
Twice did thy malice and thy calumnies  
Exile me from the face of Theobald.  
Now I am Canterbury and thou art York.

To this ROGER replies:—

And is not York the peer of Canterbury?  
Did not Great Gregory bid St. Austin here  
Found two archbishoprics, London and York?

At the time it might have been necessary to uphold the rights of York regardless of sacrifices. With all his arrogance, Archbishop ROGER was a generous lover of architecture. The great crypt at York still expresses his aspirations; he also lived to complete a choir above the crypt. At Ripon he rebuilt the church, and the transitional work which will be seen in the illustrations which are to follow must be credited to him. During the episcopate of WALTER DE GRAY at York the west front was erected, with the towers, which were surmounted by timber spires, additions that were indispensable to give elevation to a building that somehow appears to be exceptionally low. In the thirteenth century Gothic underwent



remarkable developments, and when Archbishop JOHN presided in York the east end of the choir was rebuilt in the new mode, now generally known as the Decorated style. The interest taken by so many archbishops in Ripon is extraordinary. Their duties were best served by residing at York. That Ripon was used as a secluded residence is hardly sufficient to explain the expenditure of so much money on the church, and it may be that large sums were also needed for the monastic buildings. There were many parish churches in the archdiocese of York which also called for assistance. The favour shown to Ripon can only be accounted for on the supposition that the clergy or canons living there performed duties of which the records have not survived. By degrees the archbishops' preference seems to have diminished, and in the beginning of the fourteenth century the absence of protectors was exhibited in an unusual way.

In 1318 some Scottish troops were able to enter England. The clergy and people of Ripon, by the payment of 1,000 marks, secured the safety of the place, but on a second visit it was found impossible to collect any more money, and the church and houses in the town were set on fire. It was only after the victory of EDWARD III. at Gladesmore that efforts were made to rebuild the monastery and minster, the latter, according to DUGDALE, "being raised anew almost from its very foundation, and erecting thereon three tall spires of more beauty than those before." In 1375 there was a fire which caused much damage. In the next century it was necessary to rebuild the south and east-walls of the tower and parts of the south transept and choir. In the beginning of the sixteenth century the nave had to be reconstructed, but the aisles were not completed at the time of the Dissolution, and were only roofed with timber.

RICKMAN said that Ripon contained "various parts well worthy of attention, particularly its west front, which is a very fine specimen of bold Early English, and, except the battlements and pinnacles, without alteration." He appears to have judged the building by the exterior as seen from one point of view. Ripon, in fact, exemplifies the evolution of architecture from Norman to Perpendicular, and on that account it is one of the most interesting churches in England. If looked upon simply as a collegiate church, and one which provided for parishioners, it is remarkable. It is cruciform on plan, and has an internal length of 266 feet 5 inches, of which the choir measures about 100 feet. The transepts are 132 feet in length, and the width of nave and aisles is 87 feet.

The area is not too limited to serve for cathedral purposes. In the early history of the church it acquired somewhat of an anomalous character, for it appeared to be intended to serve for more than monastic or parochial purposes. In the controversies which arose around WILFRID a bishop was appointed, and he ruled at least nominally for five years. Eleven and a half centuries had to elapse before it was judged desirable to have a second bishop. By abstracting parts of the diocese of Chester and York a bishopric was arranged in 1836, and Dr. CHARLES THOMAS LONGLEY, head-master of Harrow School, was selected for the office.

### ARCHITECTURE IN 1901.

IN architecture, as in all other spheres of British activity, the most prominent event of the past year has been the passing away of

HER LATE MOST GRACIOUS MAJESTY QUEEN VICTORIA.

Of the part that Her late MAJESTY played and would have played if the feeling of the nation had permitted in the world of art we have already spoken. Architecture indeed has made great progress during the past reign, but would doubtless have advanced still further in common with other forms of art had not the artistic instincts of the late QUEEN and her PRINCE CONSORT been chilled as we have pointed out. Architecture must be grateful to the memory of the departed monarch for good intentions if not for potent encouragement.

THE NATIONAL MEMORIAL TO THE LATE QUEEN has been the subject of much heart-burning and of legitimate animadversion on the procedure of the com-

mittee appointed by the KING to determine the details of the enterprise. In particular the action of the sub-committee—consisting of Viscount ESHER, LORD WINDSOR, Major-General Sir ARTHUR ELLIS, Sir EDWARD POYNTER, Mr. A. B. FREEMAN-MITFORD, Mr. W. EMERSON and Mr. SIDNEY COLVIN—in restricting the opportunity of competing to Mr. T. G. JACKSON, Mr. ASTON WEBB, Mr. ERNEST GEORGE, Sir THOMAS DREW and Dr. ROWAND ANDERSON amongst architects, and in selecting without any competition Mr. THOMAS BROCK as sculptor, has, by its callous tactlessness wounded the loyalty and legitimate ambition of artists throughout the Empire. They would cheerfully have given their time and their brains, had they been permitted, to testify their affection and to offer the finest tribute that the art of all the Britons could produce. It is no derogation to the position of those whom the sub-committee have selected to say that there are many architects whose ability is known to be equal to that of the chosen, and many sculptors who are known to be equal to Mr. BROCK. We have so much faith in the younger men of our time that we venture to say that there are unknown men amongst the artists of both the old country and the colonies who, under the stimulus of such an occasion, are capable of and might have given us something better than the designs which have been produced. Nor is it only the artists of the Empire that have been wounded; the general public have resented the policy adopted, and the defective business ability of the committee is shown by the lack of funds for the completion of their scheme. The hole-and-corner fashion in which the designs submitted were exhibited was but the culmination of the bungling of the sub-committee, whose efforts would seem, from their actions, to be directed towards preventing the memorial from being "national."

Another great and almost national project, the

### NEW CATHEDRAL FOR LIVERPOOL,

has been brought to the front during the past year, and has been the occasion of controversies which even yet have not probably reached their full development. The committee in charge of the project have indicated their preference for English Gothic and for one particular phase of this as the style they desire. Thereat a storm of protest at once arose from those who are most keen in the present-day adoption of Renaissance as the vehicle of architectural expression. Catholicity of taste is a quality in which practitioners of architecture are notoriously deficient. Those who fight so vigorously for their own particular dialect should at least be ready to allow to others an enthusiasm equal to their own for another medium of expression. The committee have our respect for their courage, in indicating the predilection they possess apart from any question as to whether Gothic or Renaissance is the more proper treatment for an English cathedral in the twentieth century. Renaissance, indeed, for the moment happens to be the vogue for most of our architectural designs, but no argument that can be adduced in favour of Renaissance as against Gothic does not apply with equal force in favour of the "new art," or even Greek. If a design in English Renaissance garb by Mr. REGINALD BLOMFIELD is admissible, why not one by Mr. HARRISON TOWNSEND in the latest anti-historical mode, or one by a Glasgow follower of Greek THOMSON? The committee have, however, yielded to the expression of opinion from the anti-Goths and indicated their willingness to consider designs in other fashions.

Then, again, the committee have been adversely criticised for their method of selecting an architect. Certainly one must sympathise with Mr. EMERSON in being set aside after his victory in the bygone competition, but even then opinion was not unanimous as to the superiority of his design at all points, and architecture to-day does not stand where it then stood. The giants of church design in the seventies and eighties of the last century have now almost all passed away; younger men, as Messrs. CARÖE, CORLETTE, NICHOLSON, PRYNNE, SKIPWORTH, WARREN and others have with less opportunity given proof of their ability, and we think the committee are right in welcoming all and sundry to submit drawings to enable them to select good men for the final competition.

The fiercest controversy and the hardest battles which



the committee have to face are, however, connected with the question of the site, and a determined effort is now being made by a self-constituted body of dissentients from the committee's selection, calling themselves the "Liverpool Cathedral Petition Committee," to force the committee to abandon their own choice of St. James's Mount in favour of the Monument Place site. As we understand the case, the chief reason for the selection of the St. James's Mount site is the less cost of this as compared with the other, and we do not doubt that if the petition committee would guarantee to raise independently the extra cost of the Monument Place site, the cathedral committee would be only too pleased to adopt that location, even though it is, as we consider, legitimately open to question whether a central position in the midst of the noise and bustle of a great city is a suitable one for a cathedral, and whether a half-mile vista of the west front sufficiently compensates for the inability to see the cathedral on any other side except at very close quarters. Personally we prefer the site of Westminster Abbey to that of St. Paul's Cathedral. It is easy enough to raise opposition and to get up a "petition," but let the dissentients prove their sincerity by making their scheme financially possible, and thus save themselves from the suspicion that their real sentiment is unintentionally revealed in their own words, "Better no cathedral."

Whilst the members of the National Church are squabbling before they begin cathedral building, the adherents of the Church of Rome are working, and the

#### CATHEDRAL AT WESTMINSTER

has as regards its external fabric taken concrete form, and is rapidly approaching completion, so that we can begin to realise the ability of Mr. BENTLEY and the effect of his original and clever design. Here we have no straining after half-mile vistas, and although we may not all be agreed as to the precise value of some of Mr. BENTLEY's detail, we must recognise that his is work that will live, that it is virile, conscientious and thoughtful, and we doubt not that the interior when completed will once more teach us, what our compatriots who differ from us in form of worship have often before shown us, that a church is a place in which to worship rather than at which to gaze from outside—a lesson, by the way, of which English Churchmen at the present day, judging from the empty benches everywhere to be seen, need very forcible impressment.

Once again during the past year have architects been able to realise the

#### GOVERNMENTAL CONCEPTION OF ARCHITECTURE

in the steps that have been taken in consequence of the decease of the selected architects of the new offices in Whitehall and Parliament Street. Mr. WILLIAM YOUNG's son has been entrusted with the carrying out of his father's design, and though in this case there is no great objection to be raised, it is nevertheless thoroughly characteristic of English thought to assume the inevitable transference by heredity of the father's mantle to the son. In the case of Mr. BRYDON, on the other hand, there was no son in his office to step into the father's shoes, and in the condition in which Mr. BRYDON's design was left, it was of vital importance that the further execution of the work should be carried on by a man of equal ability and of like sympathy. In spite of all remonstrance by professional and amateur lovers of architecture, capable of realising what architecture is, and wherein lay the excellence of Mr. BRYDON's work, officialdom can see no further than the limited purview of its own ring-fence.

The scant respect which the official world shows for the opinion of architects is but a reflex of the lack of

#### PUBLIC APPRECIATION OF ARCHITECTURE

and of architects which is characteristic of the ordinary British citizen. Hence we were glad to see Mr. LEWIS SOLOMON's attempt to wake up the Royal Institute to its duty in the matter, even although the resolution he proposed was toned down to the appointment of a committee "to inquire into the status of the architectural profession, and to suggest remedies if needed." We trust this committee will make an earnest effort to grapple with the question—not to stifle and shelve it. One great evil is the

lack of appreciation of each other's work, and of tolerance for divergent opinion; another, the absence of self-assertion in architects as a body rather than as individuals. A greater regard for architects and their opinions on the part of the public would make for a better appreciation of architecture as an art, but can only follow an increased respect by architects for each other's opinions, and an adamant solidarity in adhesion and fidelity to *esprit de corps*. Particularly is this necessary in regard to competitions. Nothing is more discreditably to the profession than the jaundiced efforts of defeated competitors to throw discredit on a successful rival, which we unfortunately so frequently see.

The action of the architects of the Midland city in connection with the

#### BIRMINGHAM UNIVERSITY BUILDINGS

was in our opinion one of those regrettable exhibitions of deficient *esprit de corps* which do so much to belittle architects and architecture in public opinion. Messrs. ASTON WEBB & INGRESS BELL in open competition won the commission for the Law Courts, and in carrying out the work have given Birmingham one of its most beautiful buildings. In limited competition against able men they won the commission for the great educational establishment at Horsham for Christ's Hospital. They are carrying out another great scholastic institution in the Britannia Naval College. What wonder, then, that the authorities of the University of Birmingham should select these well-proved architects for their new buildings, and give them the commission without competition?

Yet this was made the occasion by the Birmingham Architectural Association for an attempt to oust Messrs. WEBB & BELL entirely, by the specious suggestion that the work should be thrown open to competition with Messrs. WEBB & BELL as assessors, chiefly on the ground that these gentlemen are not Birmingham architects. The clannishness of Birmingham people is well known, and to this the agitators appealed. There are able architects in Birmingham, but do they confine themselves to their own city? If they wish no outsiders in Birmingham, they should take no work outside Birmingham. Do they not do so? Who are the architects of the Royal Victoria Hospital at Belfast, for example? Let us hope this is the last exhibition of such petty parochialism that will be given by the Birmingham Architectural Association.

#### ACTIVITY IN THE BUILDING TRADE

has unquestionably during the past year been still further on the decline, in sympathy with the general contraction of the nation's trade and the increased price of money, which is one of the results of the uncompleted war in South Africa. This decrease of activity has not been an altogether unmixed evil; indeed, those contractors who were fortunate enough to secure large works at the beginning of the year must be inclined to regard it as a blessing, inasmuch as the unworthily low scale of production which, as most of us know, was becoming the rule with builders' workmen has been checked, and the bricklayer who would only lay his 200 bricks a day knows that there are plenty of men out of work who are ready to give something more like a fair day's work for a fair day's pay. The prices of material have also been on the down grade, so that builders who are now working on contracts secured twelve months or more ago must be making comfortable profits.

We are inclined to think from what we hear amongst architects in town and country that the bottom of the "slump" in building has fallen out, and although we are not anywhere approaching the boom of a few years back, still things are slightly better than they were. That they may continue to improve to the benefit of all our readers is our hearty wish for the New Year.

Throughout the country many large public buildings are in various stages of progress. The competition for

THE NEW BOROUGH ASYLUM, CARDIFF, has resulted in the selection of the plans of Messrs. OATLEY & SKINNER, whilst premiums of 100*l.* each were awarded to Messrs. GREENAWAY & NEWBURY, HOOLEY & SAUNDERS, LAW & ALLEN, WILLS & ANDERSON.

THE NEW MUNICIPAL BUILDINGS, CARDIFF, are now fairly on the road to realisation, the foundations put in and the walls proceeding.



THE VICTORIA AND ALBERT MUSEUM at South Kensington is completed as far as the foundations, and a second contract for building to the ground-floor level is now in course of fruition.

THE NEW MARKET HALL, LEEDS, is in course of construction from plans prepared by Messrs. LEEMING & LEEMING, and will cost about 100,000/.

The designs of Messrs. BRIGGS & WOLSTENHOLME and Messrs. F. B. HOBBS & ARNOLD THORNEY have been selected in the competition for

THE BLUECOAT HOSPITAL, LIVERPOOL, and will cost in carrying out something like 90,000/.

The competition for new

MUNICIPAL BUILDINGS, HEREFORD, was not quite satisfactory in its result, as although the assessor placed the designs of Messrs. MACINTOSH & NEWMAN first, those of Mr. H. F. FOWLER second, and those of Messrs. STANGER & STANGER third, the building committee of the Corporation selected the designs of Mr. H. A. CHEERS.

For the

POLICE COURTS, BRISTOL, the designs premiated were those of Mr. HENRY WILLIAMS, of Bristol, and Messrs. BUCKLAND & FARMER, of Birmingham (another case of Birmingham architects going outside their own limits).

The competition for the new

FIRE STATION AND POLICE COURTS, MANCHESTER, a building to cost 75,000/; resulted in the victory of Messrs. WOODHOUSE & WILLOUGHBY with Mr. JOHN LANGHAM, whose design was placed first, the second place being taken by Mr. GEORGE WATSON and the third by Messrs. MANGNALL & LITTLEWOODS.

Local jealousies and dissensions have prevented the

WORKHOUSE INFIRMARY FOR STOCKPORT at Stepping Hill proceeding smoothly, although the premiums in the competition were awarded to Messrs. GILES, GOUGH & TROLLOPE first, Mr. H. PERCY ADAMS second, and Mr. CHARLES W. HARDY third.

The past year has seen some successful exhibitions, amongst which must be placed first the

INTERNATIONAL EXHIBITION AT GLASGOW, which, with the true business instinct that might be expected from the Clydesmen, has been financially prosperous as well as enjoyable and instructive.

THE BUILDING TRADES EXHIBITION in London at the Agricultural Hall has also been held this year with conspicuous success. A new feature was an exhibition in a side hall arranged by the British Fire Prevention Committee, of fire-resisting construction and appliances.

THE PAN-AMERICAN EXPOSITION, BUFFALO, was not a financial success, and its failure was intensified by the dastardly murder of the late President MCKINLEY.

A subject of absorbing interest, not only to Londoners but to all Englishmen, has been the threatened

DANGER TO ST. PAUL'S CATHEDRAL, by the consummated burrowings for underground tube railways and the extreme probability of impending catastrophe from contemplated schemes. These projects for

UNDERGROUND TRACTION are not without their dangers. The "twopenny tube" has been proved to have caused damage, and the extension of this solution to the crucial problem of London traffic has rightly received the attention of a special joint committee of the House of Lords and House of Commons, which has, with no unnecessary promptitude, considered the various aspects of the whole question.

THE WIDENING OF PICCADILLY has for the present been determined by a compromise which can hardly be more than temporary, and the suggestion by Mr. H. L. FLORENCE, recently illustrated in our pages, for a parallel relief road through the Green Park has obvious advantages and is readily applicable.

The scheme for

UNDERGROUND TRAMWAYS at a slight depth only is one which in its adoption has great promises, and will, we have no doubt, be hereafter largely followed as a valuable assistance to the overcrowded thoroughfares of the Metropolis.

THE LIABILITY OF ARCHITECTS for inefficiency or negligence has repeatedly during the past year been heavily enforced by the courts, and may be regarded as a useful aid to the weeding out from the profession of the ignorant and incompetent charlatans who, in default of registration or some such safeguard, now need only a brass plate and impudence to foist themselves upon a gullible public, to the detriment of honest and well-trained practitioners.

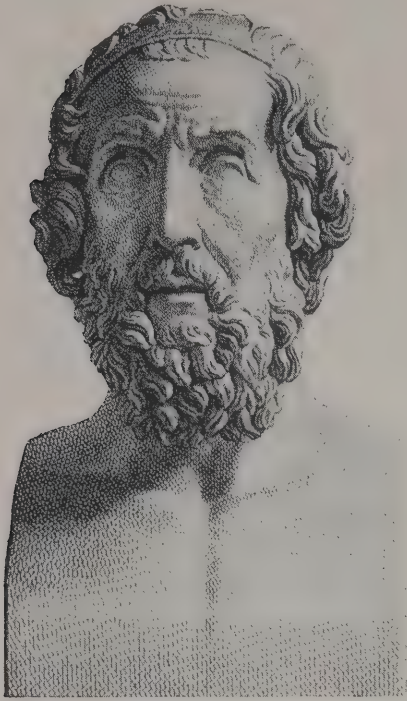
On many other topics of interest to architects and architecture we might touch, but space forbids us to do more than record some of the losses, many of them heavy, that have been caused by the hand of death in a year that has seen the passing from amongst us of ARTHUR CATES, JAMES BROOKS, JOHN MCKEAN BRYDON, JOHN BURNET, HENRY YEOVILLE THOMASON, CHARLES JOHN INNOCENT, WILLIAM BASSETT SMITH, FREDERICK BOREHAM and CHARLES DORMAN.

### STEREOTOMY FOR STUDENTS.

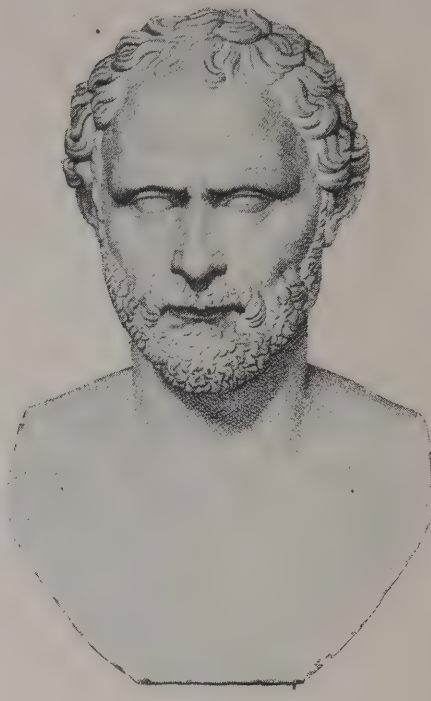
THE annexed illustration shows some of the examples of stone-cutting lately produced by students of the classes in Geneva directed by Mr. Lawrence Harvey. The exercises are a continuation under more favourable auspices of those which were undertaken a few years ago in the classes of masonry in the City and Guilds of London Institute. For such subjects severity of style is not always desirable. The end in view should be the attainment of skill in the manipulation of form among elements which, when combined, will form a whole that is effective. The different parts, it will be observed, allow of the co-operation of students varying in competency, and who can derive satisfaction from their united endeavours. The subjects deserve consideration by the heads of technical schools in this country.



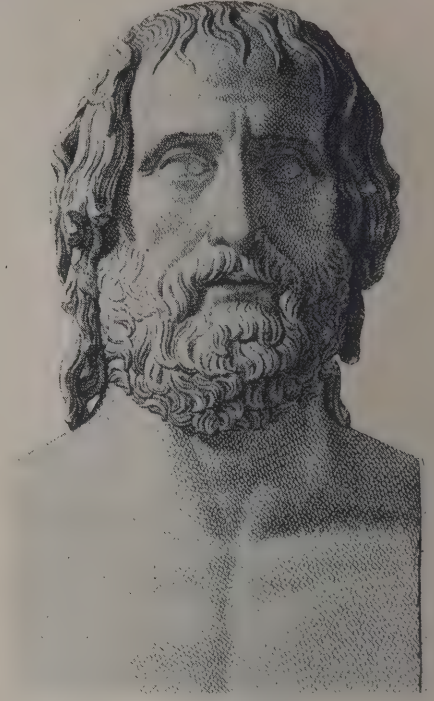




HOMER.



DEMOSTHENES.



EURIPIDES.

#### BUSTS AND THEIR IDENTIFICATION.

**P**ORTRAIT busts are so common, it is not generally admitted that the early history of the class of sculpture to which they belong is obscure and has formed the subject of much controversy. The origin of the word itself is not clear. "Bustum" with the Romans was a crematorium or a grave, and by a very usual process in language was afterwards applied to a dead body. "Sanctorum busta" was an ordinary expression to designate martyrs. Afterwards the word signified the trunk of the body without the head. As the Latin sources seem to fail, modern etymologists have turned towards others, and many now believe the word "bust" to be a derivative from some Northern language. It is allied to the German "Brust," which is the modern form of "borst," and was related to "bären," to heave. Bust, simple as it may sound, remains an etymological puzzle.

If considered in a practical way the bust seems to have marked a development of the primitive *hermæ*, which were originally only blocks of stone dedicated to deities. Although the Greeks had advanced in sculpture beyond all other nations, yet until a very late period they preserved with reverence those strange memorials. Afterwards the stone became a pedestal for a head that was rudely carved. In course of time the pedestals were lengthened and a channel was chiselled in them to suggest limbs. It would also appear that not only the Greeks but other nations placed heads on wooden frames which were covered with drapery, and in that way served as figures.

It is not, however, to be determined at what period among the Greeks the heads became representative rather than typical. The pretty story about a girl outlining the shadow cast on the wall by her lover's head would indicate that in an early period portraiture in the modern sense was understood. But it is now impossible to settle how far idealism competed with accurate representations of living beings. The beautiful profiles which are found on Greek coins may sometimes have been exact portraits either of a famous beauty, or of some man or woman of importance in the town. We shall afterwards refer to a case of the kind, viz. the sage *PITTACUS*. Sculptors who have had experience in portrait-work have not been able to determine the limits between realistic and ideal heads in Greek work. The difficulty is not confined to Greece. It was at one time believed that no true portraits were to be found in Egyptian painting or sculpture, but it was demonstrated plainly by *CHAMPOLLION* and later explorers that with them realism was respected, and that even defects were not ignored. Among the Greeks there are sufficient traditions to suggest that fidelity in portraiture was practised, and it is not irrational to presume that several of the heads which

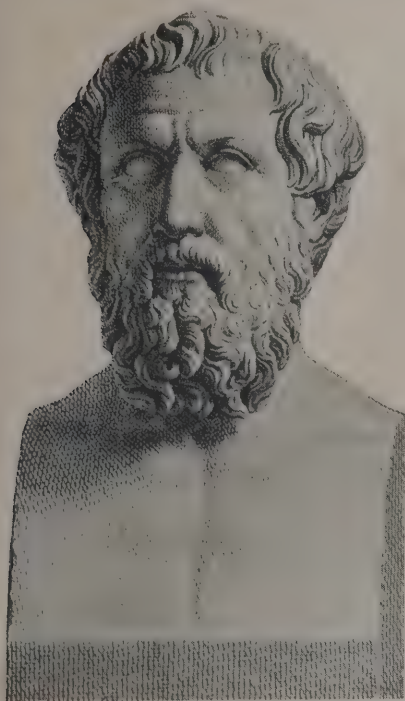
seem to be expressions of the artists' ideas have been taken from nature. There can, however, be no general rule on the subject, for even now when the sun becomes the portraitist the results are often declared to be irreconizable.

Common sense must always make people sceptical about the authenticity of the likenesses of men like *HOMER* or *LYCURGUS*, who lived in a remote age, when the arts were not in a flourishing state. We cannot help imagining busts of that kind to be either derivations from busts of a ruder form, but which were exalted by tradition, or creations which the artists based upon the attributes assigned to the men by history. Types were respected by Greek sculptors, and it is possible the busts of their ancient poets, legislators and warriors were akin to examples of older date of which we have now no trace.

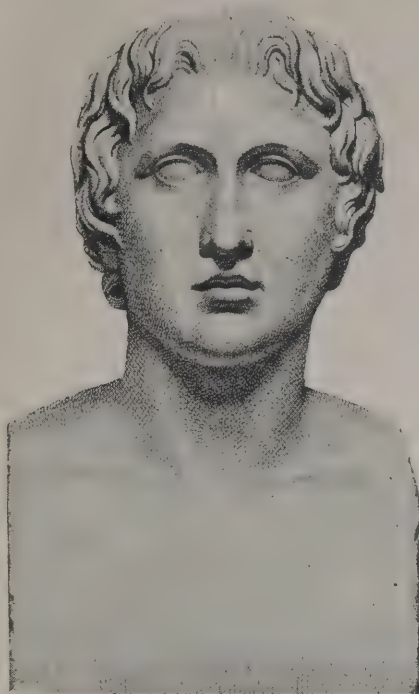
It was stated by *PLINY* that there was no true portrait of *HOMER* known to the generations which preceded his own. What passed for a portrait was considered by him to be no more than an expression of the imagination of sculptors. It has been said, "Ten famous towns contend for *HOMER* dead, through which the living *HOMER* begged his bread," and from the number of busts differing in character of which there are records, we may conclude that each of the towns justified its claim of being the birth-place of the poet by the possession of a portrait. It would be difficult to ascertain why the bust which appears on this page should have been accepted as coming nearer to one's own idea of the appearance of "blind *MELESIGENES*, thence *HOMER* called." The historic evidence is not irrefutable, but the qualities of the bust are favourable to a conviction of its genuineness. The eyes have not merely the vacancy seen in ancient busts and statues, but are suggestive of blindness. The head is surrounded by the band that belonged to gods and heroes. It is evidently a likeness of old age, and the furrows indicate sorrow as well as thought. But, at the same time, the noble expression is almost suggestive of a soul that, unlike *TITHONUS*'s, was endowed with perennial youth, and there is more than philosophic composure stamped on the face. *HOMER* was destined to be the great apostle of literature, and therefore of civilisation, for it is surprising that the old poems which "*PHŒBUS* challenged for his own," and pirates respected so much that they gave liberty to the captives who would recite them, are still supreme in all schools where literature is taught. No Italian, English, French or German poet holds the supremacy in his native country which *HOMER* still retains throughout Christendom, and from which there is no likelihood he will ever be deposed.

In the cases of the orator's and dramatist's busts seen alongside *HOMER*'s, there are grounds for believing that they were taken from nature. *EURIPIDES* is said to have

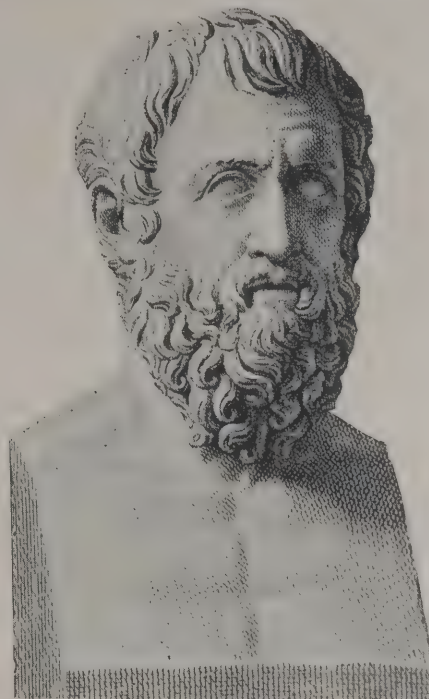




LYCURGUS.



ALEXANDER.



PITTACUS.

been born in Salamis in B.C. 480, and at that time Greek sculpture was opening its third and most glorious period, in which such artists as MYRON, CALLIMACHUS, POLYCLETUS, SCOPAS, PRAXITELES and PHIDIAS exercised creative powers. In the days of PAUSANIAS statues of EURIPIDES were to be seen in Athens, and as late as the fifth century they were found ornamenting Byzantium. All the busts and statues of the dramatist are so suggestive of physical vigour as to confirm the story that EURIPIDES was brought up by his father to be an athlete. He was the most muscular of poets, and refuted the theory that inspiration was only a characteristic of weaklings. It is terrible to think that when he retired from Athens, owing to the decline of his popularity among playgoers, he should be torn to pieces by the hounds of ARCHELAUS of Macedon. Assuming the bust to resemble him, EURIPIDES was a noble-looking man, but unluckily his mother sold vegetables, and that was enough to enable ARISTOPHANES to bring the most tragic of poets into ridicule.

There is also so much similarity between the bust reproduced and a statue of DEMOSTHENES, we have the satisfaction of believing we see something more than an imaginary work before us. When RICHARD COBDEN saw the Vatican *Demosthenes*, which is an upright figure, holding in the two hands a scroll, he, although no amateur in art, was convinced that the attitude must have been taken from life, and that the tension of the arms and hands was suggestive of the character of the speech the orator was delivering. The peculiar form of the mouth, and especially of the lower lip, seen in the bust and statue, has been judged by critics who profess to have a knowledge of anatomy as a sign of a man who laboured under an impediment in speaking, and who was only able to cure himself by incessant labour. It is in characteristics of that kind that nature is recalled to us, and the gloomy expression of the noble brow suggests the fate of the orator who, in his own person, became an epitome of Greek liberty, but was destined to fall through the ingratitude of those for whom he lived and laboured. In the Townley collection of the British Museum there is another bust of the orator, but it is wanting in the expression of that resolution which "shook the arsenal and fulmin'd over Greece," and would better serve for a CLEON or other spouting tanner.

ALEXANDER THE GREAT must have had many portraits taken of himself, for he was the patron of artists. It is, however, remarkable that not one of them which can be regarded as authentic is known to have come down to us. The head which is found on a coin is generally accepted as having claims to be as true a likeness as coins usually present. But some archæologists maintain that the same head is to be found on contemporary coins bearing a different

name. The bust which was discovered in 1779 near a country house of the PISO family, and which we engrave, was judged to be a valuable acquisition. But as the surface of the marble was greatly corroded and some parts were mutilated, it does not entirely agree with the descriptions of the son of PHILIP which the old historians have drawn. The nose especially is not of the aquiline form which was a characteristic of ALEXANDER, and as other parts have had to be restored the bust cannot be accepted as a faithful likeness. On the other hand, an inscription leaves no doubt that the bust had ALEXANDER for subject. The head is fine, but it has not the dramatic effect of the Vatican bust of the conqueror, which was prepared as if to suggest that there was a second sun god, and on that account holes were bored in the marble in order that gilt rays might be fitted into them. The head of the PISO bust is that of a mortal, but a great one, and it may well serve for a warrior who was able to conquer the world, who was a statesman as well as a soldier.

As a law-giver LYCURGUS was the superior of ALEXANDER, but as he lived about nine hundred years before the Christian era and in the least advanced of the Greek states, it was not to be expected that portraits which are more than an approximation to his appearance are to be found. The Spartans had no great love for sculpture, and the last man among them to care for such luxury was likely to be the author of the institutions which gave consistency to his country during several centuries. The individual counted for little in Sparta, and all that is recorded about LYCURGUS or any of the warrior chiefs was derived by later writers from tradition. On that account the bust of the legislator can only be looked upon as an exercise in sculpture by a Greek artist.

PITTACUS was another law-giver who lived somewhat nearer to our time, for he died B.C. 570. He was numbered among the seven wise men of Greece, but is not to be taken as entirely mythical. He was a native of Mitylene, in Lesbos, and appears to have been the bravest as well as the wisest among the islanders. His life was written by DIOGENES LAERTIUS, and several other Greek and Roman historians were fond of referring to him as an authority. The only grounds for maintaining that the bust is not entirely imaginative is its correspondence with the head on a coin of Mitylene.

The six busts of which engravings are given can be taken as exemplifying the degrees of certainty or uncertainty which are the measure of our knowledge of ancient art. Unless care is taken it is astonishing how short a period is needed in order to make the identification of the human being represented by a painter or sculptor an impossibility. At the present moment the so-called *Duchess*



of Devonshire gives rise to as many doubts as surround statues and busts which are ancient. It cannot be laid down with confidence whether it was painted entirely or partially by GAINSBOROUGH, and all means adopted for tracing the subject are without avail. Yet the picture was produced in the eighteenth century by an artist whose work was described by his contemporaries, and the lady represented must have been of some importance in order to have been dignified by so admirable a work. It is not therefore surprising that the portrait in the National Gallery by VANDYKE, long known as *Gevartius*, should now be catalogued as *Cornelius van der Geest*, that *Borgia and Macchiavelli* should be transformed into *Sebastiano del Piombo* and *Ippolito de' Medici*, and that some portraits in the same collection are officially marked as "supposed." The uncertainty becomes, of course, magnified when we have to deal with representations of Greek and Roman notabilities. In those cases we must be satisfied with evidence that is not deeply founded. Human nature, however, is not always displeased at deception, and there is more satisfaction in finding a bust labelled "Lycurgus" or "Pittacus" than "Bust of an Old Man." But what is the use of complaining about the difficulty of identifying portraits when so many large and important buildings exist without the least clue to the name of their designers?

### THE SUPPLY OF ELECTRICAL POWER OVER LARGE AREAS.

By F. J. WARDEN STEVENS, A.M.I.M.E., A.M.I.E.E.

THE question of the generation of electricity on a large scale, and its distribution over extensive areas, covering districts under the control of several local authorities, is one which is of the greatest importance. In the early part of the year 1898, a committee of Parliament was appointed to consider, amongst other matters, the following:—

"Whether powers should be given in any case for the supply of electrical energy over an area including districts of numerous local authorities, involving plant of exceptional dimensions and high voltage."

As a result of this consideration it was decided that powers may be granted where sufficient public advantage is shown, and further, that the conditions under which such undertakings are authorised may differ to some extent from those existing under the Electric Lighting Acts.

A scheme which brought forward the importance of the question was that proposed in 1899 by a company called the General Power Distribution Company. The scheme of this company was to erect enormous generating works at Worksop in Nottinghamshire, where coal slack could be obtained for the generation of motive power at a very low rate. Mains were intended to be laid to a distance of about 26 miles from the power works, but the company did not intend to supply in competition with local authorities, although they required to lay their trunk mains through the districts of such authorities. The company's proposal was to supply only large consumers, such as manufacturers guaranteeing a minimum demand, and if desired to supply local authorities also for them to distribute to private consumers.

A glance at a map will show that such an area as set out by this company covered the important towns of Nottingham, Sheffield and Derby amongst others. The company's efforts to obtain Parliamentary powers were unsuccessful owing to the considerable opposition of the local authorities, but this scheme may be said to have been the pioneer of others of a similar nature which have since been brought before Parliament, and which I will refer to later.

I now propose to briefly consider independently the question from the point of view of the different interests concerned, namely, the public, the local authorities, and the companies.

In the first place it should be mentioned that the areas decided upon for such projects are manufacturing districts, areas near coal-fields or thickly populated places. The general claims for these schemes amount to the following:—

Owing to the high and increasing price of land in large

towns, and to the high cost of labour due to the question of housing the working classes; and, further, owing to the difficulty of obtaining cheap coal, there is a strong tendency for manufacturers to transfer their works to districts where they can reduce such costs.

Cheap power is an absolute necessity for our manufacturing works in order to be successful in competition with other nations, and it is electrical power that is required. It has been proved that electricity is obtainable at a lower cost when generated in large works than when produced from small works. As these principles are now acknowledged, and as in certain districts a real demand has arisen, the question has been, not so much as to the necessity for a supply of electricity specially suited for power in manufacturing centres, but the question of how it is to be supplied. The areas decided upon are usually of such large extent that it becomes more economical to supply from one or two large generating works situated conveniently to a coal supply, rather than from a number of local works. The great disadvantage of small works under separate control undertaking the supply of power in considerable quantities to individual consumers, is that it entails a large capital outlay, and the loss of one or two consumers after the necessary plant has been provided would be damaging to the financial working.

The further, and perhaps rather more disputable, contentions may be here summarised:—

In order to efficiently supply, various districts cannot be omitted in a defined area to meet the views of individual local authorities. The public as a whole is benefited and the claims of vested interests must be to a great extent neglected, so powers are sought for the whole area, irrespective of civil divisions. It is difficult to distinguish between the use of electricity for different purposes, and it is required to supply manufacturers for any purpose, lighting or power, and on stated terms; but the power companies are, as a rule, willing to a condition being imposed that where a local authority is already supplying, or about to supply, the company will not supply a consumer requiring less than a certain number of units per annum. A supply in bulk is generally offered to the local authorities at low rates, which are claimed to be lower than the cost of generation at independent small works.

The local authorities have, therefore, the opportunity of avoiding the outlay for generating plant, and require to incur only an outlay on the distributing mains for the local supply to private consumers.

In this connection it must be remembered that, as regards small or outlying districts in general, the cost of independent generating plant is a heavy tax on the scheme, and often entirely prevents the adoption of electricity supply. Further, a local authority with limited borrowing powers, by obtaining electricity from a power company, is in a position to lay mains practically over the whole area and give a supply for the same capital outlay as that involved in erecting works and laying mains in restricted areas. There is thus no doubt that the power companies will enable electricity to be supplied in many suburban and other districts where a complete scheme could not be carried out because of limited borrowing powers, or where otherwise only a small portion of a district could be supplied.

When the supply is given also, the risk to the distributing undertakers is very much less. By having a certain margin between the purchase and selling prices there can be no loss on working, while the utmost risk is that of capital charges. With separate works the standing charges are so high that, if electricity is not taken up quite as rapidly as expected, there is often a considerable loss on working in the early years in addition to the capital charges.

Local authorities, in opposing such schemes, have brought forward the following claims:—(a) They have pre-emptive rights to supply electricity under the Electric Lighting Acts; (b) their approval is generally required before a provisional order is granted to a company; (c) they are responsible for the condition of the roads, and have a right to a voice whether they shall be broken up or not; and (d) they require a supply from separate works in their district on account of the employment of local labour and industries.

Having summed up in a preliminary manner the posi-



tion of the different interests concerned, it is necessary to consider in what way the interests of the local authorities are being protected without injury to the public.

It must be remembered that, under the Electric Lighting Acts, the opposition of a local authority must be reasonable, and if they will not themselves supply the requirements of the district their opposition is liable to be ignored. The question resolves itself, then, to the local authority carrying out the supply of electricity themselves or consenting to a company supplying.

Local authorities cannot reasonably raise objection to allowing trunk mains to pass through their districts to supply other unserved districts if an arrangement is arrived at as to the route of the mains, and especially if there is payment for wayleaves, also in view of the power granted to local authorities of undertaking the reinstatement of the road surface at the expense of the company. Conditions on such lines cannot be said to be unfair to or detrimental either to the local authority, the power company, or the public.

From the conditions under which a supply of electricity in bulk has been authorised the following may be stated:—

(a) It is understood that a supply in bulk can be given to any local authority or company authorised by Act of Parliament or provisional order to supply and distribute electricity, but not apparently in bulk to unauthorised undertakings established in the area.

(b) Electricity may be supplied for the purpose of providing power to any one, and also for lighting in such works where power is utilised. An objection might arise in this connection that a supply may be given for ordinary private purposes to the detriment of the "authorised distributors" providing a motor however small is in use. It is, however, provided that the "reasonable" consent of "authorised distributors" is necessary before a supply is commenced in their districts.

Having thus defined the position relating to this question, I will briefly describe some of the principal schemes authorised. These include, (1) Lancashire, (2) South Wales, (3) Durham, (4) North Metropolitan, (5) Midlands.

(1) This scheme is for supplying an area of 1,000 square miles in Lancashire, but does not include in the area Liverpool, Bootle, Manchester, Salford and Stockport. Generating works are intended to be erected at St. Helens, Wigan, Little Lever, and Trafford Park, adjoining the Manchester Ship Canal. Wayleaves only are given in the case of Bolton and for districts adjoining and receiving a supply from Manchester.

(2) The entire county of Glamorgan and a portion of Monmouth is the area covered by the South Wales scheme, which, again, is about 1,000 square miles in extent. The power works will be situated at Neath, Pontypool, and near Pontypridd.

(3) The area over which the county of Durham undertaking extends is 250 square miles, the generating works being situated at Gateshead and Durham, and additional works will be established at Harraton. Wayleaves only have been granted for the districts of Hebburn and Felling. The company controlling this scheme have, in addition to their Power Act, obtained provisional orders for the towns of Gateshead, Jarrow and Durham, in their area, to enable them to supply private lighting consumers and all classes of demand for electricity and, in addition, to work tramways.

(4) This scheme covers an area of about 325 square miles, including districts in the north of London, and extends from Hornsey, Walthamstow and Hendon, to St. Albans, Hertford and Ware. The power works are at Barnet and Hertford, additional works being proposed at Edmonton. Provisional orders have also been obtained in connection with this scheme for Barnet and Hertford.

(5) The scheme in the Midlands is authorised entirely by separate provisional orders for the greater part of the area, having as its centre Tipton, where the power works have been erected. Sub-stations are to be situated at Wednesbury, Rowley Regis, Brierley Hill and Bilston.

Other schemes of a similar nature already authorised or about to be brought before Parliament include the counties of Yorkshire, Nottinghamshire, and Derbyshire.

Such schemes it can readily be understood involve an

expenditure of several millions of money, and certainly open out a great field for the development of manufacturing industries. They must be looked upon as one of the greatest advances in the utilisation of electricity.

#### FACTORIES AND WORKSHOPS ACT.\*

ON Wednesday morning the Factory and Workshop Act, which was passed in the last session of Parliament, came into operation. We hope it will not be allowed to become a dead letter. The provisions of it have been inspired by the customary respect for property, which has hitherto caused legislation for factories to be of trivial advantage to workers. A little cleanliness and an attempt at ventilation will be almost all that is necessary to satisfy the law, whilst the demolition of some thousands of factories is needed throughout England in order to remove a peril to the State. It is not to be expected that men and women can be contented who for about one-half of their hours are confined in places which are more dangerous to their existence than any of the prisons of the country. Countless factories are of that class. Philanthropists have, however, supposed that the discontent of the working classes is caused by the defects of their dwellings. There is no doubt that unsanitary houses are factors in making people miserable. But many among them have to live as many hours in unhealthy factories as in unhealthy homes, yet while so many are ready to condemn the latter the condition of the factories never receives the attention from the public which is demanded. There would seem to be a belief that production to be profitable must be accomplished amidst dingy surroundings, and proprietors who have acted on an opposite theory have been considered to be amateurs rather than men of business.

Looking at the industrial history of the country, it might be thought that legislators believed human bodies were self-regulating machines, which could always accommodate themselves to external hazards. Adulteration was declared to be no more than an incident in competition, and the evils of factories were declared to be only a consequence of the employment of machines. When inquiries into the conditions of factory life began they were confined to efforts to discover to what extent the bodies of the workers, especially those of women and children, were not adapted to the long hours which the owners of factories insisted on. Regulations were made which could often be evaded. But in those days the shortcomings of the buildings where the operations were carried out were neglected, and it must be allowed that after sixty or seventy years the subject has not secured the attention which is necessary.

Let us take for example the Act which began its course on Wednesday. It deals with factories and workshops. What is a factory? There is, we believe, no general definition. We learn that a textile factory "means any premises wherein or within the close or curtilage of which steam, water or other mechanical power is used for preparing, manufacturing or finishing of cotton, wool, hair, &c." A non-textile factory means works, warehouses, furnaces, mills, foundries, &c., required for the making, altering, repairing, ornamenting, finishing, or adapting any article for sale. Shortly stated, "the expression 'factory' means textile factory and non-textile factory or either of those descriptions of factories." A workshop means any premises, room or place not being a factory used for the making of any article or part of any article, or the altering, repairing, ornamenting, finishing or adapting for sale of any article. There is nothing to indicate that any standard of construction is adopted, and it would be possible to have walls, roof, floors, doors and windows of an imperfect kind without incurring any penalty under the new Act. For what are the provisions?

According to the first section, a factory must be kept in a cleanly state; must be free from effluvia from any drain, water-closet, &c.; must not be so overcrowded while work is carried on as to be dangerous or injurious to the health of the persons employed therein; must be ventilated in such a manner as to render harmless, so far as is prac-

\* *The Law Relating to Factories and Workshops.* By William Bowstead, barrister-at-law. London: Sweet & Maxwell.



ticable, all the gases, vapours, dust or other impurities generated in the course of the manufacturing process or handicraft carried on therein that may be injurious to health. To secure those ends, all the inside walls and all the ceilings or tops of the rooms, all the passages and staircases (if they have not been painted with oil or varnished once at least in seven years) shall be limewashed once at least within every fourteen months. If they have been painted or varnished they are to be washed with hot water and soap once at least within every fourteen months. The medical officer of health or inspector of nuisances can order the limewashing whenever necessary. A factory or workshop will be considered overcrowded if there is less than 250 cubic feet of space and 400 during overtime for every person employed. The quantity of space may be reduced or diminished by order of the Secretary of State. Every room is to be kept at a reasonable temperature. Sufficient means of ventilation will have to be provided and maintained, and the standard is to be fixed by the Secretary of State. If a floor is likely to be damp to such an extent that the wet is capable of being removed by drainage, adequate means of draining must be provided. Sanitary conveniences must be also provided. Machinery is to be fenced. Steam-boilers are to be regularly examined. All factories erected after January 1, 1892, and all workshops erected after January 1, 1896, in which more than forty people are employed, must be provided with reasonable means of escape in case of fire. The doors of a factory or a workshop must not be locked or bolted, or fastened in such a manner that they cannot easily be opened from the inside. A court of summary jurisdiction will have the power to prohibit the use of an unhealthy factory or workshop.

In a general sense the foregoing lines express the spirit of the voluminous Act. There are special provisions for various trades and industries. It will be seen that the Act does not insist on any high standard of construction. So long as the provisions above mentioned are forthcoming the building will pass official scrutiny. Factory owners, if they are wise, will, for their own interests, do much more than the Act demands, but the Act can be obeyed on very economical terms.

The duty of enforcing the provisions of the Act will be entrusted to factory inspectors. The officials have under the Act manifold obligations, for they have to observe the Education Acts, the Truck Acts and other enactments. By what means they will be enabled to judge of the provisions for ventilation and other requirements is not stated. As a rule they have not had any training in construction, and we doubt if one of the inspectors now in office was ever examined about his knowledge of the scientific questions which are involved in the sections relating to buildings. As well as we can understand, they will be in a position analogous to MATTHEW ARNOLD'S, when the duty of examining needlework in girls' schools was thrust upon him. But the consequences of irregular or uneven stitches are trivial if compared with those which may arise from a want of skill in judging of the manner in which the provisions of the new Factory and Workshop Act are carried out. In proper hands the Act might be made a useful measure, but if it is not as stringently enforced as possible, it will be little more than a means for playing with sanitation, and will be one of those legislative shams of which we have too many already. It is to be hoped that architects and builders will not lend themselves to a superficial observance of the enactments, for where so little is asked for there should be no evasion.

The edition of the Act which has been brought out by Mr. BOWSTEAD contains much else besides the measure passed last year. The notes are valuable, and, what will be found useful, the enactments which have been repealed are given in full. There are also included the parts of other Acts which relate to factory works.

**M. Roger Ballu**, the son of the great architect, has been suspended from his duties of inspector of fine arts and professor at the National School of Decorative Arts, in consequence of a speech at a political meeting in which he attacked the French Government. French officials are now expected to sacrifice their rights as citizens to their offices.

## FLORENTINE INDUSTRIES.

IN the last report of the British Consul-General there is a description of the Ginori factory for the production of china, majolica and porcelain. It is situated at Doccia, about 8 kiloms. from Florence, on the right-hand side of the railway line to Prato. It was founded by the Marchese Carlo Ginori in 1735, that is, at about the same date as the works at Sèvres, and twenty-five years after the celebrated Meissen factory established by the Elector of Saxony. The progress made by the Ginori business may be traced in the increase in the number of hands employed. In 1848 there were 100, and in 1890 the number rose to 1,344. A diminution took place in 1899, their number being 1,141, which has remained up to the present unvaried. The factory occupies at Doccia a total area of 70,500 square metres, and is surrounded by the workmen's houses built by the Marchese Ginori for his men, numerous enough to constitute a village. It is fitted with various steam-engines with a total of 250 horse-power, thirteen circular kilns, eight small furnaces for artistic and ornamental majolica, two rectangular kilns for porcelain, four kilns for stoves, twenty-nine muffle furnaces for painted and gilt majolica, several kilns of various kinds and three gasholders for the lighting of the premises. The supply of the best class of machine tools of all descriptions is also abundant. The kilns are heated by British coal and by charcoal of pine, oak and elder wood.

The first material employed is chiefly china clay imported from the United Kingdom, and in a lesser degree Italian kaolin, pegmatites, felspars, quartzes and other silicious minerals and earths. The Italian clays have hitherto proved inferior to the French (Bollène and St. Yrieix), and especially to the British kaolins (Cornwall). In Sardinia numerous lodes of china clay are said to exist, but it appears that the clay obtained near the surface is lacking in purity. Should, however, the lodes be dug to some depth better results might be obtained.

The Doccia factory, in addition to table services of all kinds, from the plain and inexpensive to the most expensive ware of the highest artistic value, from common flower-pots to exquisitely modelled vases and bowls, manufactures porcelain plaques for the names of streets and numbers of houses, as well as enormous cylinders ("en biscuit") employed for corn grinding, stoves, filters, kitchen ranges, fireproof bricks, &c. With regard to the production of artistic work the Ginori factory has no need to fear any serious competition, but following its traditions, limits itself to the production of objects of real artistic value, disdaining bad imitations and the article known in the trade under the name of "camelote."

The Ginori factory amalgamated in October 1896 with the firm of Sigg. Richard, of Milan, under the name of the "Società Ceramica Richard-Ginori"; capital, 280,000*l.*; and works also the following factories:—Milan, stone porcelain, 800 operatives; Pisa, 300 operatives; Mondovì, 300 operatives; Vado, 50 operatives.

Sigg. Cantagalli & Sons' factory is greatly renowned for artistic majolica, especially for imitations from the antique, plaques for inscriptions, coloured and varnished tiles, Della Robbia work, &c. It employs seventy workmen, nine children and a woman.

Sigg. Salvini & Co. also manufacture artistic majolica, chiefly imitations from the antique. Their works are fitted with three kilns, and have a grinding mill for the preparation of the raw material.

Of late a co-operative company, called the Società dell'Arte della Ceramica, was formed in Florence by seven artists for the manufacture of imitations of the antique, especially of the pre-Raphaelite period.

Artistic furniture, which had unfortunately been a decaying art in Florence since the thirteenth century, was revived after the year 1840 by the works of some excellent artists, Ranieri Bardi and Barbetti at their head, who, abandoning the Empire style, brought wood carving to an admirable perfection. It is now, however, some years since the cheap commercial article has invaded the market to the detriment of real art. At present there are about 200 wood-carving studios in Florence, employing about 1,100 hands.

The Florentine mosaic (hard stones) industry, quite a specialty of Florence, once enjoying a world-wide renown, is now greatly affected by the competition of inferior mosaics of softer stones, as well as by fashion. The important Government works for hard stones, giving employment to twenty-one men, are, however, still in existence. It is calculated that this industry gives employment to 150 hands, including some children under fifteen years.

The working of ornamental stones, and especially of Carrara marble and serpentine (verde di Prato), holds a considerable place amongst the industries of the province. The working of marble and alabaster into statues and statuettes of an industrial type likewise occupies a considerable number of workmen, partly working at their masters' studios and partly at their own houses. The approximate number of workmen is 535. This industry, like mosaics, is almost exclusively supported by British and American demand.



## NOTES AND COMMENTS.

It would be interesting to know the private opinion of Mr. Justice RIDLEY about the evidence that was given in *BAILEY v. LONGTON*, which was tried before his lordship recently at Leeds. The plaintiff, Mr. WILSON BAILEY, sought to recover 171*l.* 3*s.* from Mr. LONGTON for services rendered in preparing plans and quantities and obtaining tenders for houses to be erected in Keighley. In 1887 Mr. BAILEY had acted as architect for the defendant, and when the latter intended to erect other houses in 1898 he gave the commission to the plaintiff, the fees being at the rate of 5 per cent. on the cost. The defendant altered his mind more than once about the planning, and at last decided that he would not go on with the buildings. The lowest tender amounted to 3,206*l.*, and he alleged that the plaintiff had estimated the cost at 2,256*l.* 10*s.* Plaintiff had received 87*l.* 1*s.* 11*d.*, and the defendant lodged in Court 5*l.* 4*s.* 6*d.* The two amounts make 92*l.* 6*s.* 5*d.*, and it will be asked how a gentleman who declared that it was his wish that the plaintiff should be paid fairly could arrive at that amount. That sum, however, was named by an architect, one of the defendant's witnesses, as reasonable remuneration. How such fees could be computed is by no means evident, for who knows whether there might not be a halfpenny more or less discovered in working out particulars? Another architect who appeared on behalf of the defendant was more generous, for he allowed an additional 13*s.* 7*d.*, which brought up the total to 93*l.* One of the plaintiff's witnesses said that by the Institute's schedule the fees would have amounted to over 300*l.*, and another architect declared he would have charged more than 200*l.* The Judge said that there was not any agreement by defendant as to the cost of the houses, and he gave judgment for the plaintiff for the full amount claimed. Cases of this kind have an effect which is not limited to the parties or witnesses in the action. They denote how easy it is when an architect is once on the spit to find willing hands to turn him. When an architect values another architect's services at about one half the amount the latter claims, what it may mean is that architects are to be found who are ready to work at very reduced rates, and are not afraid to announce the fact in public. Differences about the value of services naturally make people who intend to build rather dubious, and it is no wonder if they often ask borough surveyors to accept commissions for a lump sum, or run the risk of dispensing with architects and trusting themselves entirely to builders.

WE have reproduced from time to time several of the remarkable decorative designs by M. FRANÇOIS EHRMANN. From the circumstance that he studied architecture, and is competent to practise in that art, his paintings are peculiarly adapted for grandiose decoration in public buildings. For that reason he is often commissioned to design the most important tapestries which the Gobelins can produce, the *Sciences and Arts in Antiquity* being one, and which are intended to uphold the reputation of France in a class of work that is still unrivalled in other countries. We are therefore glad to learn that M. EHRMANN has been selected to produce an allegorical painting for the new Musée des Arts Décoratifs in the Pavillon de Marsan of the Louvre. It will be difficult to obtain compositions from other artists that will be of equal merit, and on that account we suppose M. REDON, the architect, has made arrangements to entrust the entire decoration of the grand hall to M. EHRMANN.

THE proposal of M. EDOUARD DETAILLE to have Paris adorned with signs has been received with general approval. As yet officialdom, which is omnipotent in the city, has only given a tacit concurrence. M. DETAILLE is of opinion that the competition among artists should be immediately opened, and that in October next all the examples produced should be exhibited in the Petit Palais. The jury, according to him, should consist of thirty members, together with the presidents of syndicates representing the various branches of industry and commerce. The members of the Institut of Fine Arts as well as all other artists desirous to assist, although not trying for the prizes, would be declared *hors concours*. All the signs that are awarded prizes would be at the disposition of the jury. M. DETAILLE is of opinion that they should be presented to shopkeepers who

are desirous to possess them, on condition that all recipients should guarantee an expenditure equal to the value of the sign on the artistic decoration of their shops or houses. He would, however, stipulate that in the rage for the imposition of new taxes which now prevails in Paris artistic signs should be always exempted. M. DETAILLE also insists that there is to be no imitation or adaptation of ancient signs. What is desired is that in the designs new ideas should prevail, and that they should be typical of Paris in the twentieth century, rather than reminiscent of Paris of the Musketeers. It may be mentioned that a new work entitled "*L'Enseigne*," by M. JOHN GRAND-CARTERET, with illustrations by M. GUSTAVE GERANNE, has been prepared, which no doubt will be used to suggest the ancient style which prevailed in the South of France.

It is not often a unique case comes before a Metropolitan Police Court relating to a railway company or a public authority. But the case heard by Mr. FRANCIS at Lambeth recently was certainly in that category. The London and North-Western Railway Company have a coal depôt at West Dulwich. Along Rosendale Road a sewer was constructed, and 459*l.* 5*s.* 9*d.* was claimed as the company's contribution. About 100*l.* of the amount was expended in enlarging an existing sewer, and the company objected to the payment of that sum. The argument was that the enlargement related to a sewer already vested in the Borough Council at Lambeth, and all expenses connected with it should be paid out of the borough rate, but to the rest of the claim there was no objection. On behalf of the Borough Council it was contended that the enlargement was demanded on account of the construction of the new sewer, and that the railway company, like other frontagers, should pay part of the cost. The magistrate considered that if the Borough Council's argument was acted on fully it would be unreasonable, unfair and oppressive, and he did not believe the Acts of Parliament were intended to bear such an interpretation. The summons was accordingly dismissed, and the Borough Council ordered to pay 10 guineas cost. It will be observed that nothing was said about any privilege which the railway company had acquired under public or private Acts, and which often affect cases under the London Building Act. Apparently frontagers on whom a similar claim was made would also be able to claim exemption on like grounds. The magistrate therefore declared his willingness to state a case should one be asked for, and as in suburban districts, not only in London but elsewhere, alterations of sewers may arise under similar circumstances, it would be well to have the judgment of a higher court. For at present it would appear as if sewers must be constructed of a size that would meet all possible circumstances, or be left when extensions take place of an area which will be equal to the new demands.

THE Germans are not negligent of the industrial resources which nature provides for them in their South-west African possessions. Near Karibib they have found a variety of marbles, and the KAISER has expressed admiration of the specimens sent to Berlin. As the colours range from snow-white to black, with others which are warmer in tone, it is expected the marbles will become valuable exports. Karibib is laid out with regular lines of streets, it has an excellent water supply, and the electric light is employed. There are extensive engine works near the terminus. For the railway lines sleepers are used of hollow pressed steel of about a quarter or three-eighths of an inch in thickness, forming a sufficiently strong support, especially in a sandy country. The rails are fixed, bolted and nutted on to these sleepers—eight sleepers to a pair of rails. In this manner they are conveyed, or rather pulled, by engines to the terminus of the line so far as it is laid, and as the earthworks are already done, the laying of the line is effected with rapidity. Bricks are not easily made, and various substitutes are introduced. One is granulated cork. The framing of the house is formed of grooved iron, which is filled with cakes of cork measuring 4 feet in length, 9 inches in width, and a thickness of 3 inches. The blocks are compressed with some adhesive matter, and although of cork and very light, look substantial. The houses constructed of the granulated cork are said to be cool in summer.



THE narrative of the various stages of the project for the erection of a statue to HONORE DE BALZAC would afford a subject for a pen that would resemble the great novelist's. It will be remembered that several years ago there were competitions for the model, which were without effect. Then the commission was given to M. RODIN, who as the most original sculptor of his time was believed to be alone capable of dealing satisfactorily with the subject. After a long delay he modelled a very remarkable head of BALZAC, but for the body he substituted a heap of wrappers, as if he wished to suggest that the author of the "Comédie Humaine" was accustomed to go about carrying all his blankets. The committee were amazed at the result and suggested modifications. But the sculptor was deaf to all appeals and remonstrances. Finally he threw up the commission. It was then offered to M. FALGUIERE, who, after various trials, contrived to satisfy the committee. Before the statue was completed he died. M. PAUL DUBOIS generously undertook the task. The statue is now ready, but a difficulty has arisen about the site. After many propositions it was arranged that the statue should be placed in the Place du Palais Royal. There was no peculiar fitness in the adoption of that spot, but it was at least an important open space. During the long negotiations over the statue and the site projects of another kind have been in progress. Under the site which was assigned to the statue there is now a railway. The statue consequently cannot be placed there. The Prefect of the Seine proposes no less than seven various sites. The committee have decided that under the circumstances, it will be best to accept a position in the Avenue Friedland, which is a continuation of the Boulevard Haussmann. The reason they assign is that it is not far from the house occupied by BALZAC after his marriage with the Polish lady, and the street which bears his name. But the place is distant from the centre of Paris, for it is near the Hôpital Beaujon; but it is better to have the statue set up anywhere than run the risk of accidents to it.

A FRENCH audience in a theatre is too well instructed to tolerate incorrect architecture, and as a consequence several architects obtain commissions for studies which can be used by the scene-painters. The latest instance of the kind is M. HECTOR D'ESPOUY. He won the Prix de Rome in 1884. Since his return from Rome he has often aided in designing architectural compositions which have gained applause for himself and those who executed them. His latest commission is for the decoration of the iron curtain in the new Théâtre-Français. The subject is to be *The Coronation of Molière*, and the background will form an architectural composition of exceptional importance. We hope one effect of it will be to restore harmony among the sociétaires, who, although like HAMLET's visitors, "the best actors in the world either for tragedy, comedy, history, pastoral, pastoral-comical, historical-pastoral, tragical-historical, tragical-comical, historical-pastoral, scene-indivisible or poem unlimited," are apt, like those in *Gil Blas*, to consider that they are infinitely superior to mere dramatists.

THERE is much evidence awaiting every visitor who was acquainted with Paris in the latter days of the Empire that the Haussmannising process is still producing its effects, and that the Quartier Latin is every year becoming more and more respectable in outward appearance. The students whose characteristics were described by HENRI MURGER would declare it to be an impossibility that close to the big fountain which stands at the entrance to the "Bou-mich" two houses should be erected in the Rue Danton which gained the first and second prizes in the competition for façades erected during 1900. The architects are MM. ARMAND and PERRONNE. But with the introduction of co-operative restaurants and co-operative lodging-houses, modernisation of buildings in the Quartier was inevitable. Four other houses have been premiated, viz., 21 rue Monsieur (M. GOY), 85 and 87 faubourg Saint-Martin (M. HERMANT), 170 rue de la Convention (M. LEGRUIL) and 81 avenue Malakoff (M. LE VOISVENEL).

It was once supposed that cities and towns grew through accidental circumstances. EMERSON says it is believed in America that cows are the best surveyors, for

they follow the routes which are easiest for locomotion. The Russians, from their peculiar manners and customs, might be expected to set out towns in a haphazard style. PETER THE GREAT, however, adopted system in laying out the present capital of Russia in a marsh, but it was necessary for at least 100,000 men to be sacrificed in the endeavour to cope with nature. Dalny, which is the present terminus of the Siberian Railway, in its planning suggests the spirit of PETER I. The place has been arranged in sections. There is one for Government buildings, which will comprise churches, schools, theatres and clubs. The steamship and railway offices are situated in the section. Another section will be mainly occupied with wholesale warehouses. Standing apart is a section where foreigners will reside. There is to be a Chinese city, but it will be separated by some distance from the European divisions. Streets are being formed on modern methods, there will also be parks and botanic gardens, and, if money and energy are sufficient, Dalny will present some of the appearances of the most modern European cities. The solution of a difficult problem in street construction deserves applause. Having a definite purpose, the city may not for a century, at least, be subjected to any change of character. If it should hereafter be found that alterations are necessary the Russian governor is not likely to hesitate to adapt the city to the requirements of unforeseen circumstances.

THE length of the cubit has given rise to a variety of measurements. From its importance as a standard there cannot be too much investigation on the subject. The origin of the name is not very clear, but it is believed to relate to bending, and it was therefore assumed that the cubit was the distance from the joint of the elbow to the end of the middle finger. That a human standard was adopted may be concluded from the expression in Deuteronomy, where the length of the bed of OG is said to be 9 cubits after the cubit of a man. There was apparently a second cubit, for the cubit mentioned in measuring the Temple is described as a cubit and a hand-breadth. Some commentators, however, consider that the Temple cubit was the old Hebrew one and not the Babylonian cubit with which the captives were familiar. The Greek and Roman cubit was thought to express the length from the elbow to the wrist or to the knuckle of the middle finger, and it has been calculated that it was equal to a foot and a half, or, more exactly, 1 foot 5'4744 inches, English measure, for the Roman, and 1 foot 6'2016 inches for the Greek cubit. The ancient Egyptians probably had two cubic measurements—the natural cubit was 17'71 inches, and the royal cubit 20'66 inches. The modern Greek cubit is 18 inches, and in Bengal the cubit is of the same length, or one half a guz or yard. In Morocco the cubit measures 21 inches. Mr. W. SHAW CALDECOTT now maintains "that the length of the cubit in common use amongst the Hebrews, and the one used in all their building operations, was one of an English foot and a fifth. The evidence on this behalf is derived from Babylonia, and was in July of this year laid before Professor FLINDERS PETRIE, as the most widely known of British metrologists. Professor PETRIE did not reject the evidence, but neither did he commit himself to an *ex cathedra* opinion upon it. On November 5 the documents relating to it were submitted to the members of the council of the Palestine Exploration Fund. By them the papers were submitted to Professor SAYCE for an opinion. A summary of the paper given to the committee was ordered to be printed. On receiving Professor SAYCE's report the Palestine committee relegated the question of the further examination of the evidence to the Society of Biblical Archaeologists, who, it is said, will summon a conference early in the new year to consider the whole question." If Mr. CALDECOTT is correct, it will be seen that all the calculations previously made are erroneous. The general opinion from the examples we have given is in favour of 18 inches being the length, although Bishop CUMBERLAND asserted the Hebrew cubit was 1 foot 9 inches. The size of many ancient buildings depends upon the length assumed for the cubit, and we hope the forthcoming conference will be successful in settling the problem.



## ILLUSTRATIONS.

WALL-PAINTING, OPERA HOUSE, PARIS.—THALIE—ERATO.

THE WESTERN BLOCK OF THE STRAND IMPROVEMENT.

WE publish a perspective drawing of this important block of buildings now in course of construction—important not only on account of its forming the new homes of the Gaiety Theatre, restaurant and hotel, and SHORT'S, LTD., but interesting because it marks the commencement of building operations on a large scale of what perhaps is one of the most comprehensive schemes of improvement promulgated in late years, and one worthy and fitting as a notable event at the commencement of the twentieth century.

Much thought, time, and no little anxiety has been caused in connection with the building forming the subject of our illustration, the Council, on the one hand, being most desirous of securing for this important western block a design worthy and fitting the unique situation, and which should to an extent govern the type to be followed in connection with the Strand frontage generally if not the curved street. After many conferences with the authorities and Mr. NORMAN SHAW, R.A. (who is largely responsible for the elevations as approved by the committee of the L.C.C.), a type was agreed upon which it was thought would satisfy all requirements, and at last this vexed question has been effectually disposed of to the satisfaction of all parties. The architects are warm in their appreciation of the great assistance afforded by Mr. NORMAN SHAW, R.A., in arriving at this happy termination to a difficult problem.

It will be remembered that in a former issue we published the drawing of the Gaiety Theatre, *Morning Post* offices and a part of the hotel as designed by Messrs. ERNEST RUNTZ & Co. and exhibited in the Royal Academy. The design has, of course, now been abandoned. It will be found in comparing that illustration with the one now published that the theatre block has been considerably heightened by the formation of a massive loggia and dome, thus making less perceptible the difference in height of the theatre and hotel.

Without doubt the present design will result in a building impressive by its massing, dignified in conception, and pure as to detail, at the same time suitable for the various commercial undertakings to be carried on, a really remarkable achievement when one realises the extremely varied purposes of the respective buildings.

We append a general description of the three interests involved in this western block as supplied us by the architects, and in doing so desire to call special attention to the 50 feet connecting or garden thoroughfare, which should prove a most pleasing and useful innovation to London street architecture.

The new Gaiety Theatre, as regards accommodation, will be about the same size as the present, but the approaches and exits being up to date and in accordance with the latest requirements of the London County Council, the building will necessarily cover a considerably larger area.

The principal parts of the house are approached through a circular colonnaded crush-room situated under the dome. From this crush-room, by a short flight of steps, the stalls corridor is reached, which extends the full width of the building, giving access to the stalls on either side. The dress circle is also approached through the crush-room, and over the latter is a foyer to be used in conjunction with the circle. On either side of this foyer are alcoves in which are refreshment bars. The upper circle entrance is in the Strand, with an exit into the curved street, and under the dome a large saloon is arranged. The gallery is treated in a similar manner, excepting that the entrance is in the curved street and the exit into the Strand. All details behind the proscenium wall have received every attention, and a lift is provided for the use of the artists.

It is needless to say that the ventilating, heating, lighting and fire appliances are all of the latest description, and when complete the New Gaiety should be one of the most comfortable houses in the country.

The restaurant and hotel premises, as shown in the illustration, form an imposing block of buildings, having frontages to the Strand curved street and the garden thoroughfare. The restaurant portion is situated in the

basement, ground and part of the first floor, and the upper part of the building is used for the purposes of a luxuriously arranged and equipped hotel.

The approach to the restaurant and hotel is from the central entrance in the Strand, which takes the form of a spacious vestibule, from which two broad corridors give access to the restaurant and hotel respectively.

The chief feature of the restaurant is the grand dining-room on the ground floor, 60 feet long by 39 feet broad and 30 feet high, with windows facing the garden thoroughfare on one side while on the opposite side are windows looking into a fernery. A gallery is arranged round this room at the first floor level, and a separate service room is provided to both the ground-floor and the gallery.

In the basement are placed two smaller dining-rooms, a smoking-lounge and the large billiard-room and the kitchens, while on the ground-floor the frontages to the Strand and the curved street are occupied by buffets, and in connection with the latter a large smoking-room is arranged on the first-floor.

In connection with the hotel is a spacious lounge on the first floor, from which the dining and smoking-rooms are approached, and a ladies' writing-room is placed on the second floor. Several of the rooms are arranged in suites of various sizes, comprising a sitting-room, bathroom and from one to three bedrooms.

It is proposed in carrying out the decorations of this hotel and restaurant to adopt a scheme of varied methods. Some of the rooms will follow the more general styles of ADAMS and LOUIS XV., but it is intended in the majority of cases to carry out a treatment of modern decoration, enabling the architects to infuse that amount of individuality into their work which is so promising a sign of the present day.

The premises occupied by SHORT'S, LTD., are absorbed in the general architectural treatment and do not show as a distinct section. They are situated at the corner of the Strand and garden thoroughfare, and comprise the ground and basement floors for the purpose of their business, the upper floors being designed to let out as offices.

MESSRS. ERNEST RUNTZ & Co. are the architects.

McEWAN HALL, EDINBURGH.

EMPLOYERS' LIABILITY ASSURANCE CORPORATION OFFICES,  
VICTORIA MEMORIAL.

CATHEDRAL SERIES.—RIPON: GENERAL VIEW OF EXTERIOR  
FROM SOUTH-EAST.

## HENRI IV. ORNAMENT FROM THE LOUVRE.

DURING many years Italian influence was exercised on the construction of the Louvre. It was believed that Fra Giocondo, the architect, was engaged on the buildings in the reign of Louis XII. Serlio also prepared plans for enlarging the buildings in the time of Francis I. It is possible that among the numerous Italians who were brought from Italy for the decoration of the palace at Fontainebleau some were engaged on the Louvre. Catherine de Medicis, the wife of Henri II., is believed to have largely patronised her countrymen. For a time she preferred the palace of Tourneelles, but after the death of Henri II. from a wound by Montgomery in a tournament she returned to the Louvre. Henri II., however, wished a part of the building to be a memorial of his affection for Diana of Poitiers rather than for his wife. The letters H. and D. combined may be discerned among the ornamentation which was executed during his reign. The ornament was of a very elaborate kind, and differed in character from what was seen in the older parts of the palace. But it evidently was adapted to the new ideas of art which were accepted in the Court.

When Henri IV. came to the throne he had to deal with an agitated Paris. After a few years he was able to restore calm to France, for the strife between Catholics and Huguenots was suspended. Then were recommenced the works at the Louvre, and he allowed his sculptors to continue a similar class of ornament. He had married another princess of the house of Medicis, and it is supposed that her approval was given to the carving. A great many sculptors were then employed, but those who were more immediately concerned in the architectural work shown in the illustrations were Pierre Biard, Boileau and Morel.

Critics who take a general view of the work executed under Henri II. and Henri IV. are not always able to distinguish between them. There is, however, an absence of the letter D. in the work of the later reign. It is also thought that the four upright lines which were introduced here and there were



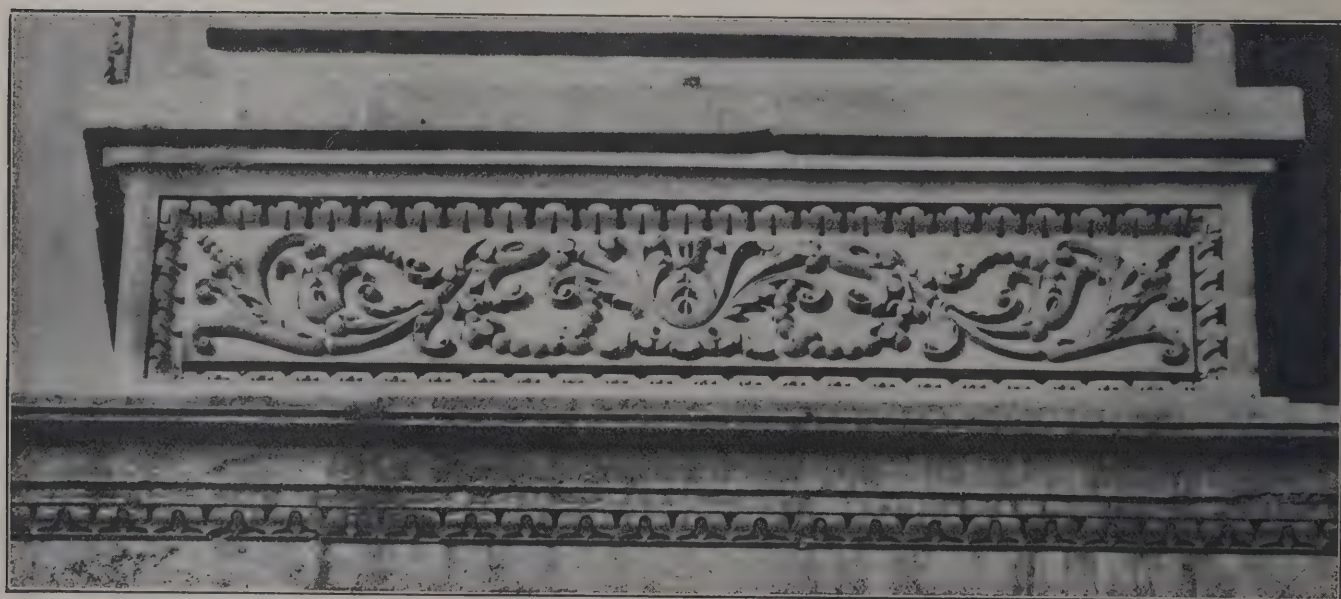
supposed to serve instead of IV. In the bands which were intended to mask the joints of columns it will be seen a sword is introduced entwined with laurels, which is also believed to recall the bravery of Henri of Navarre. The balance symbolised the equity of the king, who treated old and new subjects alike. The cable might suggest at first sight the pleasing bonds in which the second Henri was held by Diana of Poitiers, but its applicability to Henri IV. must be derived from different reasons. The use of the fleur-de-lis in the capitals is also significant of Henri IV., who was descended from Louis IX through the heiress of the house of Bourbon, although he was king of Navarre. Whether he had a right to the fleur-de-lis which belonged to the Valois branch of the family is a question which is not worth discussing now. Any sign or token which would help to make Henri's seat firmer on

the throne would be adopted by him regardless of any objection of the heralds. The shells and the profusion of flowers have been taken to express a compliment to Marie de Medicis, and some other ornaments have been imagined to form the letter M.

If tested by severe rules the ornamentation is excessive in quantity and in variety. There was even a time when it was proposed to remove it because it recalled the Bourbon family. Percier and Fontaine, the architects, were, however, able to have the destruction delayed, and they coated the whole of the ornament with plaster in order that it might not offend the eyes of purists. Their prudence must now be applauded, for, with all its exuberance, the treatment is valuable as revealing an endeavour to escape from the coldness of faithful reproductions of Classic Orders. For use in terra-cotta a similar mode of dealing with columns would be applicable.



SCULPTURED COLUMN, &C., FROM THE LOUVRE



CARVED ORNAMENT FROM LOUVRE



## THE LATE SIR NOEL PATON.

THE *Dunfermline Press* has the following graphic article on the late painter:—

Dunfermline has lost one of its most distinguished natives in the death of Sir Noel Paton, which occurred with startling suddenness at his residence in George Square, Edinburgh, on the 26th ult.—the venerable artist being found dead in bed. Since Lady Paton's death in May of last year, Sir Noel did not possess so much vigour, and it was observed that after coming to town from the country in the autumn this year he did not appear to have been so much benefited by the change as his relations had hoped. Some time ago the doctor declared his heart to be in a very weak state, and he has been ill for about two months although not confined to his room. When the maid went into his room about five o'clock on Thursday morning he was found lying quite dead with a peaceful expression on his countenance. It had been his custom to read in the early morning in bed, and it looked as if he had been making preparations for this when he passed away. His death has created national regret. Into the humblest homes he had carried his refining influence, and the creations of his fancy in some form of reproduction are as familiar in the cottage as in the castle.

Sir Noel Paton was born at Wooser's Alley, Dunfermline, on December 13, 1821. There is little doubt that through his father, Joseph Neil Paton, Sir Noel acquired and inherited his artistic faculty. Through his mother his talent and character were enriched with the poetic fancy and spirituality of the Celt. Without the direct and clearly defined influence exercised upon him by his mother, his family story had been a pointless tale. Like Burns and Aytoun, he was his mother's child, drew from her his patriotism, the imagination which made the heroes of Scottish history and border minstrelsy live again, and the fancy which filled the dells and glens with elves and fairies. When in 1864-65 Sir Noel painted "Fact and Fancy"—his boy Diarmid and a group of fairies—he was only giving pictorial form to an incident of his own boyhood. He so believed in the supernatural that he used to go out on moonlight nights and peer through the trees in perfect faith—"I am sure the fairies will come to-night." Young Noel was the sublimated product of nearly a thousand years of Highland superstition. His mother was Catherine M'Diarmid, a daughter of Archibald M'Diarmid, the seventh in descent from a sixteenth-century namesake, chief of the ancient and once-powerful Siol Dhiarmid. Her mother was Amelia Robertson, who came through the Robertsons of Invervack and Drumachune from the house of Strowan. The Robertsons of Strowan trace their descent through the De Atholias to Malcolm Canmore.

Descent explains much in the painter's art. Superstition gives place in him to a prolific and always beautiful fancy, and the creative faculty finds exercise amongst themes suggested by Jacobite loyalty, and by the history, fiction and poetry of Scotland. The earliest of Sir Noel's recorded works was a water-colour drawing of the "Combat between Bothwell and Balfour," in "Old Mortality"; the second was an oil—"Annot Lyle Singing," from the "Legend of Montrose." To that quality of Sir Noel's genius were due the "Quarrel of Oberon and Titania," "Puck and Fairy," "Reconciliation of Oberon and Titania," "Meeting of Zephyr and Aurora," "Thomas the Rhymer and the Queen of Faerie," all painted between 1846 and 1851. All the Shakespearian pictures of Puck, Ariel and Caliban were due to the hereditary tendency to people the supernatural with the beautiful and the weird. "The Bluidie Tryste," "The Dowie Dens of Yarrow" and "Watching the Pass" were the fruits of youthful excursions into Border ballads in the company of both parents. From these it is a short stride to the Arthurian cycle, whence some of Sir Noel's finest works were inspired. These began in 1860 with "Lancelot of the Lake" and "Sir Galahad and the Angel," which were followed in 1865 by the "Death Barge of King Arthur"—a drawing in black and white, done for the Art Union of Glasgow. Other Arthurian subjects were dealt with in the interval, but in 1879 came two versions of "Sir Galahad and the Vision of the Holy Grail," and in 1889 the subject was reverted to.

For the religious side of Sir Noel's art it is necessary to turn more particularly to his father and early home. Sir Noel drew his first breath in an atmosphere saturated with art. His earliest recollections were of casts, engravings and his father's works of design. He drew, as a boy, upon any scrap of paper he could find; with a burnt stick he drew Biblical and Jacobite pictures upon the whitened hearthstone, at thirteen he began to model, at fourteen he had illustrated the Bible. Reduced to its elements the parental influence was evenly divided. If the mother was Highland, full of traditions and Jacobite enthusiasm, the father was a Lowland artist, educated in fine art and design, learned in ballad literature and an antiquarian. He was, moreover, a collector, and surrounded his children with all manner of weapons, armour, curios and relics. They grew up in a kind of artistic Mediævalism, and reality strengthened the

hold of the antique upon taste and imagination. Paton *père*, yet further, was a religious man, the son of a Unitarian, and himself successively a Methodist, a Quaker and a Swedenborgian. He was an earnest searcher for truth, a wanderer in quest of a creed, who abandoned churches without compunction when he found their beliefs unsound.

Locality vitalised every one of these varied elements. The house at Wooser's Alley stands near the edge of a ravine which Sir Noel painted as the scene of his "Queen Margaret and Malcolm Canmore." He pictured the royal lovers, after wandering up the glen from the palace, sitting in religious converse on mossy stones immediately below the site of his own early home. In Sir Noel's early life the ravine was in all likelihood less bare and prosaic than it now appears. Be that as it may, as a boy he could look from its verge down to the grey walls of the palace and the abbey, and the thoughts they stirred are easy to surmise. The abbey ruins are a memorial of English invaders and of Reformation iconoclasts. The palace was a seat of Government, and for five hundred years a more or less regular royal residence. Within the abbey Malcolm and his queen were buried, and there also King Robert Bruce rests in his shroud of lead. Thus the charm worked upon the boy-artist. Were these kings not his forefathers? Was the palace not his ancestral home? Was Scottish history not interwoven with that of his family? Are these, we ask, merely a boy's fancies, and as such not worthy of serious consideration? In similar fashion all the mother's stories and the father's art and religion might be swept aside, were it not that they reappeared as influences in life, character and art. His mother made him a poet, and we can read the fact in "Poems by a Painter" and "Spindrift." His father made him an artist, and taught him the beauty of graceful form; and we can read the results of the lesson not only in the work of one of the most accomplished draughtsmen of his day, but in his sculptured models.

His father also filled him with his own religious feeling, and, above all things else, set before him an ideal of Christ higher than that of the average Christian. Sir Noel was known mainly as a religious painter. It is both curious and suggestive of the unbroken continuity of his personal development that it is between fifty-three and fifty-four years since he painted "Ruth Gleaning," his first exhibited picture. It was followed within a year by "Rachel Weeping for her Children," "A Holy Family" and "The Spirit of Religion" (large cartoon). Then came at intervals "Christ bearing the Cross," "The Entombment," "Gethsemane," "Mors Janua Vitæ" (1865-66), "Faith and Reason" (1871), "The Man of Sorrows" (1875), "Christ, the Good Shepherd" (1876), "Thy Will be Done" (1878), "Lux in Tenebris" (1879), "In die Malo," and others of a remarkable gallery containing by far the most powerful and eloquent contributions to Christian art made in modern times. Their moral and religious influence, evinced in poetry, general literature and pulpit, has been so great as almost by comparison to belittle considerations of technique and purely artistic quality. Inspired with a message of the most profound gravity and deepest interest to humanity, Sir Noel delivered it in language at once lucid, attractive and poetic. He painted homilies and sermons, and what he had to say to his fellow-men he couched in terms most thrilling and melodious.

Sir Noel's early reading quickened his imagination, for the favourite literature of the family consisted of the Bible, Bunyan's "Pilgrim's Progress," Pope's "Homer," Blind Harry's "Wallace," Barbour's "Bruce," Macpherson's "Ossian," and Scott's "Border Minstrelsy." When about thirteen years of age he tried his hand at modelling, but he did not persevere with that branch of art, and devoted himself to sketching and to illustrating the books he read. When he had attained his eighteenth year a well-known manufacturer of hand-sewed embroidered muslin, from Paisley, who was struck with young Paton's original ability as a draughtsman, offered him a position at the head of the designing department of his factory. Young Paton accepted this post, in spite of the opposition raised by his father, who thought that the work would interfere with his son's artistic career. While giving much satisfaction to his employers, he devoted his leisure hours to the study of literature and art. In 1843 he went to London, but did not stay there long, taking very little advantage of the Royal Academy, to which he had been admitted a student. Indeed, he never formally studied anywhere, a remarkable fact considering the comprehensive knowledge his works show of form and drawing. One of the incidents of his residence in London was the formation of a lifelong friendship with Millais—then a full-blown student, though still quite a boy.

In 1845 Sir Noel made his first great success, when he sent a large and ambitious cartoon, "The Spirit of Religion, or the Battle of the Soul," to the Westminster Hall competition. For this he obtained one of the three premiums of 200*l.* awarded by the Commissioners, the other two going to Armistage and Tenniel. From this time forward his position in the



world of art was well assured. The cartoon, "The Spirit of Religion," was afterwards presented by Sir Noel to his native town, and it adorns the walls of our Council Chamber.

In 1847 Sir Noel sent to Westminster Hall "The Reconciliation of Oberon and Titania" and a colossal religious painting, "Christ Bearing the Cross," and for these two he was again awarded the prize of 300*l.* by the Fine Art Commissioners. In the same year the Royal Scottish Academy elected him an associate, and offered to purchase "The Reconciliation" for the permanent collection. There were two other competitors for it, the Society for the Promotion of the Fine Arts and the King of the Belgians, but though he could have got more money for it he generously allowed the Academy to have it, and, as is well known, it and "The Quarrel," purchased by the Fine Art Society for 700*l.*, are now two of the most popular pictures in the National Gallery of Scotland. In 1856 the distinguished artist exhibited at the Royal Academy a picture entitled "Home," representing a guardsman being welcomed back by his wife and mother after the Crimean war. A replica of this picture was executed for Her late Majesty Queen Victoria, who also had a special photograph taken for her of Sir Noel's "In Memoriam"—a picture designed to commemorate the heroism of the British ladies in India during the Mutiny of 1857. Sir Noel many years afterwards painted for Her late Majesty "Vigilate et Orate" (watch and pray), which is hung in the prayer-room at Osborne. The subject, painted with power and sympathy, and generally acknowledged to be one of the finest of a series, is the return of Christ from His agony in the garden of Gethsemane to find His three disciples asleep. Together his pictures form a gallery of Christian art, the like of which probably no artist in modern times has produced. The most of them have been engraved and have had a wide circulation, carrying the spiritual message they were designed to teach into the homes of English-speaking people in many lands.

Sir Noel was made an A.R.S.A. in the year 1847, and in 1850 he was elected a full member of the R.S.A. In 1866 he was appointed Her Majesty's limner for Scotland, and in the following year he was summoned by royal command to Windsor to receive the honour of knighthood. In 1876 the University of Edinburgh conferred on him the degree of LL.D.

Sir Noel Paton was a man of great variety of gifts. In 1859, in connection with the patriotic movement to erect a national monument to Sir William Wallace, he modelled a spirited and symbolical group of a lion with a broken chain overthrowing a crowned Typhon, which it was proposed to carry out in galvanised iron on a huge scale. It had been selected by the acting committee, but was put aside subsequently on some sentimental consideration for the architectural design which now stands on the Abbey Craig. In the art of sculpture also he produced in 1865 two charming works—one a group of sea nymphs, to which he gave the name of "Spindrift"—an attempt to personify the breaking wave, and the other a group in wax—"Un Premier Pas"; and it may be recalled that he had a graceful design for the Scottish national monument to Prince Albert, which was warmly approved by Her Majesty, but was set aside by the committee for the equestrian statue by the late Sir John Steell, now in Charlotte Square, Edinburgh.

Sir Noel's grandfather, David Paton, was originally a weaver, but afterwards a wood-turner. Subsequently he took up printing, and made his own woodcuts to illustrate the books and pamphlets of which he was the author. He was the author of several little books on the Old and the New Burgher Kirk of Dunfermline, a collection of songs, and the "History of Dunfermline, Gathered from Good Authority and Personal Knowledge and Hearsay." His "History of Dunfermline," which is in rhyme, was in 1813 put in type and printed off by his own hands, and is illustrated with cuts of the abbey and the town house. The only copy of the book known to be extant is in the Advocates' Library in Edinburgh, and it is almost impossible to get copies of the other works at any price. Some of the illustrations are extremely clear, and have the marks of the careful detail which formed a characteristic of the work of his distinguished descendant. Sir Noel's father was born in 1796, and, like his father, began life as a weaver. He did not much care for the handloom, and was ultimately apprenticed as a printer. He had inherited all the artistic instincts of his father, and in 1818 he left the printing and took up damask designing, producing in great variety patterns of marked excellence.

Sir Noel is survived by a family of ten sons and daughters. One of his sons is a captain in the Camerons, and has been in South Africa since the outbreak of the war, being wounded in one of the first engagements. Another son is in Bombay, but all the others are in this country. His brother, Waller Paton, was a popular water-colour painter. His sister, Mrs. D. O. Hill, the wife of a well-known artist, has done good work as a sculptor. Deceased had during his life lent a helping hand to many an artist whom he guided in the early part of their career. He was of a retiring disposition, and thus, except through his

work, never came much before the public. Had he so desired, he might have been President of the R.S.A., but he preferred to devote his energies to art pure and simple rather than the direction of the business side of it. In his house in Edinburgh he had a very rich collection of arms and armour, there being in all 650 pieces of great value. Sir Noel always dressed in the national costume, and with his strong knit, stalwart frame, white locks under a Scottish blue bonnet and Highland plaid over his shoulder he was a picturesque figure.

## LIVERPOOL CATHEDRAL.

AT a recent meeting of the Liverpool Rural Deanery the Ven. Archdeacon Madden delivered an address, in the course of which he said:—

The St. James's Mount site, which has been selected by the committee and approved by the public, is central, commanding and picturesque. It is within a few minutes' walk of the great public halls—the Philharmonic Hall, Hope Hall and Y.M.C.A. Hall. These halls were erected in central positions in order to be "get-at-able" by the people from North, South and East Liverpool, and from outside, and the new cathedral will therefore be as get-at-able as these halls. As regards the commercial centre of the city, St. James's Mount is quite as convenient for business men as Monument Place, and in the course of years it will be more convenient. The next fifty years will see vast changes in the heart of the city, and a cathedral on St. James's Mount will probably by that time be in the very centre of the commercial part of Liverpool. Already Duke Street, Hanover Street and Seel Street have ceased to be residential, and warehouses and factories are taking the place of dwelling-houses. The "city" is steadily creeping upwards towards the Mount. If proximity to the centre of business life is a thing to be desired, then the cathedral fifty years hence will be as much in the heart of the city as St. Peter's is to-day. The position is commanding. There it will spread forth its vast wings brooding over the city. It will be seen from afar lifting its magnificence above the crowded streets. It will stand forth a great spiritual beacon towering over England's chief seaport, "to give life and to save life." Sir James Picton thus describes the Mount:—"The situation is most commanding. On a Sunday morning in summer the view is extensive and beautiful." The proposed site is one of the largest "open spaces" in the centre of the city. The open space upon which St. George's Hall is situated, *i.e.* all the free-air space surrounding the hall, including St. John's Churchyard, Lime Street, &c. is 17 acres. St. James's Mount was most central, being only 500 yards from St. James's station, and as near Central station, Exchange station and the pier-head as was Monument Place. It was only 600 yards further from Lime Street than Monument Place was. The open space at Monument Place was only 8 acres in extent. The whole open space connected with St. James's Mount is 22 acres, *i.e.* from Sandon Terrace to Parliament Street, and from Hope Street to St. James's Road. You could place the largest building in Liverpool, St. George's Hall, on St. James's Mount and not cover one-half the ground. The position is picturesque. No one can have visited the Mount and viewed the landscape from its commanding heights without being struck with the wonderful panorama presented to his eye, "the expanse of the Mersey, the estuary of the Dee, Bidston Hill, the ocean and its majesty of calm or storm, and the Welsh mountains terminating the perspective." I have seen from the gardens on the Mount a glorious sunset, and realised as I looked upon the flashing sunlit heavens what the effect would be as the lights of even fell upon the spires and pinnacles of a great cathedral—bathing it in golden sunshine. Its vast proportions would be transfigured with the wondrous light, its windows would shimmer with purple and with gold, and the noble vane would stand forth a gigantic amethyst "mingled with fire." To those who see in the inception of this scheme the "Hand of God," it will not be amiss to point out a remarkable coincidence. On the very day the public meeting was held in the Town Hall and St. James's Mount was approved as the site of the cathedral, the first lesson at evening prayer was Ezra 1 and 3. There we read:—"Then rose up the Chief of the Fathers, with all them whose spirit God had stirred, to go up to build the House of the Lord"; and again, "They gave money also unto the masons and to the carpenters . . . and all the people shouted with a great shout when they praised the Lord because the foundation of the House of the Lord was laid." And the coincidence is all the more striking when we remember that the original name of St. James's Mount was the same as that on which the temple was built, namely, Mount Zion. The objection that the cathedral committee are robbing the poor of an "open space" demands consideration. The cathedral will be erected on the north portion of the Mount, and upon ground now covered by houses and private gardens. It will not encroach to any large extent



upon the portion used by the public. As a matter of fact, when the cathedral is built the whole space round about the structure will be open to the public. Adjacent to the Mount are two gardens which are now open to the public—the churchyards of St. Luke's and St. James's. Churchmen are as jealous as any other portion of the community of the "rights of the poor," and, as a rule, if they talk less about the "rights of the poor" they often do more for them than the talkers. One must speak with bated breath in the hearing of experts on the subject of style. I am quite sure if any genius can produce a great and magnificent twentieth-century cathedral the committee will not select an adaptation of a thirteenth or fourteenth-century Gothic cathedral. Let it be clearly understood—there are many of the committee whose minds are not at all made up as to "Gothic" being the only style for an English cathedral. The architects have a perfectly free hand—young and old. And this is as it ought to be. When it comes to the selection of the design and the architect, the committee will be assisted by professional advisers. The final decision, however, in all matters connected with the building of the cathedral—the style, the architect, the stone, will rest with the committee. This is only reasonable. They are trustees, the responsibility is theirs and they must act on it, and not delegate it to others, however skilled and learned in their profession. The committee are the jury responsible for an honest and true decision. The judge and the K.C.'s are legal experts, and the jury listen with respect to all they have to say, but the twelve men in the box must give the verdict. To them the final decision is left. It has been stated that to place the cathedral north and south would be "an outrage on English Church propriety." It is an outrage that has been committed again and again by every party in the Church if it be an outrage. Walcott in his book on "Church and Conventual Arrangements," says orientation "was never a law of the Church." Here in Liverpool we have several churches placed north and south. One erected recently—St. Agnes, Ullet Road—was built by the most Anglican of our architects, Pearson. There was land enough to have built this church east and west; it must therefore have been deliberately placed north and south. York Minster and Canterbury and Lichfield Cathedrals do not lie direct east, but bend towards the south. As far as I can learn from leading men of all parties in the Church, the question of "orientation" is of little or no importance. The general verdict was, If it is possible place it east and west; if it is not possible place it north and south. Do not spoil the beauty and proportions of your cathedral for the sake of a custom that is not a law of the Church.

### THE SAINTE CHAPELLE, PARIS.

ALTHOUGH the dedication of a separate and distinct ecclesiastical edifice for relics was unknown before the times of St. Louis, yet we do know, says Clutton, that in cathedral and other churches in France, as in the whole of Christendom, altars expressly dedicated to the honour of relics were universal. In the sanctuary of a church or a cathedral it was usual to place such altars behind the great altar, but elevated above it. It was thus at St. Denis, at Notre Dame of Paris, at Rheims, at Bourges, and at Westminster and at Salisbury. Notre Dame of Paris had six altars of relics. The first, which contained the chasse of St. Marcel, was placed immediately behind the high altar, and raised above it; the chasse, which contained the remains of the saint, was of silver gilt, and enriched with numberless jewels and precious stones. It was placed on a table plated with copper and supported by four large and lofty pillars of the same material. More elevated still was a very large cross, the crucifix of which was also of silver gilt. To the right of the chasse of St. Marcel was that of Notre Dame, which was placed on the altar to the Holy Trinity. This chasse was also of silver gilt, and contained numerous relics. The remaining chasses, one of which was of wood only, covered with very precious drapery of silk, and sometimes carried in procession round the church, were those of St. Lucian, of St. Cosmo and St. Damian, of Severin and of St. Gundulph. All those chasses severally had altars to them. The altar tomb of Edward the Confessor at Westminster is situated behind the place for the high altar. The chasse which contained the remains of the canonised king was, like that of St. Marcel at Paris, raised on a slab or table, supported by columns, which, instead of being of copper, are chiefly of Alexandrian mosaicwork. In front, or against the west end of the basement or tomb, was a small altar, and the chasse itself had a feretory or movable covering, which was raised whenever the remains of the saint were exhibited to the faithful. These two examples from the principal churches in Paris and in London will suffice to show the arrangement for altars of relics where there was space sufficient in the sanctuary to admit of their presence. When, however, from the abundance of relics the space in a church

would not admit of each chasse having its proper altar, a practice became general in the thirteenth century of erecting over one altar an estrade or receptacle to receive several chasses; and for the purpose of lowering on to the altar beneath any one of these chasses, on the feast of the saint whose relics it contained, a square hole was left in the under side of the estrade, large enough to admit the passage of the largest chasse it held, a cord being the medium which regulated its descent. This plan was adopted at the cathedral of Arras, at the church of St. Etienne du Mont at Paris, and in the Sainte Chapelle itself.

With a few exceptions the building of Pierre de Montereau, erected to contain these relics, did not vary in its plan and arrangement from chapels contemporaneously erected and attached to palaces and other large residences. The type chosen by Montereau was the same as that which was then being carried out in the erection of the chapel to the archiepiscopal chapel at Rheims. Thus the circumstance of St. Louis erecting an edifice expressly to receive relics did not develop any particular ecclesiastical arrangement in the plan of the building. The common type of the day seems to have been adhered to; one recognised by its lower as well as upper chapel, consisting of from three to four bays, vaulted in one space, without aisles, and terminated at the east with an apse of three or more sides. The exceptions before alluded to in the plan of the Sainte Chapelle from that of previous and contemporaneous edifices is the introduction of small oratories.



SAINTE CHAPELLE, PARIS.

They present themselves as small recesses, one placed on either side of the chapel in the bays next to which the apse commences. These were respectively used by the kings and queens of France. Such oratories are found in all buildings of subsequent erection called Saintes Chapelles, as indeed in very many other chapels differently dedicated. Fireplaces, and chimneys attached to them, were introduced into these oratories. We also find that these buildings contained a succession of chambers one placed above the other, the whole communicating with the chapel itself by means of a small staircase. The use of these chambers is doubtless obvious, but a reference to the original statute of foundation of the Sainte Chapelle at Paris, and made by St. Louis, will show us the exact origin of this arrangement, besides other and curious information connected with the use of the buildings themselves and the manner in which they were served.

In 1248 St. Louis appointed for the chapel in honour of God and the Holy Crown five principal or master



chaplains, priests, each of whom was to have appointed with him a priest or sub-chaplain and a deacon or sub-deacon, three churchwardens, also priests, and each with his deacon or sub-deacon; one of the master-chaplains to be president, to whom the others were to be obedient. To each of the five chaplains and to each of the three wardens, besides offerings and endowments belonging to the benefice, an annual salary, payable half-yearly on All Saints Day and the Ascension, of 25 livres (parisis) was to be made, the president to have 15 livres additional.

The architecture of the Sainte Chapelle at Paris is an episode in the history of the art of the first half of the thirteenth century. It is very difficult to understand how the cathedral of Chartres, the archiepiscopal chapel at Rheims, and the Sainte Chapelle in question can be buildings of the same epoch, or where to find the connecting link between the severe art of the two first-mentioned works and the vigorous outburst of a new inspiration which Montreuil's buildings display. It is true that his genius may have prematurely developed the nascent forms observable in them; but the changes in the treatment of the mouldings, and particularly of the foliage carving, is an effort beyond the genius of any one man. The French have not yet attempted to solve the enigma, and it is not improbable that the daily increasing attention of the architects of this country to the art of France may assist sooner or later in deciphering it.

Every feature in the Sainte Chapelle is so well known that it will be needless to allude further to them. This building became the type of numerous other chapels, the remains of which are scattered over France. And here it is that a fact, very worthy of attentive observation, presents itself.

It is known that in France buildings called Palais de Justice occur in other cities besides Paris. It is also known that the large provinces, particularly in the fourteenth and following centuries, were governed by princes of the house of Valois and by the chief nobility. Thus at Dijon and at Lille during this period the Dukes of Burgundy, when not in Flanders, resided and kept their courts, and had in both cities palaces of a similar character to that at Paris. To the palace at Dijon the dukes summoned the estates of Burgundy, which province they possessed by right of appanage. At Lille they assembled those of Artois and Franche Comté, by virtue of the authority which had become vested in them as successors to the inheritance of the Counts of Flanders. The Duke de Berri also in this century possessed the county of Berri by right of appanage, whilst he governed Auvergne, Languedoc and Poitiers by commission from the king. Thus at Bourges and at Riom this prince built entirely new palaces, and at Toulouse and Poitiers enlarged others which had belonged to the former counts of those provinces.

Many other examples might be given to prove the general existence of such buildings in the great provinces of France during the fifteenth century. Thus at Aix there was a similar palace which had belonged to the Dukes of Anjou in right of their title of Counts of Provence, and at Rennes and at Nancy there were two others, belonging respectively to the Duke of Brittany and the Duke of Lorraine.

Besides being residences, these buildings were also the seats of government of the respective provinces, and in them the same functions were performed as were performed by the kings of France in the Palais de Justice at Paris, and in this similarity of name and application the chapels attached to them formed no exception. Each one was called Sainte Chapelle, after its Paris antitype, and for the reason already assigned they one and all contained and were dedicated in honour of holy relics.

These provincial Saintes Chapelles had usually an upper and lower chapel, partook exactly of the same plan, had oratories, one on either side, and apartments for the accommodation of the keepers of the chapel. In the oratory of that at Riom are fireplaces and chimneys. The Museum at Bourges contains a curious model of the now destroyed example attached to the palace in that city. On it is shown a flèche, such as we now see on the chapel at Paris.

In the internal arrangements of these buildings, that at Paris furnishes us with an exact arrangement for the altars and its estrade and circular staircases; the latter of these are parts of the original work.

From the description which has come down to us of the fittings of the Bourges chapel, we find, commencing from the west end, the two first bays formed the avantchoir, which was separated from the body of the chapel by a screen, probably of wood, since the doors of it, which are still preserved in the cathedral, are of that material. On either side of these doors and against the screen there stood an altar.

The next two bays of the chapel formed the choir, and ranged on the north and south sides of it were some beautiful wooden stalls. The tomb of the Duke de Berri, erected to him by his nephew, Charles VII., was placed in the centre of the choir, and protected by a grille of iron. The two tribunes or

oratories of the Duke and Duchess of Berri occupied the fifth bay on either side of the chapel, and somewhere in this part were placed the sedilia, which are now in one of the churches of the town.

Under the keystone of the vaulting of the apse stood the high altar, having a dossel or retable decorated with a picture. A small circular wooden staircase, about 4 feet 6 inches in diameter, with fourteen steps, is said to have stood behind this altar. This may have been the staircase to the estrade, or receptacle for one or more chasses containing the holy relics, as in the Sainte Chapelle at Paris. Under the east window of the apse was placed another altar, called Autel de Notre Dame la Blanche, on which stood a statue of Our Lady in white marble.

On either side of the altar were life-size statues of the Duke de Berri and of his wife, kneeling, with a prie-dieu to each of them. These statues were coloured and gilded, and are now in the lady chapel of the cathedral.

### ULSTER SOCIETY OF ARCHITECTS.

THE annual general meeting of the Ulster Society was held in Belfast under the presidency of Sir Thomas Drew, P.R.H.A.

Mr. W. J. Gilliland read the report, in which it was stated:—You will be pleased to know that the Society continues to prosper, as indicated by the considerable increase in the number of its membership. But signs of progress are not limited to mere increase of membership. The representative character of your Society is becoming more and more recognised, and its influence is beginning slowly to make itself felt. The representatives of the Society elected by the Corporation of Belfast on its technical instruction committee have succeeded in obtaining the appointment of an art subcommittee. It is hoped that great benefit to this department may result therefrom. Your Council have had the following subjects under its consideration:—Conditions of contract, builders acting as architects, revision of by-laws of local authorities, formation of prize fund and scheme for self-improvement of the junior members of the Society. With reference to the latter subject, it is intended to call a meeting not only of the members, but also of all their architectural friends at present outside the Society, as soon as it is possible, to frame a scheme for the purpose of indicating to the latter class the advantages of membership, and inducing in all a more enthusiastic interest in architectural study. The Belfast City Corporation, with a desire to improve the street architecture of the city, propose to include in an omnibus Bill which they intend to promote in the coming session of Parliament, a clause to regulate the "elevations of buildings." By a hastily-drawn and ill-considered clause they propose to cut the Gordian knot of a difficult problem by making the city surveyor the universal architectural censor for the city. Your Council have protested in the strongest way against this intolerable tyranny, and they will persist in their opposition, in which they expect the support of every member of the Society, until this objectionable proposal is withdrawn. A very substantial section of the Corporation, that which understands the subject best, is with us, and we have no doubt that we shall bring others to see that far from producing a desired and desirable improvement, the result of giving a city surveyor such powers would be most unsatisfactory and indeed unworkable.

The following officers were elected for 1902:—President, Sir Thomas Drew, R.H.A.; vice-president, Mr. W. J. Gilliland; honorary secretary, Mr. N. Fitzsimons; honorary assistant secretary, Mr. W. B. Fennell; honorary treasurer, Mr. Vincent Craig; council, Messrs. T. J. McDonnell, M. A. Robinson, F. H. Tulloch, W. J. Fennell and Henry Seaver.

The first annual dinner in connection with the Society was afterwards held. Sir Thomas Drew presided.

After the loyal toasts were honoured, Mr. W. J. Gilliland proposed "The President." Their thanks were due to him more particularly for the great interest, the friendly interest, he had taken in the success of their Society in the North. Without his support, enthusiastic support, and warm sympathy they never could have attained to the position they had done in the organisation of that Society in such a short period of time.

Sir Thomas Drew, in reply, said he could assure them there were very few things in life which were more pleasant to him than to find himself sitting in the position which he did that night in the town in which he was born and educated, and for which he had never lost his friendly feeling. Neither had he lost a friend of his early days except through death. Indeed, he always felt young when he was in Belfast. He had a great desire to see the profession with which he was connected in a better position in his native town, and he felt proud that the time had come when at last an organisation of local architects was an accomplished fact. Already



they found themselves face to face with questions of very great gravity to their profession, as well as to the public of Belfast, and he had no doubt when in time they came to be better recognised their organisation would be an exceedingly useful one, working in harmony with the municipality. In Belfast there was a question which affected them. A Bill had been promoted in Parliament which would in some points affect the practice of architects in this city, and there had been put into his hands that night for the first time the draft which was proposed. Among other things it stated:—"The surveyor may disapprove of such elevations on the ground that they were in his opinion objectionable, or that in any respect they are not in conformity with the requirements or provisions of the existing local acts or by-laws of the Corporation." That was certainly a most extraordinary clause, and, he feared, was drafted under a total misapprehension and mistake. The draughtsman of such a clause could not possibly have conceived what the ultimate result would be, and how it would affect architects. In the first place, could he have thought what a blow it was to the liberty of the free subject in this free kingdom? Municipal laws as regarded buildings were no novelty. Parliament had been hammering away at them for fifty years, and after many amendments and new Acts municipal legislation as to buildings was in a pretty concrete state. The City of London had a system which, with all its faults, was as nearly perfect as could be. The Local Government Board of England had issued model by-laws, which had been adopted by even the smallest urban authorities in the smallest towns, while the great municipalities of England had their legislation and their by-laws pretty well now in smooth working order. He ventured to say in no part of the King's dominions could such a clause as that proposed by the Belfast Corporation be found. He doubted if they would be granted by the Legislature if proposed. Those things which were really objectionable and offensive in property were regulated by the ordinary legislation in towns, and the precedents he had quoted were quite sufficient to meet them. The general powers given to municipalities as to frontage lines and the widening of streets were sufficient, and worked very smoothly. Then again, if such a preposterous clause as that proposed were adopted, who was the surveyor that he should be censor of architecture any more than of morals? What were his qualifications for the position? He was not an architect, as a rule. He (Sir Thomas) should also be very sorry indeed to see a censor of architecture appointed, although he might be a distinguished architect. They had all ideas of their own as to how things should be done. They should remember how that kind of thing was met in London under the Metropolitan Buildings Acts. There was a court of arbitration, consisting of three professional men, and their decision was the rule for the County Council. On mere questions of taste and architecture there should be no censor. Such a thing was foreign to the whole spirit of the British trader and at variance with the free spirit of the country. If such a thing were imposed it would be to the detriment of the architectural progress of the country. He hoped there would be enough good sense on the part of the Corporation of Belfast not to insist upon the proposed clause, and that a pen would be drawn through it before it became a public and burning question. It would be more creditable to the common sense of this city if that clause was drawn simply on the lines of other municipalities, and then there would be no more heard about it. If it, however, should be presented to Parliament, he was sure the architects of the city would take steps to oppose it. It would be their duty to do so, and he could promise that in their opposition they would have the assistance of the Royal Institute of British Architects and of the allied societies throughout the kingdom. He sincerely trusted the by-laws of his native city would be model by-laws, and that the architects and Corporation would work in harmony together. In conclusion, Sir Thomas thanked the members for having elected him president for another year.

Sir Otto Jaffé, in responding to "Our Guests," said that with regard to Sir Thomas Drew's remarks, he could assure the members that the law committee of the Corporation was only too pleased to see a deputation of their Society the other day. The committee attempted to alter certain clauses, and he believed that, to a certain extent, those clauses were an improvement upon the original draft. It would not be proper for him to disclose what happened in committee, but he might say that he took the liberty of expressing certain views about those clauses, particularly about that one referring to the elevation of buildings. He himself could not see how any professional man could be asked to give the height of adjoining buildings. The clause, however, had been retained in the Bill for the present. How long it would remain there would be a matter for discussion. As a result of the meeting of the Corporation the Bill had advanced one stage, but the clauses could be all altered yet. The members of the deputation that then appeared before the Council would remember that the Lord Mayor said:—"Gentlemen, if these clauses don't please

you, or are not in accordance with what you consider right, send us in a sketch of the clauses you would like." If they would be so good as to formulate at the earliest moment clauses as they would like to have them passed, and send them to the town clerk, he was sure Sir Samuel Black would be very happy to discuss the nature of them. That certain clauses might appear drastic they could understand was only natural. Architects argued that these clauses, as they had been put forward, were not in accordance with the custom, but somebody must break through the custom. If they could show the Corporation that the attempt to break through the custom was not good, he was sure the Council would be only too glad to meet their views. He would try to convey to his fellow-members of the Corporation the remarks which Sir Thomas Drew had so well made. The President had taken exception to their form of appeal. Well, they thought it was the very best form that the appeal should be to the Recorder, but if the system in operation in London was good enough for that city, he did not see why it should not be equally good for Belfast. The Corporation had nothing but the interests of the city at heart, and whatever was best would doubtless be done.

## INCRUSTATION OF STONE AT ST. PAUL'S.

A LATE number of the Proceedings of the Chemical Society contains the following paper by Mr. E. G. Clayton, F.I.C., "On an Incrustation from the Stone Gallery of St. Paul's Cathedral."

Around what is known as the Stone Gallery, at the base of the dome of St. Paul's Cathedral, is a balustrade of Portland stone, surmounted by a heavy coping-stone of the same material. Much of the surface of the stone is greatly "weathered," and is coated by a stratum of a grey or black substance, which in some places (especially on the underside of the coping-stone) attains a thickness of three-quarters of an inch. This material, which is brittle and detachable with a knife, has a very rough and irregular surface, is stalagmitic in character, and though differing in colour, in other respects resembles very closely some boiler deposits. It can easily be reduced to a fine grey powder, which, under the microscope, shows no morphological features indicating the presence of fungoid or similar matter.

Some of this incrustation has been analysed, with the following results:—

In 100 parts by weight :	
Water, lost at 100° . . . . .	2'06
" " 150° . . . . .	22'48
Organic matter (carbon) . . . . .	1'10
Lime . . . . .	26'44
Magnesia . . . . .	0'27
Ferrous oxide . . . . .	1'31
Silica, sand, &c. . . . .	10'39
(Including combined silicic acid, SiO <sub>2</sub> , 2'33)	
Sulphuric acid (combined) . . . . .	34'93
Phosphoric acid " . . . . .	1'02
Carbonic " . . . . .	none
Chlorine . . . . .	trace
100'00	

Bases and radicles being combined the composition is apparently as follows:—

Water (100°) . . . . .	2'06
" (150°) . . . . .	22'48
Carbon (soot) . . . . .	1'10
Calcium sulphate . . . . .	59'38
" phosphate . . . . .	2'22
" silicate . . . . .	1'63
Magnesium silicate . . . . .	0'67
Iron silicate . . . . .	2'40
Sand and uncombined silica . . . . .	8'06
100'00	

Evidently, therefore, the substance is composed chiefly of calcium sulphate, hydrated, together with some siliceous matter. Calcium carbonate, which might have been expected to be present, is not one of the constituents. What then is the origin of the incrustation? In the immediate vicinity there is no obvious source of gypsum or plaster. It cannot have been blown upwards from the bare leaden roof of the cathedral or floor of the gallery. The stones of the balustrade are cemented, of course, with mortar. Still less likely is it that so much calcium sulphate has found its way from the neighbouring thoroughfares. The sand and soot may, to a great extent, be thus derived, and perhaps a small proportion of the calcium sulphate represents coal-ash transported by wind. But after a careful consideration of all the circumstances, and especially the characteristic appearance of the incrustation, it is suggested that the presence of the main component is principally due to two centuries'



solvent and weathering action of rain, charged with sulphurous and sulphuric acids derived from the gases and smoke of innumerable surrounding chimneys. The action exerted by rain beating heavily against the stone in that exposed situation must be very considerable. The deposit of calcium sulphate, left by the water dripping and running from the underside of the coping-stone, has become gradually thicker, just as is the case with stalagmite and calcareous tufa, to which the external features of the incrustation give it a curiously close resemblance. That the weathering influence of rain has been potent no one examining the surface of the Portland stone can have a moment's doubt.

### ROYAL ENGINEERS AND BARRACK WORKS.

AN anonymous pamphlet has just appeared on "Military Engineering Reform," in which are reviewed the old complaints against the system under which Royal Engineers thrive throughout Great Britain, India and the Colonies. Hitherto it was found that the majority of sufferers were civilian architects and engineers who were either neglected in the erection of public works or were only employed in subordinate positions. In India especially Royal Engineers have obtained a monopoly of the principal appointments. As the complaints were supposed to be inspired by personal disappointment they did not receive the attention they deserved. The writer of the latest pamphlet is an Army official, and he professes to write as an army reformer for the benefit of the public. He demonstrates the inefficiency of the Royal Engineers in the present war in South Africa. It seems incredible, although it is a repetition of what occurred in France thirty years ago, that a better map of South Africa than any possessed by our Intelligence Department was produced by a German military attaché. The main cause of the defects is said to be the peculiar mode of training in the corps, which "is based upon the assumption that engineer officers are Admirable Crichtons. The result is that the system merely develops actors, who endeavour to play their part in the masks which the War Office orders them to wear. It is impossible for the young cadet to grasp a tinge of this knowledge, which is theoretical throughout. He is instructed chiefly by lectures and from books, and obtains literally no actual experience of his subjects, which are the most practical of the practical." During the two years' special studies only five months are devoted to construction, and then a subaltern is supposed to be competent to deal with fortifications, field works, telegraphs, ballooning, submarine mining, roads and bridges, railways, demolitions, electricity, surveying, pontoons, photography and the whole range of civil engineering, architecture, building construction, materials, &c. As the history of South Kensington reveals, they were not afraid to control art in various forms. The pamphlet mainly deals with military inefficiency, but the following cases relating to the meddling of the Royal Engineer Corps with building demand public attention:—

Permanent buildings are not constructed during war, which in these days of destructive weapons is necessarily of short duration, and troops are either protected by canvas or temporarily housed in rough huts that can be put up by any labourer. Moreover, an army is always on the move, and the construction of lasting habitations is unnecessary, so that even if an R.E. officer learns building and architecture to the masthead during peace, they will not be of the slightest use to him in the field. Indeed, fiddling about barracks only keeps him from his legitimate business, and he has a great outlet for his energies in fortifications, field works, telegraphs, ballooning, roads and bridges, and demolitions alone, not to speak of drill, tactics, musketry, manoeuvres, routine, &c.

The barrack department originally was wholly civil, but after the battle of Waterloo the Duke of Wellington caused it to be handed over to the military engineers in 1822, solely to prevent their disbandment after the Peninsular Wars. The actual technical work, however, was still done by civilians, and has been so performed down to the present day. The simple reason is that the engineer has had no proper education for building construction and architecture, and it is impossible to obtain the requisite knowledge and experience at Chatham. As a matter of fact, our barracks, and even our fortifications, are really designed and carried out by professional architects and civil engineers, conveniently styled "surveyors" and "draughtsmen," who are civilians, and, therefore, remain in the background. The builders are likewise civilian contractors, and not sappers. Indeed, the whole object of the system is to hide the workers and blind the eyes of the public. The R.E.'s merely perform administrative functions and "boss" others. Other army officers are thus only brought into contact with the figureheads, and never dream of the true state of affairs. It is this control by amateurs which has led to so much public waste, in which the civil architects have no voice whatever. The dual elements create endless friction, for the civilian feels himself degraded in order that the military officer

over him may be proportionately glorified. And the British taxpayer has not only to pay for these superfluous officers, but also for the squandering caused by their incompetence. The Royal Engineer is thus neither a soldier nor an architect, nor yet an engineer, and the régime could not be worse. Most of the younger officers hate barracks, and would gladly confine themselves to fighting, in which they can earn distinction and rapid promotion, but their fossilised elders persist in keeping up the ancient fictions. Some of the more honest-minded R.E. officers have raised their voices for reform in articles in the *United Service Magazine* and other journals, but they have been as one crying in the wilderness. The civilian surveyors, too, have again and again shown up the utter rottenness of the service in the professional press, but all to no purpose. General Sir Andrew Clarke, R.E., warned his fraternity years ago that their time would come to be adversely criticised, but even he was ignored.

Barrack scandals could be quoted wholesale, but we will confine ourselves to the most grave one, that of the Royal Barracks, Dublin. It was decided in 1891 to improve these barracks, and 60,000*l.* were allotted for the purpose. Two contractors were asked to tender for contracts involving the expenditure of 30,000*l.* each in six months. One of them declined to guarantee such an expenditure in the limited time with no drawings or quantities to know what to do; the other agreed to do so, and was given the whole contract as a measurement one, based on the War Department schedule of prices. Work was commenced without plans, estimates, or even a general description of what was to be done. This groping in the dark led to a state of "utter chaos"—to use the words of Lord Wolseley, then commanding the Forces in Ireland. Engineer officers were put in charge of the operations who had no particular experience of building, and these were constantly coming and going owing to hasty military calls. For example, one officer from another station was suddenly ordered to take over the work, and before he had been in Dublin six months he was hurriedly sent abroad because of "the exigencies of the public service." He had in the meantime given verbal instructions to the contractor to make an opening in a brick wall for a doorway. His successor caused it to be closed up and then afterwards opened again. His successor in turn converted the doorway into a window, and we can vouch for the fact that at least one such doorway was opened and closed five different times under various officers. All these were verbal orders, given in military fashion as if the contractor were a soldier being drilled on parade, and statements were seldom put down on paper. The result was that the builder had everything his own sweet way, and could rake up imaginary work which could not be disputed because the officers who gave the instructions had in the meantime been transferred to other places, as our military system does not permit them to remain long in one command. Had civilian architects been in charge they would have been there to see the job through from start to finish. In another case new floors were laid down at a cost of nearly 5,000*l.*, and then the building containing them was swept away altogether on sanitary grounds. Sham ventilating pipes to drains were fixed, which led to nowhere, but stopped at ground level. The very civilians who were told off to measure up and price the work were being perpetually changed, to make them conform to the beautiful jack-in-the-box ideas of the Royal Engineers.

Matters reached a climax in the autumn of 1893, when the contractor sent in his final claim of 160,000*l.*—just 100,000*l.* over the original estimate. The Treasury protested against the excessive expenditure, and a surveyor was sent over from the War Office to inquire into matters. After a laborious investigation, this gentleman gave it as his opinion that at least 45,000*l.* worth of work might have been contested on the recorded measurements and billing alone, and that probably the total overcharge was 100,000*l.* The builder declined to alter his claims, laughed at the Royal Engineers and threatened to take the case into the Law Courts. The Inspector-General of Fortifications, seeing that such a course would mean the exposure and damnation of his corps, recalled this official, and then sent over the chief secretary to treat generally with the claimant. But the latter would only waive his legal expenses, and so the huge bill was paid in full on July 4, 1895, to save the reputation of the Royal Engineers. We have, therefore, the startling fact that the interests of the State were utterly sacrificed to those of a rotten corps.

The Clarence Barracks, Portsmouth, of the latest construction and completed in the same year (1895), with accommodation for over 700 men, sergeants' mess, recreation establishment, stores and offices, cost 50,000*l.* The reconstruction (merely) of the Royal Barracks, Dublin, accommodating 1,000 men, cost 175,000*l.*; *pari passu*, if new, they should have cost 70,000*l.*; then where has the difference gone—100,000*l.* odd?

The finale is worse when the pigheadedness at the start is known, for Messrs. Guinness, whose Dublin brewery is just opposite the royal barracks on the other side of the Liffey,



made a handsome offer to the War Office at the outset for the purchase of these old barracks. They intended to utilise them for an extension of their brewery works, and to connect the two establishments by means of an iron bridge across the river. But the War Office refused, and left the royal tinkers to create the greatest building scandal of the nineteenth century.

When Mr. Rogers Field, M.I.C.E., the eminent civil engineer, made his report on the sanitary condition of these barracks in 1889, he discovered on examining the water-mains that a very large amount of preventable waste of water was taking place from the various fittings. This had been going on for ten years, and the money loss alone in that period represented 8,000/. Precisely the same thing occurred in Barbadoes, and was similarly put right about 1893 by the civilian surveyor at that station, the annual saving to the War Department being 600/. Why was this waste not discovered and put right by the Royal Engineers?

The Imtarfu Barracks at Malta presented so impressive an example of the capacity of the local R.E. officers (who altered the designs made by their civil architects) that the War Office on receipt of photographs of the buildings characterised them in an official rebuff as "unworthy even of a barbarous nation."

The expense of the staff for supervision of army works amounts on an average to 20 per cent. of the sums spent, yet in civil life an architect only charges 5 per cent., and a quantity surveyor 1½ per cent., or 6½ per cent. in all.

Many more barrack scandals could be cited, but enough has been said to show the taxpayer how his money is squandered through the endless incompetence of our military engineers.

### SURVEYORS AND RECORDERS AS ARCHITECTURAL CENSORS.

WE referred last week to the Bill of the Belfast Corporation by which powers are sought to compel architects to submit drawings showing the height, character and design of every building proposed to be erected in that city. The surveyor was to be empowered to disapprove of the elevations if he considered them objectionable, and any person aggrieved by the decision could appeal to the Recorder of Belfast. The Ulster Society of Architects have protested against the clauses, and in support of their opposition the following opinion of counsel has been obtained, which is worthy of attention in other places where a similar innovation may be contemplated:—

I have most carefully considered the clauses with reference to the designs and elevations of new buildings in Belfast, which constitute Part V. of the proposed new Bill, with a view to adopting the suggestion as reported of the Lord Mayor, that the Ulster Society of Architects should lay before the Council alternative clauses if the same was capable of being carried out.

I note that his lordship stated any proposed alterations in these clauses would be carefully considered by the Council.

In my opinion it would be impossible to frame any alternative clauses such as could or ought to be formulated, or even sanctioned, by the Ulster Society of Architects or by anyone interested in the advancement of architecture, and especially by all companies or traders desirous of spending money in Belfast either on the improvement of their old or the erection of new buildings within the city of Belfast. If it were merely in form that these clauses were objectionable, then alternative ones might be substituted; but the object of Part V., and the principles on which it rests, are inherently faulty and unprecedented in legislation. The passing therefore into law of Part V. as it now stands, or of any modification of it having a like object, should be most strenuously opposed before the Council, and if unsuccessful there, the opposition should be continued in Parliament.

The object of the proposed clauses is presumably to obtain uniformity of architecture in the city of Belfast, and that object is sought to be obtained by establishing an autocratic censorship in matters of artistic taste, on which the most divergent and fanciful ideas, from the nature of things, must always exist among a body of self-constituted censors.

Such a censorship could not but be injurious and intolerable to the profession of architects by killing all attempt at original architectural design in Belfast, and must of necessity interfere with the immemorial rights of private property and individual enterprise, and the spirit of independence to which Belfast owes her present proud position, and to which the greatness of the British Empire may be fairly traced.

Part V. of this Bill is manifestly intended to be supplemental to the vast quantity of private Bill legislation relating to Belfast, and is intended to give the Council powers of an entirely different nature to those heretofore enjoyed by them or by any other British urban authority, and so far as I know the only foreign precedent is to be found in the unconditional and autocratic powers exercised by Baron Haussmann under the Empire.

A close examination of all previous legislation on these

matters will show that every Act of Parliament bearing on them has been founded on the two following cardinal principles:—The first being that in all cases concerning sanitation and the prevention of injury to person or property the interests of the majority should be considered paramount, and the powers given the executive authority, including that of making by-laws, should, subject to certain defined restrictions, be practically absolute. The second principle is that in all cases where legislation was with regard to matters of municipal commercial convenience, the powers are only given on strict commercial lines and full provision made for the due compensation of the individual.

In Dublin and the surrounding townships such matters are regulated by almost identical codes of by-laws framed with regard to their several private acts and the Public Health Act. In no instance are the powers given at variance with, or do they go beyond the two principles I have mentioned.

Several years ago the Corporation of Dublin endeavoured to assert that their code gave them power to demand elevation designs, but the existence of that power having been directly challenged, the Corporation, after due consideration, came to the conclusion that their position was untenable, and abandoned their demand. Though a very considerable number of years have passed, no attempt has been made to revive this contention, nor have the Corporation or townships sought for legislative powers to enforce such a requirement. Here I may mention that the only interference with the height of buildings permitted is on the ground of sanitation, and Belfast already possesses that power under the 62nd section of the Belfast Act of 1878.

I think it is also of importance to mention that the Corporation of Dublin, as private owners and lessors, have powers somewhat similar to those sought for by the County Council of Belfast conveyed to them under the provisions of the old Wide Street Commission Leases. These restrictive clauses the Corporation, in the interests of the city, have long since waived as regards these leases, as tending to hinder individual enterprise and to prevent street architecture being kept up to date, but no such assertion of powers over the freeholders and leaseholders under other owners as that now sought by the Belfast Council has ever been dreamt of.

A very great object lesson is also to be learned from the example of London so very lately as 1894, when the entire question of the proper and satisfactory construction of buildings and streets over the vast area of Greater London was most carefully considered by some of the most eminent men in the kingdom representing every possible interest. The outcome was that carefully drawn and elaborate Act, 57 & 58 Vict. c. 213, an Act containing 218 sections and elaborate schedules, dealing with every case deemed possible; yet London, notwithstanding its great Parliamentary power, did not seek to obtain any powers not strictly in accord with the principles which I have already stated had governed all prior legislation.

It is very well worthy of note by the Ulster Society of Architects the respect shown to the profession of architects by that great city and by Parliament, inasmuch as although the power to make by-laws is strictly limited to certain objects, yet any draft by-law must be sent to the two great architectural bodies in England, the Royal Institute of British Architects and the Institute of Surveyors, at least two months before confirmation can be applied for; and the profession is further recognised as an authority on these matters, inasmuch as at least two of the three members of the Appellate Tribunal must belong to the profession, while the Council itself requires even the subordinate district surveyors to receive certificates of competency from the Royal Institute.

To sum up, I am of opinion that these clauses are objectionable in principle on the following reasons:—

1. As interfering with the private rights of property and enterprise on a quite novel and insufficient ground.
2. As tending to check all original design as regards buildings in Belfast, thus hindering the development of native talent and ultimately placing the architects of Belfast in a very disadvantageous position.
3. As being absolutely without precedent in these countries.
4. As confiscating the right of private property without any sufficient justification.
5. As introducing a novel and disturbing principle into this class of legislation.
6. As departing from the course adopted by both London and Dublin after most mature consideration.

The method in which the object of the Belfast Council is sought to be attained is also objectionable, inasmuch as the obstructive power now proposed to be given to the Council is much too wide, and would depend on various individuals' private idiosyncrasies, not on any recognised canons of art, and would possibly be influenced by personal, political or trade jealousy.

The Appellate Tribunal is also open to cavil, considering that they are not questions of interpretations of law, of fact, or even of public expediency which are to come before the



learned recorders, but mere questions of artistic taste, in which any judge would be indeed slow to reverse the decision of a professional expert in a matter of mere individual taste.

ARTHUR WM. MURRAY.

### TESSERÆ.

Frederick Nash and Joseph Nash.

FREDERICK NASH was born on March 28, 1782, at Lambeth. He was placed with an architectural draughtsman named Moreton, who gave him a thorough grounding in perspective; he soon after entered the schools of the Academy, and when about the age of nineteen exhibited a view of "Westminster Abbey." In Britton and Brayley's work, "The Beauties of England and Wales," may be found some twenty prints after drawings by F. Nash, bearing dates of publication from 1801 to 1809. In 1808 he was an exhibitor with the Associated Artists, and in 1809 a member of that society, contributing in these two years eight drawings. They included two interiors of "Westminster Abbey," the "West Front of St. Paul's," a large drawing of the "Choir of Canterbury Cathedral" and several ruins in Wales and the North of England. In 1810 he became instead a contributor to the old Society, exhibiting his five drawings as an associate. In 1811, having become a member, he sent twenty-two, followed by nine in 1812. His chief exhibited works were views of Paris and Versailles. Amongst his published works are "Illustrations of London," "Westminster Abbey and its Monuments," "The History of Oxford" and "Views of Paris and its Environs." Nash's practice was to make three drawings of his subject, coloured on the spot, with effects of early morning, midday and evening respectively. These he continued from day to day to the point of finish he deemed necessary. He died on December 5, 1856, at Brighton at the age of seventy-four. Joseph Nash was the son of a clergyman of the Church of England, the Rev. Okey Nash, who kept the Manor House School, Croydon. He was born at Great Marlow in 1808, and educated at his father's school, where he showed his bent by covering his lesson books with sketches. In 1829 he became a pupil of Augustus Pugin, and was one of the group of young men who went with him to Paris to make drawings for his "Paris and its Environs" (two vols. 4to, 1830). He began in this early part of his career to draw upon stone, his first lithographic work being also done in conjunction with Pugin, whose "Views illustrative of Gothic Architecture," 1830, are lithographed by J. Nash from sketches taken under Pugin's direction. He also published in four large volumes "Old English Mansions," wherein are rescued from oblivion so many of those magnificent examples of decorative invention which prove the age of the Tudors and the first Stuarts to have been the most fertile in architectural fancy this island has ever known. It was chiefly, however, as a painter of genre that he made his first independent efforts to obtain distinction as an artist. He was elected Associate of the Water-Colour Society in 1834 and a full member in 1842. He died at Hereford Road, Bayswater, in December 1878.

### The Origin of Mezzotint.

Prince Rupert, in his retirement at Brussels, after the catastrophe of his uncle, on going out early one morning, observed the sentinel at some distance from his post very busy doing something to his piece. The prince asked what he was about. He replied, the dew had fallen in the night, had made his fusil rusty, and that he was scraping and cleaning it. The prince, looking at it, was struck with something like a figure eaten into the barrel, with innumerable little holes closed together, like friezed work on gold or silver, part of which the fellow had scraped away. One knows what a mere good officer would have said on such an accident; if a fashionable officer, he might have damned the poor fellow, and given him a shilling; but the "génie fécond en expériences" from so trifling an accident conceived mezzotint. The prince concluded that some contrivance might be found to cover a brass plate with such a grained ground of fine pressed holes which would undoubtedly give an impression all black, and that by scraping away proper parts the smooth superficies would leave the rest of the paper white. Communicating his idea to Wallerant Vaillant, a painter whom he maintained, they made several experiments, and at last invented a steel roller, cut with tools to make teeth like a file or rasp, with projecting points, which effectually produced the black grounds; those being scraped away and diminished at pleasure, left the gradations of light. The surprise occasioned by the novelty of the invention, by its softness and union of parts, cannot better be expressed than in the words of Evelyn, whose abilities deserved the compliment paid to him by the prince, of being one of the first to whom this secret or mystery, as they held it, was imparted, and who was so dazzled with the honour of the confidence or with the curiosity of the new art that after encouraging the world

to expect the communication he checked his bounty and determined not to prostitute the arcanum, but to disclose it only to the elect. Here is his description:—"It would appear a paradox to discourse to you of a graving without a graver, burin, point or aqua fortis, and yet this is performed without the assistance of either; that what gives our most perite and dexterous artists the greatest trouble and is longest finishing (for such are the hatches and deepest shadows in plates) should be here the least considerable and the most expeditious; that, on the contrary, the lights should in this be the most laborious and yet performed with the greatest facility; that what appears to be effected with so little curiosity should yet so accurately resemble what is generally esteemed the very greatest, viz. that a print should emulate even the best of drawings, chiaroscuro or (as the Italians term it) pieces of the mezzotinto, so as nothing either of Hugo da Carpi or any of those other masters who pursued his attempts, and whose works we have already celebrated, have exceeded or indeed approached, especially for that of portraits, figures, tender landscapes and history, &c., to which it seems most appropriate and applicable."

### The First English Collector.

Thomas Howard, Earl of Arundel, is sufficiently known in his public character by that admirable portrait drawn of him by Lord Clarendon. Living much within himself, but in all the state of the ancient nobility, his chief amusement was his collection, the very ruins of which are ornaments now to several principal cabinets. He was the first who professedly began to collect in this country, and led the way to Prince Henry, King Charles and the Duke of Buckingham. "I cannot," says Peacham, "but with much reverence mention the every way right honourable Thomas Howard, Lord High Marshal of England, as great for his noble patronage of arts, and ancient learning as for his high birth and place; to whose liberal charges and magnificence this angle of the world owes the first sight of Greek and Roman statues, with whose admired presence he began to honour the gardens and galleries of Arundel House about 1614, and hath ever since continued to transplant Old Greece into England." The earl was not a mere selfish virtuoso; he was bountiful to men of talents, retaining some in his service, and liberal to all. He was one of the first who discovered the genius of Inigo Jones, and was himself, says Lilly, the first who "brought over the new way of building with brick in the city, greatly to the safety of the city and preservation of the wood of this nation." On his embassy to Vienna he found Hollar at Prague and brought him over, where the latter engraved a great number of plates from pictures, drawings and curiosities in the Arundelian collection. There is a set of small prints by Hollar, views of Albury, the earl's seat in Surrey. "Lord Arundel thought," says Evelyn, "that one who could not design a little would never make an honest man." A foolish observation enough, and which, if he had not left better proofs, would give one as little opinion of the judgment of the speaker as it does of that of the relator. The earl seems to have had in his service another painter, one Harrison, now only known to us by a chronologic diary, in which he records particulars relating to Old Parr, whom Lord Arundel had a curiosity to see. At the beginning of the troubles the earl transported himself and his collection to Antwerp, and dying not long after at Padua he divided his personal estate between his sons Henry Lord Maltravers and Sir William Howard Viscount Strafford.

### The Theseion, Athens.

This monument still shows upon the whole of its external surface well-preserved remains of a coating of colour, the material substance of which is least of all decayed on the south side of the building, although the actual colour has vanished through the effect of time, or has changed its hue. It is only here and there—chiefly in crevices or in hollow surfaces—that, by carefully scraping off the external crusts, we can meet with the actual pigment employed. Traces are found of two different species of red (namely, a warm brick red on the columns, the architrave and the general surface, and a very light cinnabar red on some of the ornaments), two blues (azure, or sky blue, used for the masses, and a deeper blue employed for the ornaments), green and some rather doubtful traces of gilding. The high-reliefs were also completely encrusted with colours, the remains of which are still plainly discernible in the folds of the draperies. The drapery of a sitting figure on the frieze above the portico of the temple shows itself to have been of a beautiful rose tint; in other parts green appears to have been the prevailing colour. The ground itself of the frieze was blue, and a large portion of the surface is still covered with it. Beneath the neck of the anta of the opisthodomos of this temple, on that side of it which is turned towards the columns in antis, there is still remaining a fragment of blue colour, about the size of a man's hand, and the whole of the cella appears to have been covered with it. In the niches which were afterwards constructed, in Christian times, between the antæ of the



portico out of fragments of the ceiling of the temple, we meet with some that are still either entirely or partly covered with the original glasslike enamel. The wall in the interior of the cella, from the deep socle to the height of six courses of stone, has been entirely coated with a thicker stucco, as the chiselled surface of the stones and the pieces of stucco still adhering to it plainly enough prove. Nor can we imagine that this careful tooling of the surface with the chisel was the work of after-times, because, had they found the face of the wall smooth, the Christians would have painted upon that without further preparation, as we find them to have done in the Parthenon.

#### Persian Architecture.

In the Persian empire the Arab conquerors found an architecture which excelled rather in the richness and costliness of its details than in the beauty and variety of its leading forms. From these details all Mohammedan architecture appears to have derived much of its characteristic ornamentation. The edifices of Persia of this period were chiefly distinguished by a great vaulted hall, generally of the entire height of the building and completely open at one end to the air, having thus the appearance of a vast porch. This central hall was flanked on both sides by many small rooms, usually vaulted and arranged in two or more storeys either lighted from the hall or opening into each other without windows. They were thus kept dark and cool during the heat of summer. Sometimes these rooms were surmounted by domes. In front of the edifice was a spacious court. Although this architecture cannot boast of any true dignity or any beauty of the highest order, or of the solid massiveness of other styles, yet it admits of many very elegant and pleasing combinations, and is admirably fitted to the exigencies of the climate and to the tastes and manners of the people. Rills of water are led through the halls, and breaking into tiny cascades or raised into sparkling jets, cool the air and lull the senses by their gentle murmur. Trees, beds of roses, and other sweet-scented flowers and abundant fountains adorn the inner courts. The walls are covered with enamelled tiles or painted with tracery of many colours and exquisite design, and with verses from the poets in the interlacing letters of the Persian character. The ceilings are inlaid with countless small mirrors. Costly carpets and embroidered hangings of the most exquisite texture and of the most harmonious yet brightest hues form the only furniture. Plain brickwork, without a window or a cornice to break the monotony, usually faces the street, and a low doorway and a dark passage lead into the garden court. Such are the palaces of Ispahan and the mansions of the nobles of Persia; within a very paradise of luxury and taste, but outside mean and unadorned. The most important ancient monuments of this type still existing are the Palace of Al Hadhr, a magnificent edifice of hewn stone, probably of the Arsacid period, still rising majestically in the solitude of the Mesopotamian desert, the remains of the palaces of the Seleucid kings at Serbistan and Firouzabad in Persia, and especially the vast ruin of Ctesiphon on the Tigris.

#### Sir Godfrey Kneller.

Had Kneller lived in a country where his merit had been rewarded according to the worth of his productions instead of the number, he might have shone in the roll of the greatest masters; but he united the highest vanity with the most consummate negligence of character—at least, where he offered one picture to fame, he sacrificed twenty to lucre; and he met with customers of so little judgment that they were fond of being painted by a man who would gladly have disowned his works the moment they were paid for. Ten sovereigns sat to him, viz. Charles II., James II. and his queen, William and Mary, Anne, George I., Louis XIV., Peter the Great and the Emperor Charles VI. Not one of them discovered that he was fit for more than preserving their likeness. We, however, who see King William, the Czar Peter, Marlborough, Newton, Dryden, Godolphin, Somers, the Duchess of Grafton, Lady Ranelagh and so many ornaments of an illustrious age transmitted to us by Kneller's pencil, must not regret that his talent was confined to portraits—perhaps the treasure is greater than if he had decorated the chambers of Hampton Court with the wars of Æneas or the enchanted palace of Armida, and when one considers how seldom great masters are worthily employed, it is better to have real portraits than Madonnas without end. What Sir Godfrey's genius could have produced must not be judged by the historic picture of King William in the palace just mentioned; it is a tame and poor performance. But the original sketch of it is struck out with a spirit and fire equal to Rubens. The hero and the horse are in the heat of battle; in the large piece it is the king riding in triumph, with his usual phlegm. Of all his works Sir Godfrey was most proud of the converted Chinese at Windsor; but his portrait of Gibbons is superior to it. It has the freedom and nature of Vandyke, with the harmony of colouring peculiar to Andrea Sacchi; and no part of it is neglected. In general, even where he took pains, all the parts are affectingly kept down, to throw the

greater force into the head—a trick unworthy so great a master. His draperies too are so carelessly finished that they resemble no silk or stuff the world ever saw. His heads have extreme grace; the hair admirably disposed; and if the locks seem unnaturally elevated it must be considered as an instance of the painter's art. He painted in an age when the women erected edifices of three storeys on their heads. Had he represented such preposterous attire, in half a century his works would have been ridiculous. To lower their dress to a natural level when the eye was accustomed to pyramids would have shocked their prejudices and diminished the resemblance. He took a middle way, and weighed out ornament to them of more natural materials. Still, it must be owned there is too great sameness in his airs and no imagination at all in his compositions. See but a head, it interests you—uncover the rest of the canvas, you wonder faces so expressive could be employed so insipidly. In truth, the age demanded nothing correct, nothing complete. He sometimes in the haste of finishing left part of the primed cloth uncoloured. This fault, which in Kneller proceeded from haste and rapaciousness, was affectingly imitated by some of the painters who succeeded him, while his great reputation was still in vogue. Yet with all Sir Godfrey's desire of acquiring riches, he left 500 portraits unfinished, for his customers were not equally ready to pay as to sit. There is an entertaining account of these facts in Rouquet's "State of the Arts in England."

#### Repose in Sculpture.

An ancient sculptor sometimes only executed one statue in his lifetime. It was his entire history. He brought it every day to greater perfection. If he himself loved, or was the object of that passion; if he received from nature, or from the fine arts, any new impression, he embellished the features of his hero both from his recollections and his sentiments. He knew in this manner how to bring to view all the feelings of his soul. In modern times, in the midst of a state of society so cold and oppressive, the expression of pain is a most noble feature, and in our days the person who has not suffered has neither felt nor thought. But there was in ancient times something more noble than the expression of pain. It was that of an heroic calm and that consciousness of intellectual strength which might be developed under free and generous institutions. The first statues of the Greeks express only repose. The Laocoon and Niobe are the only ones which express violent pain, but it is the vengeance of heaven that they represent and not the innate passions of the human heart. One scarce finds any trace of the melancholy in their statues. A head of Apollo in the Palace Justiniani and another of Alexander dying, are the only ones in which the dispositions of a mind engaged in reverie or suffering affliction are painted. But they both belong, according to appearances, to those times when Greece was enslaved. From that period there no longer existed that pride or tranquillity of soul which have produced among the ancients the *chef-d'œuvre* of sculpture and of poetry composed in the same spirit.



#### Eleanor Cross at Hardingstone.

SIR,—The Eleanor Cross at Hardingstone, near Northampton, has been undergoing inspection by the Northamptonshire County Council, on the occasion of its passing into their possession. The scaffold which has been erected will remain in position for a week or two longer, and an excellent opportunity is thus afforded for measuring the whole structure, provided the weather is not too severe.

The County Council would be glad to possess a good set of drawings, and if any student cares to take this opportunity of measuring a subject which has not yet been properly undertaken, I shall be glad if he will communicate with me as soon as possible.—Yours faithfully,

J. ALFRED GOTCH.

West Hill, Kettering: December 30, 1901.

#### St. Alban, Wood Street.

SIR,—On page 363 Mr. Bumpus says, in his very interesting article, Stained Glass, "St. Alban, Wood Street (one of Wren's Gothic)." In 1864 I had occasion to read the records of St. Olave, Silver Street, from which I learned that that parish after the Great Fire in 1666 contributed 206*l.*, being one-third the expense of repairing and refurnishing the church of St. Alban, Wood Street. The church of St. Olave was a timber building and had been re-erected about fifty years before the Fire, and was said to have been wholly consumed, while St. Alban's was a stone building and damaged only. The late Rev. H. Irwin-Cummins, who was the rector of both parishes, 1856 and sequitur, told me he believed the



church, St. Alban's, was partly rebuilt early in the sixteenth century. But the records of the parish, removed probably at the Fire, never returned to the church, and the record of the building of St. Alban's was therefore lost. It was, however, certain that the church was not designed by Wren, and that the repairs were only superintended by "Mr. Wren's clerk," who is more than once mentioned by the recording churchwarden of St. Olave, and received a gratuity for his services.

I have just looked up some notes I had made in 1864, and as they may interest you, I subjoin them:—

1685—Joiners' work, carvers & ors.	£451	0	0	
Carpenters	89	0	0	
Locks and other ironwork	25	0	0	
Smiths	17	16	9	
Wm. Mildman, carved work	£2	8	4	
Painting altar-piece	5	6	8	
Pewing		33	0	0

Total of repairs under the direction of Sir

Christopher Wren . . . . . £615 16 9

I have recently learned that these old books cannot now be found.—Yours truly,  
J. FUNSTON.

### GENERAL.

**M. André Goubin**, in order to obtain the rank of doctor in literature from the Sorbonne, has sustained as theses "The Sarcophagi of Clazomène" and "Greek Sculpture in the Period between the Persian Wars and the Age of Pericles."

**A Vote** of 260,000 francs has been approved by the French Chamber for works of restoration at Versailles and the Trianons.

**A Volunteer Company** of electrical engineers is being prepared for active service at the express wish, it is stated, of Lord Kitchener.

**The Glasgow Corporation** have purchased for the Art Gallery one of Mr. Harry Spence's International Exhibition pictures, "The Gondola."

**The Completion** of the Metropolitan Railway by a line from the Place du Danube, at the extremity of Paris, to the Palais Royal, and by another from Auteuil to the Opéra, has necessitated a fresh municipal loan of 150,000,000 francs.

**Plans** for a new technical institute to cost about 100,000*l.* have been adopted at a special meeting of the Corporation of Belfast.

**Messrs. Walter Macfarlane & Co.**, Saracen Foundry, Possilpark, have offered to sell to the Corporation of Glasgow at the price of 500*l.* the large spray fountain lent to the Exhibition and standing in Kelvingrove Park.

**Mr. Luigi Ricci** will lecture on the 13th inst. at the College of Preceptors, Bloomsbury Square, to the Educational Conference, on "Giotto and the Italian Renaissance."

**Mr. A. C. Brown**, chief agent and engineer at Seaham Harbour to Messrs. Pearson & Co., Ltd., contractors, of Westminster, was killed on Saturday when superintending the construction of Lord Londonderry's new deep-water dock.

**Dr. Arthur Smith Woodward** has been appointed Keeper of the Department of Geology in the Natural History Museum, in succession to Dr. Henry Woodward, F.R.S., retired, under the age-limit rule, after forty-two years' service in the department.

**The "Record"** of the winter meetings and summer excursions by members of the Upper Norwood Athenæum has appeared as a small volume. The contents are of great interest to inhabitants of the Metropolis, for they relate to places which can be visited without much difficulty. The pages are illustrated by reproductions of photographs. The "Record" must do good service in extending a knowledge of archaeology.

**Major Haag**, of the 18th Hussars, who was severely wounded at Tweefontein, is the son of Mr. Carl Haag, the water-colour painter.

**Mr. Pirrie**, of the firm of Messrs. Harland & Wolff, is constructing a barge for use on the Thames by the Lord Mayor at the Coronation ceremonies.

**The French Society of Engraving** has presented to the Louvre a series of plates by Jacquet, Flameng, Sulpis and Patricot.

**Subscriptions** have been sent from American admirers to aid in the completion of the memorial of Charles Garnier, which has been greatly delayed and cannot be completed until several months have elapsed.

**Mr. J. S. Gibson** writes us that his offices are now removed to 27A Old Bond Street, London, W., where his practice will be carried on, together with that of Mr. William Wallace, under the designation of Messrs. Wallace & Gibson, architects.

**Moorgate Station**, on the City and South London Electric Railway, has been seriously affected by subsidences, believed to be due to railway works now in progress below the level of Finsbury Pavement.

**The Prizes** founded by American architects to reward students of architecture in the Ecole des Beaux-Arts have just been awarded to MM. Nicod, Danis and Hubaine.

**A Stained-Glass Window** has just been unveiled in St. John's Church, Sandown, Isle of Wight, in memory of Lance-Corporal Ashley W. Arnell, 1st Volunteer Company Hampshire Regiment, who died of enteric fever contracted in South Africa. The window represents three Old Testament warrior saints, Joshua, David and Gideon, and was designed and executed by Messrs. W. James & Co., of London.

**Goods Waggons**, 40 feet long and capable of carrying 30 tons, the load of three ordinary freight trucks, will soon be running on the Lancashire and Yorkshire Railway.

**The Paris Municipal Council** have subscribed for twenty-one copies of the new album which is to contain reproductions of the principal paintings by Meissonier.

**An International Exhibition** is likely to be opened in Sydney, New South Wales, early in 1904.

**Mr. Sydney Protheroe**, sanitary inspector of Hereford has been appointed sanitary inspector of Kimberley, having been selected from among eighty applicants.

**The Institution of Civil Engineers** will discuss at their next meeting on January 14 a paper on "American Workshop Methods in Steel Construction," by Mr. H. Bridges Molesworth.

**Cambridge University** has made a grant of 90*l.* to Mr. R. C. Bosanquet, M.A., of Trinity College, director of the British School at Athens, to be used for the expenses of members of the school engaged in excavations at Cyzicus.

**The Association of Master-Painters in Ireland** have made arrangements to hold a four days' convention and exhibition in Dublin, commencing on January 7. The convention and exhibition will include (1) a loan collection of drawings by the leading British decorators; (2) an exhibition of decorative materials; (3) a series of meetings at which papers will be read and discussed; (4) a competition open to apprentices, in which will be shown some of the results that have followed the efforts which for some time past have been most earnestly made to further the education of young decorators.

**The Westminster City Council**, acting on the advice of their engineer, have decided to purchase, by way of experiment, twenty oil lamps sprayed by compressed air, which are to be used during foggy weather.

**The Egyptian Temples of Luxor and Karnak** are to be lighted by electricity.

**The Liverpool Architectural Society** will hold its fourth ordinary meeting on Monday next in the Law Library, 41 Castle Street. Mr. C. J. Anderson will take the chair, and a paper on "Old English Cottages," illustrated by limelight views, will be read by Mr. James Parkinson.

**A Special General Meeting** of the Manchester Society of Architects will be held in the board-room of the Chamber of Commerce, 44 Mosley Street, Manchester, on Thursday next, January 9, at 6.45 P.M., for the purpose of electing Mr. Hugh Stannus, F.R.I.B.A., 2 Plymouth Grove, Chorlton-on-Medlock, as a Fellow, and Mr. Thomas Brammall Daniel, 18 John Dalton Street, Manchester, as an Associate of the Society. After the general meeting, the fourth sessional papers meeting will be held, when Mr. J. D. Crace, Hon. A.R.I.B.A., will read his paper, entitled, "Relation of Colour to Architecture."

**Mr. William Clarkson, F.S.I.**, who was for nearly nine years with Messrs. Douglas Young & Co., auctioneers, &c., of 61 Coleman Street, E.C., has, as he informs us, just started in business on his own account at 9 and 10 Fenchurch Street as surveyor, auctioneer and valuer, and land and estate agent. At Messrs. Douglas Young & Co.'s "staff dinner" on Saturday last Mr. Clarkson's late colleagues took advantage of the occasion to present him with a handsomely illuminated address, bearing their signatures to the number of thirty-seven, and a substantial travelling trunk and Gladstone bag, while Mr. Douglas Young, in making the presentation of a beautiful clock, spoke highly of the pleased recipient, to whom he wished every success in his future career.

**The Foundation-stone** on New Year's Day was laid at Harrogate of a handsome Kursaal, which is about to be erected at a cost of 40,000*l.* There are to be a café and refreshment-rooms, a smoke-room and a billiard-room for the men, and the Spa Gardens, which adjoin, for promenading. The concert hall is, however, the main feature. It replaces the old concert-rooms, which have so often proved inadequate for their purpose. The new Kursaal should prove an important addition to the already numerous attractions of this fashionable resort.

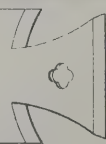








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"INK-PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

WALL PAINTING, OPERA HOUSE, PARIS.

By PAUL BAUDRY.







The Architect, Jan 3<sup>rd</sup> 1902.







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WM. EMERSON, Architect.

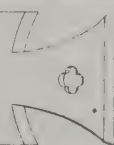








ERATO



"INK-PHOTO" SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, LONDON, E.C.

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By PAUL BAUDRY.













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n 3<sup>rd</sup> 1902.



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DINBURGH.  
L.D., Architect.













THE WESTERN BLOCK OF  
(BEING THE NEW GAIETY THEATRE, GAIETY



n 3<sup>rd</sup> 1902.

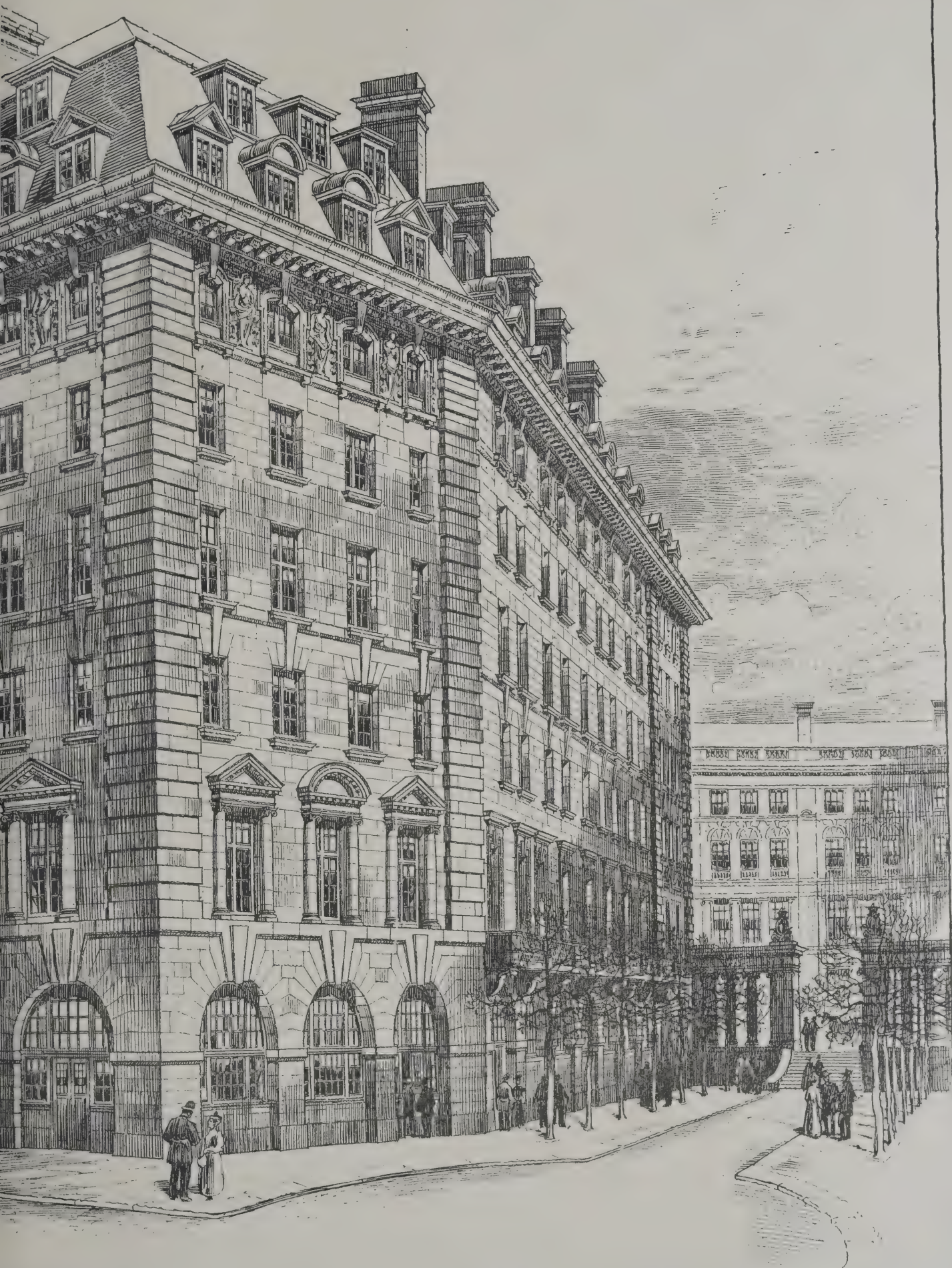


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THE STRAND IMPROVEMENT.  
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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. All information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, Westminster.

**BATTERSEA.**—Jan. 31.—Premiums of 50*l.*, 25*l.* and 10*l.* respectively are offered for the three best sets of designs, &c, of dwellings, as follows:—(a) A house of two storeys; (b) a house consisting of two self-contained tenements; and (c) a house consisting of three self-contained tenements. Mr. W. Marcus Wilkins, town clerk, Municipal Buildings, Lavender Hill, S.W.

**GLASGOW.**—Feb. 1.—Schemes, plans and estimates of cost are invited for erection of dwellings for the poorest classes upon ground at Alexandra Park. Premiums of 100*l.*, 50*l.* and 25*l.* respectively will be awarded to the authors placed first, second and third in order of merit. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

**HULL.**—Jan. 31.—Designs are invited in competition for the new art school. Premiums will be awarded to the designs placed first, second and third in order of merit (100*l.*, 60*l.* and 40*l.*). The architect whose plans are carried out will be paid the usual 5 per cent. commission, the premium to merge in such commission. Mr. Sidney R. J. Smith, 14 York Buildings, London, W.C.

**IRELAND.**—Jan. 20.—Plans, &c, are invited for drainage of Howth and Sutton, Dublin (and an alternative system for the latter). A premium of 50*l.* is offered. Mr. John O'Neill, clerk, board-room, North Brunswick Street, Dublin.

**ISLE OF WIGHT.**—Jan. 31.—Designs are invited for a suitable monument as a memorial to Her late Majesty, to be erected in St. James's Square, Newport, Isle of Wight. A premium of 25*l.* is offered for the accepted design. The Secretary, Isle of Wight Queen Victoria Memorial Committee, 20 Holyrood Street, Newport, Isle of Wight.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LOWESTOFT.**—Jan. 11.—The committee of the Royal Norfolk and Suffolk Yacht Club offer to architects premiums of 25*l.*, 20*l.* and 15*l.* respectively for the three best designs for a new clubhouse at Lowestoft, to cost about 4,200*l.* Mr. H. Townsend Clarkson, secretary, Lowestoft.

**SCOTLAND.**—Jan. 15.—The Kirkcaldy Burgh School Board invite competitive plans for a technical and science and art school to accommodate from 400 to 500 pupils, and an elementary school to accommodate about 400 pupils. Mr. Alexander Beveridge, clerk to the Board.

**WALES.**—Feb. 4.—Competitive designs are invited for municipal offices proposed to be erected by adapting, adding to and rearranging the town hall buildings at Mountain Ash. A premium of 75*l.* will be paid to the author of the design placed first in order of merit. Mr. H. P. Linton, clerk, Town Hall, Mountain Ash.

## CONTRACTS OPEN.

**AMBLE.**—For erection of Primitive Methodist church, schools and minister's house at Amble. Mr. T. E. Davidson, architect, 14 Neville Street, Newcastle-on-Tyne.

**ASHTON-IN-MAKERFIELD.**—Jan. 8.—For supply of a steam road-roller, 12½ tons, a scarifier and a sludge and snow remover. Mr. J. W. Liversedge, surveyor, Council Offices, Ashton-in-Makerfield.

**ASHTON-UNDER-LYNE.**—Jan. 8.—For taking-off the roofs to lanterns over the laundry and kitchen at the workhouse and constructing skylights in lieu thereof. Messrs. John Eaton, Sons & Cantrell, architects, Stamford Street, Ashton-under-Lyne.

**BARNSTAPLE.**—Jan. 16.—For erection of buildings in connection with the proposed electricity works in Castle Street. Mr. James Bosson, town clerk, Barnstaple.

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**BARNSTAPLE.**—Jan. 16.—For supply and erection of the electric-lighting plant. Mr. W. H. Trentham, 39 Victoria Street, Westminster, S.W.

**BERMONDSEY.**—Jan. 20.—For construction of three underground conveniences. Mr. Fredk. Ryall, town clerk, Town Hall, Spa Road, S.E.

**BOURNEMOUTH.**—Jan. 6.—For supply of electric-lighting plant. Mr. F. W. Lacey, borough and tramway engineer, Municipal Offices, Bournemouth.

**BRATTON FLEMING.**—Jan. 6.—For constructing a tunnel about half a mile in length, in the parish of Bratton Fleming, in the county of Devon, in connection with the new water scheme. Surveyor, Town Hall, Ilfracombe.

**BREWOOD.**—Jan. 20.—For reseating in oak the nave of the parish church. Mr. Ashton Veall, architect, 84 Darlington Street, Wolverhampton.

**BRIDGEND.**—Jan. 6.—For erection of business premises at the corner of Wyndham and Adare Streets, Bridgend. Mr. P. J. Thomas, architect, Bridgend.

**BRIDLINGTON.**—Jan. 7.—For erection of a chapel at North Burton. Mr. Samuel Dyer, architect, Quay Road, Bridlington.

**BROMSGROVE.**—Jan. 8.—For sinking or boring to obtain a water supply for the new Barnsley Hall asylum. Mr. George T. Hine, architect, Westminster.

**BURY.**—Jan. 20.—For construction of a central tramway dépôt in Rochdale Road, Bury. Mr. Arthur W. Bradley, borough engineer, Bury.

**CARLISLE.**—For repaving and refitting stable, &c., at Hallburn workhouse, Longtown. Mr. Jas. Murray, district surveyor, Kirkcubbin, Carlisle.

**DERBY.**—Jan. 14.—For erection of two steam-roller sheds and men's messroom, Bateman Street Yard. Mr. H. F. Gadsby, town clerk, Tenant Street, Derby.

**EXETER.**—Jan. 8.—For erection of the West memorial cricket pavilion on the county cricket ground, Exeter. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

**GUILDFORD.**—Jan. 13.—For erection of a corn exchange in the cattle market in Woodbridge Road. Mr. C. G. Mason, borough surveyor, Tuns Gate, Guildford.

**HAMPSTEAD.**—Jan. 9.—For alterations and repairs at the Hampstead public baths, 175 Finchley Road, N.W. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

**HARTLEPOOL.**—Jan. 25.—For erection of a generating station, and the supply and erection of plant, viz. (section 1) erection of buildings; (2) boilers, two of marine type; (3) engines and dynamos, steam, feed and exhaust pipes, valves and other apparatus; (4) storage battery; (5) switch-board; (6) arc lamps; (7) feeder mains, arc-light leads, &c.; (8) arc-lamp columns and brackets; (9) overhead travelling crane. Mr. C. Robson, borough accountant, Hartlepool.

**HOLYHEAD.**—Jan. 7.—For erection of an infant school at Kingsland. Mr. R. E. Pritchard, clerk to School Board, Bradford House, Holyhead.

**HORNSEY.**—Jan. 15.—For supply and erection of electric-lighting plant at the municipality electricity works. Mr. F. D. Askey, clerk, Council Offices, Southwood Lane, Highgate, N.

**IRELAND.**—Jan. 13.—For raising the tiled floors and relaying same with boards in twenty-five houses of the Charles Shiels's Institution, Killough. Mr. George M. Swail, superintendent.

**IRELAND.**—Jan. 14.—For erection of a labourer's cottage and fencing a plot allotted to it in the townland of Clontail (electoral division of Killary), Ardee. Mr. Louis Turley, engineer, 17 Laurence Street, Drogheda.

**KING'S NORTON.**—Jan. 6.—For erection of a refuse destructor at Lifford, near King's Norton, Worcestershire. Mr. Ambrose W. Cross, surveyor, 23 Valentine Road, King's Heath, near Birmingham.

**LITTLEBOROUGH.**—For erection of four houses in Hollingworth Road, Littleborough, Lancs. Mr. Thomas Wild, Ingham's Lane, Hollingworth Road, Littleborough.

**LIVERPOOL.**—Jan. 27.—For construction of public baths at Lister Drive, West Derby. Mr. W. R. Court, engineer and chief superintendent, Municipal Offices, Liverpool.

**LONDON BRIDGE.**—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

**LUXULYAN.**—Jan. 22.—For restoration of Lockingate district church, Luxulyan, Cornwall. Specifications can be seen on application to the Vicar.

**MACCLESFIELD.**—For extension and alteration of the bakehouse at the Parkside asylum. Mr. H. Beswick, county architect, Newgate Street, Chester.

**MANCHESTER.**—Jan. 7.—For laying and jointing of the southern section of the second line of pipes from Thirlmere to

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MANCHESTER.—Jan. 21.—For supply, delivery and erection at the Stuart Street generating station of the following switchboards—(a) main high-tension three-phase switchboards at generating station, (b) exciter and auxiliary switchboards at generating station, (c) high-tension three-phase switchboards at ten sub-stations, (d) low-tension switchboards at ten sub-stations. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MORPETH.—Jan. 7.—For erection of an isolation hospital near the Low Black Close, Northumberland. Mr. Alexander Wood, surveyor, Market Place, Ashington.

NANTWICH.—Jan. 6.—For supply and erection of the following plant:—(Section A) boiler-house plant—one water-tube and one Lancashire boiler, fittings, steam and exhaust pipes, &c.; (B) engine-house plant—continuous-current steam dynamos, pumps, &c.; (C) switchboard, &c.; (D) underground mains, lamp-posts, &c.; (E) accumulators; (F) meters; (G) crane, &c.; (H) dust destructor. Mr. W. H. Trentham, 39 Victoria Street, Westminster, S.W.

NEWCASTLE-ON-TYNE.—Jan. 11.—For alterations and additions to the following schools:—Westmoor, Season Burn and Benton Square, for the Long Benton School Board. Messrs. Oliver, Leeson & Wood, architects, Bank Chambers, Mosley Street, Newcastle-on-Tyne.

NEYLAND.—Jan. 14.—For repairs and alterations to the Salvation Army barracks. Mr. T. W. Evans, architect, Front Street, Neyland.

NORWICH.—Jan. 24.—For enlargement of the head post office at Norwich. Particulars may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

PLYMOUTH.—Jan. 15.—For enlargement of head office at Plymouth, for the Commissioners of H.M. Works and Public Buildings. The Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.

ROCHDALE.—Jan. 6.—For erection of a temporary carshed, 20 yards by 15 yards, in steelwork and corrugated iron. Mr. S. S. Platt, borough surveyor, Rochdale.

SCOTLAND.—Jan. 6.—For erection of the Mid-Lothian County Council new buildings, Edinburgh. Mr. J. Macintyre Henry, architect, 7 South Charlotte Street, Edinburgh.

SCOTLAND.—For erection of a bank and agent's house in Banchory, Aberdeen. Mr. Gordon, bank agent, Banchory.

SCOTLAND.—Jan. 15.—For erection of the Carnegie baths and gymnasium, Dunfermline. Mr. Hippolyte J. Blanc, architect, 25 Rutland Square, Edinburgh.

SHEFFIELD.—Jan. 14.—For erection of a police-station at Woodhouse, near Sheffield. Mr. J. Vickers Edwards, county surveyor, Wakefield.

SHEPTON MALLET.—Jan. 8.—For providing and laying about 8½ miles of 3-inch main, and about 2 miles of 2-inch and 1½-inch branches, with the erection of a hydraulic ram for compensation supply, providing and fixing standposts, valves, services and fittings, &c. Mr. A. E. Nalder, clerk, Council Offices, Market Place, Shepton Mallet.

SIDCUP.—Jan. 16.—For additions, drainage, repairs, to The Hollies House, Halfway Street, Sidcup, Kent, to adapt same as the administrators' block of the new children's homes. Mr. Thomas Dinwiddy, architect, 12 Croom's Hill, Greenwich, S.E.

SKIPTON.—Jan. 9.—For erection of Primitive Methodist chapel and school at Carleton, near Skipton. Mr. James Hartley, architect, Skipton.

SOUTHAMPTON.—Jan. 8.—For erection of new cells and cubicles at Alton police-station. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

STYAL.—Jan. 30.—For erection of cottage homes for 120 children at Styal, Cheshire. Mr. James B. Broadbent, architect, 15 Cooper Street, Manchester.

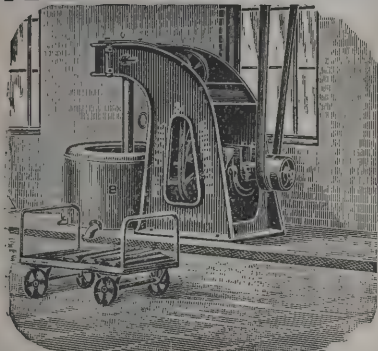
TYNEMOUTH.—Jan. 7.—For construction of a gravitation main, consisting of 12½ miles of 18-inch cast-iron pipes, from the Font to Stanington, Northumberland. Mr. Horatio A. Adamson, town clerk, Tynemouth.

WALES.—Jan. 6.—For erection of 40 houses, Treforest. Mr. Arthur Ll. Thomas, architect, Town Hall Chambers, Pontypridd.

WALES.—Jan. 8.—For alterations and additions to the Bulkeley Arms hotel, Menai Bridge. Mr. R. G. Thomas, architect, Menai Bridge.

WALES.—Jan. 9.—For erection of two cottage homes, each to provide accommodation for sixteen children, on land opposite the training school at Aberdare, Merthyr Tydfil. Mr. Thomas Roderick, architect, Aberdare.

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WALES.—Jan. 9.—For erection of a car dépôt at Newport Road, Roath. Mr. J. L. Wheatley, town clerk, Town Hall, Cardiff.

WALES.—Jan. 10.—For re-erecting the Crown Bridge over the canal at Sebastopol, near Griffithstown. Mr. D. J. Lougher, engineer, Pontypool.

WALES.—Jan. 13.—For erection of an infants' school, to accommodate 200 children, at Cwmcelyn, near Blaina, Mon, with out-offices, boundaries, playground, &c. Mr. R. L. Roberts, architect, Abercarn.

WALES.—Jan. 13.—For erection of new departments for girls and infants and additions to the boys' department, Pentre, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside, Pentre.

WALES.—Jan. 15.—For erection of a school at Alltwen. Mr. W. Watkin Williams, architect, 63 Wind Street, Swansea.

WALES.—Jan. 31.—For erection of school at Penygraig, near Pontneathvaughan, Glynneath. Mr. Thomas Roderick, architect, Ashbrook Honse, Clifton Street, Aberdare.

WALSALL.—Jan. 18.—For construction of a sewage tank 85 feet long by 21 feet 6 inches wide by 9 feet deep. Mr. John R. Cooper, town clerk, Borough Offices, Walsall.

WEST HAM.—Jan. 14.—For supply of four sets of surface-condensing plant, each to deal with 40,000 lbs. of steam per hour, complete with electrically-driven air and circulating pumps, and one travelling crane to carry 30 tons, span 67 feet. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

WOKINGHAM.—Jan. 8.—For alterations and additions at the gasworks. Mr. A. E. Sidford, architect, Wokingham.

WOLVERHAMPTON.—Jan. 5.—For conversion of premises at the junction of Cleveland Road and Bilston Street into a branch police-station. Mr. George Green, borough engineer, Town Hall, Wolverhampton.

THE gravitation water supply for Dalry, costing 2,000l., was formally inaugurated on Christmas afternoon. At the same time a drainage scheme costing 1,000l. was completed. A temporary fountain was erected in front of the Union Bank, and the square was gaily decorated. Miss Kennedy, of Milton-park, turned on the water, and was thereafter presented by Mr. James Low, the contractor, with an elegant silver cup as a memento of the occasion.

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**BRIGHTON—continued.**

For supply of about 750 tons of 18-inch cast-iron pipes.

*Pipes.*

R. Laidlaw & Son, Ltd.	£4,398	2	6
Clay Cross Co.	4,361	10	5
Macfarlane, Strang & Co.	4,254	16	3
STANTON IRONWORKS, LTD., Nottingham (accepted)	3,992	7	6
Cochrane & Co.	3,992	7	6
Roberts, Ltd.	3,806	5	0

*Irregulars (per ton).*

R. Laidlaw & Son, Ltd.	12	15	0
Macfarlane, Strang & Co.	11	5	0
Clay Cross Co.	10	15	0
Cochrane & Co.	10	5	0
Roberts, Ltd.	10	5	0
STANTON IRONWORKS, LTD. (accepted)	10	0	0

For laying about 3,660 yards of 18-inch cast-iron water main, &amp;c., in Lewes Road.

G. Burstow & Sons	£2,443	0	0
J. & T. Binns	2,343	0	0
J. Downham	1,775	12	0
T. W. Pedrette	1,601	4	0
T. Rowland	1,521	10	0
A. E. Nunn	1,289	18	0
W. H. Holman & Co.	1,261	7	6
B. COOKE & Co., Westminster (accepted)	1,248	0	0
M. S. Kitteringham	918	10	0

**BRISTOL.**

For enlargement of the Easton school, Bristol. Mr. J. MACKAY, architect, Kingswood, Bristol.

*Building.*

J. Hatherly	£2,487	0	0
W. & J. Bennett	2,400	0	0
S. Williams	2,349	0	0
F. Brown	2,330	0	0
E. Love	2,297	0	0
R. Wilkins & Sons	2,279	0	0
E. Walters	2,178	0	0
G. HUMPHREYS, Bristol (accepted)	2,142	0	0

**BRISTOL—continued.***Plumbing.*

A. E. Wilkins	£153	0	0
H. H. Stennard	146	17	6
A. E. W. Blissett	137	0	0
J. E. B. James	129	0	0
J. Wilkins	125	0	0
S. H. POVEY, 9 Ashley Hill (accepted)	117	0	0

**CARLISLE.**

For the construction of waterworks, Longton. Mr. JOHN LITTLE, engineer, Viaduct Chambers, Carlisle.

J. Laing	£19,080	0	0
Jackson	18,570	12	11
Henderson & Duncan	17,537	3	10
Buckley	17,344	6	3
R. Little	16,132	19	0
McDonald & Sons	15,871	2	0
Taylor	15,274	11	3
Braithwaites	14,832	7	5
W. & J. Lant	14,543	2	3
Hudson	13,652	10	1
Grisenthwaite & Newton	13,295	0	0
Millar	12,847	14	10
D. Thomson & Sons	12,730	14	1
L. Kelly	12,595	2	1
Brebner & Co.	11,588	18	0
P. DRUMMOND & SON, Dumfries (accepted)	10,317	13	6

**CHURCH.**

For street works in Barnes Street, Florence Street and Bradshaw Row, Church, Lancs. Mr. W. E. WOOD, surveyor.

*Accepted tenders.*J. Grimshaw, Church, for Bradshaw Row.  
G. Adams, Oswaldtwistle, for Barnes Street and Florence Street (per schedule).**DUDLEY.**

For sewerageworks in two new streets at Netherton and two courts in Dudley.

H. HUGHES &amp; SON, Gornal (accepted).

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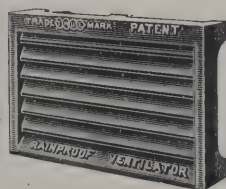
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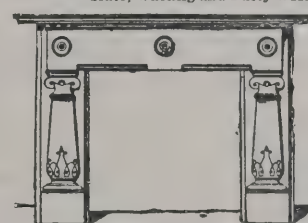
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## CHISWICK.

For additions to the Polytechnic, Bedford Park. Mr. H. T. WAKELAM, county architect, Guildhall, Westminster, S.W.

Godson & Sons	£1,539	0	0
W. S. Beaton	1,497	0	0
C. Houghton & Co.	1,476	7	6
Chambers Bros.	1,427	0	0
W. Wallis	1,400	0	0
S. Polden	1,395	0	0
R. L. Tonge	1,370	0	0
Spencer, Santo & Co.	1,369	0	0
D. D. Heath	1,335	0	0
G. Challis	1,309	0	0
A. Porter	1,299	0	0
J. W. Brooking	1,297	0	0
W. Blackburn	1,289	0	0
F. W. Harris	1,279	0	0
S. Ellis	1,277	0	0
Vigor & Co.	1,275	0	0
G. Bollom	1,240	0	0
General Builders, Ltd.	1,197	0	0
PATMAN & FOTHERINGHAM, Theobald's Road, W.C. (accepted)	1,193	0	0

## DARTMOUTH.

For erection of residence at Ford. Mr. E. H. BACK, architect, Dartmouth. Quantities by Architect.

J. Back & Watts	£456	0	0
F. Voisey	449	0	0
PILLAR & ROW, Dartmouth (accepted)	448	0	0

## DEWSBURY.

For erection of a shed, &c., at Dewsbury Moor. Messrs. HOLTOM & FOX, architects, Corporation Street, Dewsbury.

## Accepted tenders.

- B. Blackburn, Heckmondwike, mason.  
J. Richardson & Sons, Staincliffe, near Dewsbury, joiner.  
J. Higgins, Birstall, slater.  
J. Auty, Dewsbury, plumber.  
N. Ramsden, Dewsbury, painter.  
F. Firth, Batley Carr, near Dewsbury, ironfounder.  
Total, £594 3s. 6d.

## DEVONPORT.

For sewerage works, with manholes, ventilators, &c. Mr. JAMES DIGGLE, engineer, Heywood, Lancashire. Mr. JOHN F. BURNS, borough surveyor.

H. E. Skinner	£7,146	18	0
F. Kellett & Co.	6,007	0	0
Matcham & Co.	5,967	0	0
W. E. Blake	5,735	0	0
Pearce Bros.	5,720	0	0
W. C. Shaddock	5,150	0	0
R. H. B. Neal	5,126	0	0
A. N. Coles	5,008	0	0
J. & F. Binns	4,806	0	0
J. C. Lang	4,747	0	0
S. Roberts	4,661	0	0
Johnson & Langley	4,303	0	0
T. SHADDOCK, Plymouth (accepted)	3,901	0	0

## DOUGLAS.

For about 1,050 tons of cast-iron pipes from 3 inches to 18 inches diameter, including irregulars.

Clay Cross Co.	£6,501	9	6
Macfarlane, Strang & Co.	6,322	8	8
R. Maclaren & Co.	6,217	1	8
D. Y. Stewart & Co.	6,096	3	8
Stanton Iron Co.	6,095	13	3
Cochrane, Grove & Co.	5,981	5	6
COCHRANE & CO., Dudley (accepted conditionally)	5,928	5	8

## EALING.

For erection of D'Eresby House, Ealing Common, W. Messrs. PALGRAVE & CO., architects, Westminster.

J. Barker & Co.	£20,342	0	0
WHITEHEAD & CO., LTD, Clapham (provisionally accepted)	19,450	0	0
Mead & Burton	18,360	0	0

## ENTWISTLE AND WARDLEWORTH.

For widening railway at Entwistle and constructing a new mineral yard, &c., at Wardleworth, Lancashire.  
TATE & GORDON, Manchester (accepted).

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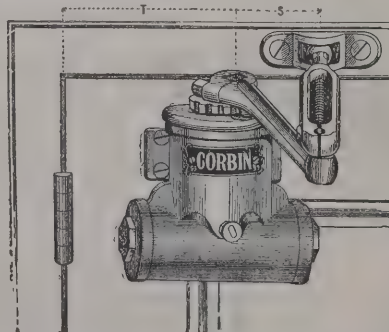
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ENFIELD.

For paving with artificial stone, granite kerbing and granite sett paving on the main road in the district of Enfield. Mr. HENRY T. WAKELAM, county surveyor, Guildhall, Westminster.

Walker & Son (flags, own make, of granite chippings and cement)	£12,390	0	0
G. Anderson (patent Victoria)	11,166	0	0
G. Anderson (patent non-slip)	10,916	0	0
W. Gibbs (patent Victoria)	10,564	9	2
Imperial Stone Co. (patent Imperial stone)	10,550	0	0
Hard York Non-Slip Co. (hard York non-slip)	10,454	10	7
G. Anderson (patent Imperial)	10,416	0	0
G. Anderson (patent adamant)	10,332	0	0
E. J. Betts (patent Imperial)	10,312	0	0
E. J. Betts (Croft's adamant)	10,230	0	0
Wimpey & Co. (2-inch Victoria)	10,204	0	0
Lawrence & Thacker (patent indurated)	10,200	0	0
G. Anderson (patent Victoria, indurated)	10,165	0	0
E. J. Betts (Threlkeld stone)	10,150	0	0
W. Manders (patent indurated)	10,049	0	0
M. Kitteringham (not stated)	9,975	0	0
Wimpey & Co. (2½-inch York non-slip)	9,950	0	0
W. Gibbs (Imperial)	9,930	4	4
J. Jackson (not stated)	9,840	7	8
VICTORIA STONE CO., Bishopsgate Street (patent Victoria stone) (accepted)	9,698	0	0
T. Adams (Croft's adamant)	9,626	0	0
Myers, Gilson & Co. ("Ceirog" flags)	9,590	11	7
Nowell & Co. (Burgess patent stone)	9,509	0	0
Indurated Stone Co. (patent indurated stone)	9,500	0	0
W. Gibbs (Croft's indurated)	9,436	3	7
Wimpey & Co. (2-inch Croft's adamant)	9,204	0	0
Griffiths & Co. (patent Victoria, indurated)	8,932	0	0

GREAT BERKHAMPTSTEAD.

For erection of offices, strong-room and laboratory at Messrs. William Cooper & Nephew's chemical works. Mr. CHARLES H. REW, architect, Great Berkhamptstead.

C. Brightman	£1,335	0	0
H. & J. Matthews	1,240	0	0
HONOUR & SON (accepted)	1,178	0	0

HANWELL.

For erection of a wall on the Oaklands Road site.

Chambers Bros.	£120	0	0
C. A. Baker	119	10	0
Reeve & Barham	115	0	0
General Building Society, Ltd.	99	0	0
KINGERLEE & SONS (accepted)	98	0	0

HASTINGS.

For erection of a lift station and conveniences, &c., on the East Hill. Mr. P. H. PALMER, borough engineer.

W. F. DETCH, 2 Halloway Villas (accepted)	£655	0	0
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HENDON.

For following works. Mr. S. SLATER GRIMLEY, engineer.

Edgware Road surface-water drain.

J. Dickson	£826	14	0
C. Ford	825	0	0
D. R. Paterson	808	8	0
MESTON & HALE, Harlesden (accepted)	795	18	6

Stanley Road sewer.

C. Ford	272	5	4
J. Dickson	236	7	4
D. R. Paterson	217	0	0
MESTON & HALE (accepted)	197	11	0

Boundary wall at offices.

G. A. Judson	355	13	6
Meston & Hale	305	0	4
C. C. Barton	280	13	0
W. TOUT, Hendon (accepted)	276	1	2

Removal steam-roller shed.

G. A. Judson	42	0	0
Meston & Hale	26	0	0
W. Tout	21	0	0
C. C. BARTON (accepted)	16	0	0

Removal of mortuary.

G. A. Judson	24	0	0
Meston & Hale	17	0	0
W. Tout	12	10	0
C. C. BARTON (accepted)	10	0	0

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**MCNEILL'S SLAG WOOL** (Silicate Cotton), for Fireproofing and Soundproofing.

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London, E.C.



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**HUDDERSFIELD.**

For erection of six dwelling-houses at Moldgreen. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

*Accepted tenders.*

Grant & Hughes, Hillhouses, joiner.  
S. Hale, Huddersfield, plumber.  
T. B. Tunnacliffe, Huddersfield, plasterer and slater.  
J. Preston & Sons, Huddersfield, painter.

**ILKLEY.**

For street works in Eaton and St. James's Road. Mr. T. H. SMITH, surveyor.

T. Cook	£1,382	15	8
Naylor & Sons	916	5	0
Watmough & Preston	900	15	4
O. Lister	879	13	10
W. Barraud	811	14	5
J. Murdock	773	7	6
EGAN & SONS, Bradford (accepted)	760	14	2

**IRELAND.**

For additions to Christian Brothers' College, St. Patrick's Place, Cork. Mr. S. F. HYNES, architect, 21 South Mall, Cork.

E. & P. O'FLYMIS (accepted).

**LANCASTER.**

For a steel or iron framed car-shed, 100 feet by 45 feet, covered with corrugated galvanised iron.

F. MORTON & Co., Garston, near Liverpool (accepted).

**LONDON.**

For alterations at the Earl of Warwick public-house, Stoke Newington, N. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

C. Dearing & Son	£976	0	0
S. Goodall & Son	883	0	0
C. Chapman & Co.	863	0	0
Green & Smith	820	0	0
SHEFFIELD BROS. (accepted)	760	0	0

**LONDON—continued.**

For repairs to shop premises, Finsbury Pavement, London, E.C. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C.

J. W. Cooke & Co.	£275	12	0
A. Major	205	0	0
J. Jefford	194	0	0
T. OSBORN & SONS (accepted)	180	0	0

For supply and fixing of one 20 cwt. electric goods lift. Mr. B. H. JENKINSON, engineer, Crouch End, N.

Otis Elevator Co.	£428	0	0
J. G. Childs & Co.	335	0	0
R. WAYGOOD & Co. (accepted)	335	0	0
F. A. Glover & Co.	333	0	0
M. T. Medway	332	0	0

**MOSS SIDE.**

For erection of entrance gates, bowl-house, shelters, potting-house, conveniences, &c., to the recreation ground, Moss Side. Mr. HENRY B. LONGLEY, surveyor, Council Offices, Moss Side, Manchester.

A. R. BULLIVANT & SONS, Manchester (accepted). £1,335 16 6

**PLUMSTEAD.**

For erection of about 550 feet of boundary wall on the south side of the union grounds. Mr. J. O. COOK, architect, 1A Eleanor Road, Woolwich.

J. H. Stephens & Son	£1,200	0	0
E. Proctor	1,057	0	0
J. W. Holt	974	0	0
Herbert Bros.	890	0	0
THOMAS & EDGE, Anglesea Avenue, Woolwich (accepted)	871	0	0
H. B. Danford & Co.	710	0	0

**SCOTLAND.**

For repairing carriageway and forming footpath on Viewlands Road, Perth.

T. Forgan & Sons	£483	0	0
D. & R. Taylor	284	0	0
P. GIRRITY, Dundee (accepted)	266	0	0

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Patented in all Leading Countries.



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NO BREAKDOWNS OR DELAYS.**

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SCOTLAND—continued.

For drainage works at Arbroath. Mr. WILLIAM STEWART, burgh surveyor.			
A. Fife.	£197	0	0
W. Brand & Son.	193	19	0
Carrie Bros.	192	11	9
W. Hunter.	188	18	0
J. Mackay.	186	0	1
T. S. Dick.	159	13	6
J. Dunbar.	156	6	0
W. MITCHELL & SONS, East Dock Street, Dundee (accepted).	152	4	2

SEVENOAKS.

For erection of an isolation hospital at Roundabout Wood. Mr. W. H. ANSELL, architect, 11 Great James Street, Bedford Row, London, W.C.			
G. H. Denne & Son.	£6,540	0	0
Maple & Co., Ltd.	6,399	0	0
Holliday & Greenwood, Ltd.	6,333	0	0
J. S. Kimberley	6,326	0	0
R. Avar.	6,228	0	0
J. Lonsdale	6,037	0	0
J. J. Wise.	5,987	0	0
R. Corben & Co.	5,959	0	0
W. Smith & Sons	5,928	0	0
Wiltshire & Son	5,869	0	0
Martin & Co.	5,855	0	0
Patman & Fotheringham.	5,783	0	0
Coulson & Lofts	5,717	0	0
Strange & Sons	5,641	0	0
G. Jackson	5,580	0	0
W. P. Banks.	5,470	0	0
R. Langridge	5,353	0	0
Tapner & Co.	5,317	0	0
R. DURTNELL & SONS, Brasted, Sevenoaks (accepted).	5,275	0	0

SOUTHAMPTON.

For reconstruction of landing steps No. 2 Town Quay, in ferro-concrete, also for the taking-down, providing new foundations and re-erecting the 12-ton hand crane, at the Harbour.			
F. GRACE, Portswood Road (accepted).	£729	0	0

SOUTHWELL.

For alterations at the wash-house at the workhouse. Mr. COTTAM, surveyor, Church Street, Southwell.			
A. JENKINS, Southwell (accepted).	£118	0	0
W. Cottam.	117	10	0
T. Layton & Son.	116	0	0

STOCKSFIELD.

For erection of a parish hall and institute. Accepted tenders.			
Davison & Co., Corbridge, masonry.			
J. Arkle, Stocksfield, joinery.			

STONE.

For painting, lighting and ventilating the town hall.			
H. TURNER, Stone (accepted).	£426	8	0

STRATTON ST. MARGARET.

For supply of and laying cast-iron irrigation pipes at the workhouse, Stratton St. Margaret, Wilts. Mr. OLIVER KIMBER, surveyor, Exmouth Street, Swindon.			
H. LOOKER, Stratton St. Margaret (accepted).	£18	10	0

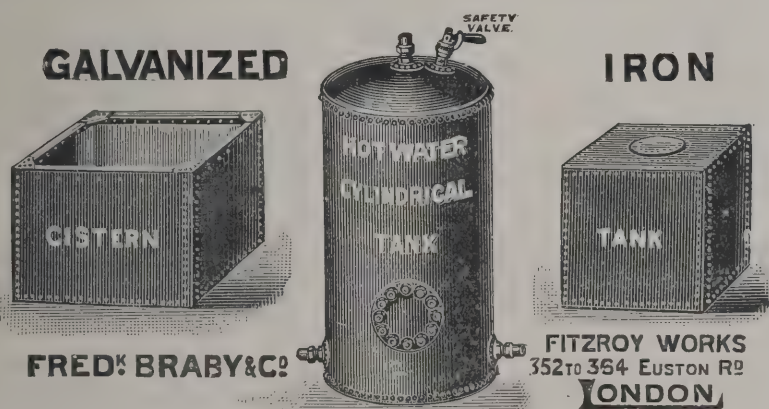
SUNDERLAND.

For supply and erection of cast-iron condenser and water pipes, and some copper steam piping, valves, &c., at the Hylton Road electric-lighting station.			
J. ABBOT & CO., Park Ironworks, Gateshead (accepted).			
Also tendered:—			
Sir J. Laing & Sons, Ltd., Deptford Yard.			
Thornton & Crebbin, Bradford.			
Wearmouth Foundry Co., Monkwearmouth.			
Rectory Engineering Co., Sunderland.			

TIPTON.

For constructing a storm-water drain at Toll End. Mr. W. H. JUKES, surveyor.			
H. Hughes & Son	£125	0	0
A. Cooper	99	0	0
E. Boore	86	0	0
J. BATEMAN, Netherton (accepted).	85	10	0

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The Largest and Most Liberal Company

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TERMS OF AGENCY ON APPLICATION.



## WALSALL.

For constructional ironwork for the new municipal buildings.  
Mr. J. S. GIBSON, architect, 4 Gray's Inn Square, W.C.  
LOCKERBIE & WILKINSON, LTD., Station  
Street, Birmingham, and 109 Victoria Street,  
London, S.W. (accepted) . . . £1,152 9 0

## WESTCLIFF.

For erection of a pair of houses, Westcliff-on-Sea, Essex. Mr.  
HERBERT RICHES, architect, 3 Crooked Lane, King  
William Street, London, E.C. Quantities supplied.  
Courtney & Fairbairn . . . £2,325 0 0  
Baker & Wiseman . . . 2,155 0 0  
H. Dupont & Co. . . . 2,085 0 0  
A. DUCAT (accepted) . . . 1,898 10 0

## WOKING.

For formation and sewerage of Ashwood Road and remainder  
of Heathfield Road, Woking, Surrey, for the Suburban  
Building Land Co., Ltd. Messrs. POOLEY & FOLLETT,  
architects and surveyors, 21 John Street, Adelphi, W.C.  
T. Adams . . . £2,036 0 0  
W. Langridge . . . 1,871 9 10  
Chafen & Newman . . . 1,780 16 0  
G. A. Franks . . . 1,733 0 0  
Drowley & Co. . . . 1,712 0 0  
H. Bentham & Co. . . . 1,694 0 0  
S. KAVANAGH, Surbiton Hill (accepted) . . . 1,674 12 3

At the West Kirby Convalescent Home a school has been  
erected to afford an opportunity for the children of the home to  
receive elementary education on five days in the week, and  
this being now completed it was opened on the 27th ult. The  
new school, which has been erected as an addition to the main  
building, is about 25 feet square, and will comfortably accom-  
modate 22 children. The room is lighted by electricity, while,  
of course, extra care has been exercised in the matter of  
arrangements for the heating and ventilation. The furniture  
as well is of a special nature, and has been selected by the  
doctors and teachers. Around the walls are a number of  
blackboards, upon which Miss Alice Horton had sketched a  
number of amusing pictures for the delectation of the children.

## TENDERS FOR THE YEAR 1901.

THE following are a few of the more important works that were  
estimated for during 1901, the tenders for which appeared in  
our columns in the course of the year:—

## BEWDLEY.

For construction of two covered reservoirs, the supply and  
laying of 9½ miles of water-mains, the sinking of a well,  
building engine-house, &c. Mr. R. E. W. BERRINGTON,  
engineer, Wolverhampton.  
Morrison & Mason, Ltd. . . . £15,962 8 9  
A. Cooper . . . 14,514 0 0  
J. H. Ewart . . . 13,685 0 0  
W. L. Meredith & Co. . . . 13,508 15 9  
W. Jones & Sons . . . 13,289 11 7  
J. Mackay . . . 12,867 6 5  
Pedrette & Co. . . . 12,760 0 0  
H. Holloway . . . 12,700 0 0  
A. Jenkins . . . 12,094 0 0  
G. Law . . . 11,736 17 11  
J. Owens . . . 11,499 0 0  
E. C. Carden . . . 11,400 0 0  
T. Vale . . . 11,333 10 0  
H. Roberts . . . 11,250 0 0  
W. H. READING, Wolverhampton (accepted) . . . 10,590 0 0

## BRIDLINGTON.

For erection of Central schools (and caretaker's residence in  
Oxford Street. Mr. J. EARNSHAW, architect, Bridlington.  
J. Rennard . . . £16,533 19 0  
Palframan . . . 15,451 6 9  
J. B. Allatt . . . 15,043 11 0  
Taylor, Ltd. . . . 14,566 16 0  
E. Corner . . . 14,397 0 0  
A. Lyon . . . 14,298 0 0  
Blackburn & Son . . . 14,095 0 0  
Smallwood & Shaw . . . 13,978 2 0  
A. Gardam . . . 13,780 2 0  
J. H. Hudson . . . 13,496 5 8  
J. Sawdon . . . 13,495 0 0  
T. Spink . . . 12,930 1 5  
SAMPSON & SIDDALL, Bridlington (accepted) . . . 12,590 11 11

# HAM HILL STONE. DOULTING STONE.

THE HAM HILL AND DOULTING STONE CO.

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Wrought-Iron Candelabra,  
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Opalescent Glass Tubes  
for fitting into sconces in  
lieu of candles, thus making  
a pretty flower epergne, 8d.  
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**BRIGHTON.**

For erection of the steel and iron work of an electrical power-house at Southwick.

E. Danks & Co., Ltd.	£52,500	0	0
A. Downay & Sons, Ltd.	29,255	18	0
Maguire & Baucus	28,974	0	0
Arrol's Bridge & Roof Co., Ltd.	28,580	0	0
Thames Ironworks Co., Ltd.	28,173	0	0
Dean, Ransomes & Co., Ltd.	27,000	0	0
Pedrette & Co.	26,700	0	0
J. Shewell & Co.	25,599	3	9
Goddard, Massey & Warner, Ltd.	25,000	18	5
American Bridge Co.	23,000	0	0
C. Wall	23,000	0	0
E. Wood & Co., Ltd.	23,000	0	0
Westwood & Wrights	21,570	0	0
Mechan & Sons	21,440	0	0
R. Dempster & Sons	20,583	18	4
Cleveland Bridge and Engineering Co., Ltd.	20,122	0	0
Horseley Co., Ltd.	20,087	12	0
Newton, Chambers & Co., Ltd.	20,053	0	0
Somervail & Co.	19,999	7	10
Pearson & Co.	19,700	0	0
W. A. Baker & Co., Ltd.	19,600	0	0
M. T. Shaw & Co., Ltd.	19,354	0	0
Sir W. Arrol & Co., Ltd.	19,200	0	0
A. Findlay & Co., Ltd.	18,600	0	0
Phoenix Foundry Co., Ltd.	18,563	10	0
Heenan & Froude	18,500	0	0
J. Lysaght, Ltd.	18,500	0	0
Head, Wrightson & Co., Ltd.	18,388	10	0
J. Butler & Co.	18,357	2	2
W. James & Sons	18,000	0	0
F. Demolder	17,950	0	0
Dorman, Long & Co., Ltd.	17,280	0	0
Hemingways, Ltd.	17,000	0	0
J. Westwood & Co., Ltd.	16,690	0	0
Cross & Cross	16,661	0	0
E. C. & J. Keay, Ltd.	16,659	0	0
E. C. & J. Keay, Ltd.	16,305	0	0
REDPATH, BROWN & CO., LTD., Edinburgh			
(accepted)	15,978	0	0
E. C. & J. Keay, Ltd.	15,909	0	0

**BRIGHTON—continued.**

For erection of a public elementary school in St. Luke's Terrace.

*School Building.*

W. Johnson & Co., Ltd.	£22,215	0	0
J. Longley & Co.	21,590	0	0
Holliday & Greenwood	20,713	0	0
W. A. Field & Co.	20,452	0	0
W. Taylor	20,154	18	0
C. Jackson	19,936	0	0
J. Parsons & Sons	19,363	6	10
Rowland Bros.	19,196	0	0
Martin, Wells & Co.	18,519	0	0
R. COOK & SONS, Crawley (accepted)	18,700	0	0

**BRENTWOOD.**

For erection of Highwood school.

Shillitoe & Son	£96,687	0	0
W. Wallis	90,390	4	0
C. Wall	89,905	0	0
H. Potter	88,706	0	0
E. West	88,649	0	0
S. Parmenter	86,650	10	0
MCCORMICK & SONS, Northampton Street, Essex Road, N. (accepted)	84,567	0	0

**BRISTOL.**

For construction of the Cutler's Mills relief culvert.

W. Underwood & Bros.	£47,580	0	0
W. L. Meredith & Co.	45,360	1	6
J. & T. Binns	37,665	11	0
R. H. B. Neal	34,000	0	0
S. Saunders	30,457	0	0
Cook & Co.	30,369	0	0
G. Bell	28,987	0	0
W. Cowlin & Son	26,846	0	0
J. Durnford & Son	26,485	0	0
Krauss & Son	25,527	0	0
J. W. Smith & Co.	23,781	18	0
E. NUTTALL, Manchester (accepted)	21,546	11	0

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## CAMBRIDGESHIRE.

For erection of a new wing at the Asylum, Fulbourn, Cambs.  
Mr. A. PAUL MACALISTER, architect, 9 Gray's Inn Square,  
London, and at Cambridge.

Charles Roper	£19,252	0	0
G. Jackson	17,100	0	0
Alfred Guy	16,996	10	6
John Shillitoe & Son	16,691	0	0
Coulson & Lofts	16,640	0	0
J. & J. Bloxham	16,569	0	0
Wm Howard	16,403	0	0
Henry Martin	15,951	0	0
Oak Building Co.	15,495	16	0
Fredk. C. Thurman	15,439	0	0
W. Bell & Sons	15,428	0	0
Kettering Co-operative Builders' Co.	15,036	0	0
E. Willmott & Sons, Cambridge ( <i>provisionally accepted</i> )	14,956	0	0
F. H. Coleman	14,944	0	0
John Cracknell	14,838	0	0
T. B. Thackray & Co., Ltd.	14,795	0	0
Architect's estimate	14,500	0	0

## CHELTENHAM.

For erection of town hall.

King & Sons	£36,489	0	0
Pollard	34,871	0	0
Morris & Son	34,213	0	0
Gibbs	33,200	0	0
W. Jones	33,100	0	0
Patrick, jun.	32,813	0	0
Bloxham	32,800	0	0
Hughes	31,510	0	0
Brood	31,432	0	0
Hodson	31,418	0	0
Parnell & Son	31,220	0	0
Maple & Co.	30,992	0	0
Estcourt	30,905	0	0
Wilcocks & Co.	30,795	0	0
Warburton	29,950	0	0
Bevan	29,820	0	0
Collins & Godfrey	29,310	0	0
Bowers	28,795	0	0
Williamson & Co.	28,379	0	0

## CLEETHORPES.

For erection of the Bursar Street Board schools. Mr. F. W. CROFT, architect, Victoria Chambers, Victoria Street, Great Grimsby.

Bowman & Son	£11,885	10	0
W. Barton	10,640	10	0
Sime	10,600	0	0
Thompson & Sons	10,490	0	0
Hewins & Goodhand	10,375	0	0
Wade & Co, Ltd.	10,177	12	6
H. MARROWS, Garden Street, Grimsby ( <i>accepted</i> ).	10,130	8	0

## CORNWALL.

For erection of extensions and additions to the present County Asylum buildings at Bodmin, Cornwall. Mr. SILVANUS TREVAIL, architect.

Wakam Bros.	£121,087	0	0
J. Shillitoe & Sons	111,176	0	0
Wm. King & Sons	102,700	0	0
C. Brealy	101,856	0	0
Thos. Rowbotham	101,500	0	0
H. E. Skinner	99,156	0	0
H. Willcock & Co.	94,300	0	0
J. & M. Patrick & Co.	94,009	0	0
A. Krauss & Sons.	92,335	0	0
A. H. Coles	92,105	0	0
R. Wilkins & Sons	90,850	0	0
W. E. Blake	90,193	0	0
S. Trehane	88,795	0	0
PETHICK BROS., Plymouth ( <i>accepted</i> ).	87,973	0	0

## CROYDON.

For erection of cottage homes at Shirley Lodge Farm, Woodside, for the Guardians of the St. Olave's Union. Messrs. NEWMAN & NEWMAN, architects, 31 Tooley Street, London Bridge, S.E.

Bulled & Co.	£160,000	0	0
Balaam Bros.	157,028	0	0
Willcox & Co.	141,845	0	0
Bowyer & Co.	141,810	0	0
Colls & Sons.	141,500	0	0
Goddard	138,500	0	0
Holloway	134,000	0	0
Patrick	129,903	0	0
CHAS. WALL, Chelsea ( <i>accepted</i> ).	128,630	0	0

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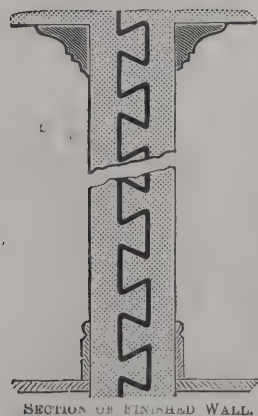
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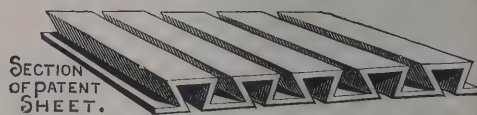
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## DALSTON.

For erection of a portion of the new building for the North-East London Institute, Dalston Lane, N.E. Mr. ARTHUR W. COOKSEY, architect, 4 Adam Street, Adelphi, W.C.

Foster Bros.	£12,378	0	0
Pollard & Brand	12,270	0	0
H. H. Hollingsworth	11,933	0	0
B. E. Nightingale	11,695	0	0
Perry Bros.	11,657	0	0
Josolyne & Young	11,350	0	0
H. L. Holloway	11,072	0	0
E. A. Roome & Co.	11,067	0	0
W. Wallis	10,997	0	0
Davis & Leaney	10,985	0	0
W. Shurmur	10,980	0	0
Sabey & Sons	10,895	0	0
Killby & Gayford	10,840	0	0
G. Parker	10,830	0	0
J. CHESSUM & SONS (accepted)	10,826	0	0
J. Appleby	10,790	0	0

## DEVONPORT.

For erection of St. Budeaux Board school. Messrs. HINE & ODGERS, architects.

Berry	£19,555	0	0
Goad	17,850	0	0
Blackell	17,711	0	0
Roach & Lovell	17,350	0	0
Carter	16,681	0	0
Skinner	16,349	0	0
Paynter	16,250	0	0
Trevena	16,100	0	0
May	16,055	0	0
Coles	15,878	0	0
Andrews	15,850	0	0
Matcham & Co.	15,673	0	0
Wakeham	15,138	0	0
Lethbridge	14,980	0	0
Allen & Tozer	14,951	0	0
Lapthorn & Co.	14,666	0	0
Blake	13,900	0	0

## DUDLEY.

For sewerage the Netherton and Woodside districts of the borough. Mr. JOHN GAMMAGE, borough engineer and surveyor.

Barnes & Co.	£24,707	0	0
S. Saunders & Co.	24,176	0	0
W. Westwood & Co.	23,024	0	0
J. Owens	22,165	0	0
J. Mackay & Co.	21,944	0	0
McCarthy & Co.	21,927	0	0
Hughes & Son	20,461	0	0
J. D. Nowell & Sons	19,072	0	0
G. LAW, Kidderminster (accepted)	17,897	0	0

## EASINGWOLD.

For providing and laying about 21,324 yards of 5-inch, 12,462 yards of 4-inch and 16,343 yards of 3-inch water-mains, together with bends and branches, valves, hydrants, wash-outs and consumers' service pipes, &c., for the Easingwold Rural District Council. Messrs. FAIRBANK & SON, engineers, 13 Lendal, York.

S. Saunders	£24,497	0	0
W. & J. Foster	20,840	0	0
Harrison & Barraclough	17,704	0	0
Parker & Sharpe	15,651	0	0
J. Bentley	15,429	0	0
W. Doleman	14,200	0	0
Morley Bros.	14,142	0	0
Ridley & Sons	14,064	0	0
Jowett Bros.	13,838	0	0
R. W. Barker	13,801	0	0
C. FIRTH, Scarborough (accepted)	13,186	0	0

## GATESHEAD.

For erection of Kelvin Grove school, Gateshead. Mr. J. LANDELL NICHOLSON, architect, 55 Northumberland Street, Newcastle.

W. C. Tyrie	£12,196	5	8
S. Sheriff	12,005	18	1
T. & R. Lamb	11,869	7	7
T. Weatheritt	11,694	5	11
J. C. Hope	11,662	11	8
J. Bewley	11,265	6	10
T. George	11,236	14	0
T. HUNTER, Washington (provisionally accepted)	9,959	10	0

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As used by War Office and London School Board.



To empty the pipes, shut down A and open B

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READING CASES for THE ARCHITECT. Price 2s.—Office: Imperial Buildings, Ludgate Circus, London, E.C.



## GOSPORT.

For constructing the works required in connection with the sewage scheme, for the Urban District Council.

Hughes & Lancaster	£89,050	0	0
J. & S. Binns	88,212	0	0
John Jackson	87,957	1	5
Underwood Bros.	87,744	0	0
Wilkinson Bros.	86,938	0	0
B. Cooke	86,750	0	0
Patrick & Co.	85,309	0	0
Grisenthwaite & Newton	83,850	0	0
GEO. OSENTON, Westerham, Kent (accepted)	77,260	0	0
Jones & Sons	69,027	5	6

## HOLT, NORFOLK.

For erection of the new Gresham's school and head-master's house, for the Governors. Mr. HOWARD CHATFIELD CLARKE, architect, 63 Bishopsgate Street Within, London, E.C.

Hall, Beddall & Co.	£53,443	0	0
E. Lawrance & Sons	51,577	0	0
Cornish & Gaymer	51,557	0	0
Colls & Sons	51,223	0	0
Parnell & Son	48,657	0	0
F. S. Halliday	48,327	0	0
G. RICHES, Cromer (modified and accepted)	45,980	0	0

## HURSTPIERPOINT.

For erection of an isolation hospital.

J. Brown	£12,100	0	0
Ockenden & Son	11,602	0	0
Thomas & Edge	11,577	0	0
Longley	10,949	0	0
Johnson & Co.	10,377	0	0
Peerless, Dennis & Co.	10,370	0	0
Foster Bros.	10,293	0	0
R. Cook & Son	10,284	0	0
Rowland Bros.	10,279	0	0
Potter Bros.	10,000	0	0
Tonge	9,898	0	0
S. Knight	9,802	0	0
Wallis	9,741	0	0
Field & Co.	9,570	0	0
NORMAN & BURT, Burgess Hill (accepted)	9,399	0	0

## HANWELL.

For erection of schools to accommodate about 1,230 children, Board's offices and caretaker's house, &c., in Springfield Road. Mr. W. PYWELL, architect, 40 Great James Street, Bedford Row, W.C. Quantities by Mr. M. CLARKE.

Leslie & Co.	£28,129	0	0
J. S. Kimberley	25,647	0	0
J. Appleby	25,500	0	0
R. Tonge	25,232	0	0
C. G. Hill	24,100	0	0
A. & B. Hanson	24,045	0	0
Stephens, Bastow & Co.	23,949	0	0
W. Wisdom	23,500	0	0
W. Blackburn	23,068	0	0
Johnson & Son	23,000	0	0
Coulson & Lofts	22,770	0	0
Kingerlee & Son, Oxford (provisionally accepted)	21,457	0	0

## IPSWICH.

For construction of a service reservoir to hold about 4,000,000 gallons of water.

H. Lovatt	£28,272	18	5
T. Oliver & Son	28,118	5	5
H. J. Linzell	27,848	0	0
J. H. Vickers & Co., Ltd.	27,184	0	0
Johnson & Co.	26,430	10	0
G. Callender & Co.	24,046	5	6
G. Double	22,600	9	0
C. Wall	21,523	0	0
A. Coe	21,140	19	6
G. BELL, Tottenham (accepted)	19,807	0	0

## IRELAND.

For supply of electric plant for the Limerick Corporation electric-lighting scheme.

Handley & Shanks	£19,265	13	5
Johnson & Phillips	19,153	19	10
W. Coates & Sons, Ltd.	17,597	17	8
Porte, Sykes & Co.	17,590	19	6
British Schuckert Electrical Co., Ltd.	17,203	19	0
Crompton & Co., Ltd.	16,868	10	0
F. Suter & Co.	16,513	6	4
Allgemeine Elektrizitäts-Gesellschaft	16,381	0	0
P. Dillon	16,280	0	0

Prevents Dry Rot,  
Fungus, Decay, &c.

**Solignum**

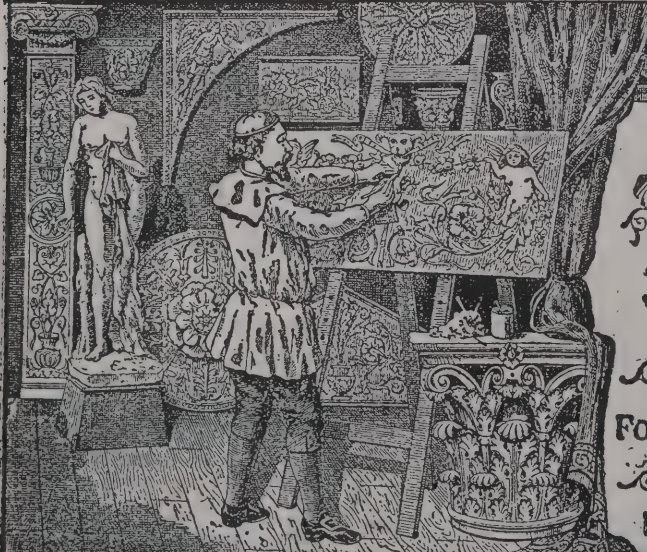
and is a pleasing  
Stain.

Enquiries  
Solicited.

**Wood Preservative.**

Enquiries  
Solicited.

Particulars from **MAJOR & CO. Ltd.** Solignum Depot, **HULL.**



ESTD 1848

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## Improved Patent Fibrous Plaster

FOR ORNAMENTAL CEILINGS, CORNICES, CENTRE FLOWERS, TRUSSES, CAPITALS &c.

HEAD OFFICE & WORKS, THORNCLIFFE RD BRADFORD, YORK.

Telegraphic Address, "Cordingley's, Manningham, Bradford." Telephone No. 107 Manningham.

GOLD MEDAL.

GOLD MEDAL.

SILVER MEDAL.

SILVER MEDAL.

SILVER MEDAL.



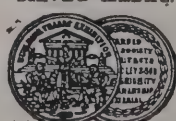
SALTAIRE.



LIVERPOOL.



BRADFORD.



SHEFFIELD.



SALTAIRE.



LEICESTER.

For extension of the Leicester infirmary.

Clark & Garrett	£11,130	0	0
J. Hutchinson & Son	10,989	0	0
J. E. Johnson & Sons	10,880	0	0
H. Bland	10,757	0	0
T. Herbert	10,679	0	0
W. Moss & Sons	10,500	0	0
H. Herbert & Sons.	10,947	0	0

LINCOLN.

For construction of water-supply works.

T. Matthews	£21,645	0	0
W. Hill & Co.	19,630	0	0
Vivian's Boring, &c., Co., Ltd.	18,471	0	0
British-American Well Works	18,000	0	0
Stourbridge Well-Boring Co.	17,947	0	0
C. CHAPMAN & SONS, Salford (accepted)	14,605	0	0

LONDON.

For erection of thirty-six double tenement houses for the working classes in Invicta and Rendel Roads, Canning Town, E. Mr. JOHN G. MORLEY, borough engineer.

Spencer, Santo & Co.	£21,000	0	0
Calnan & Son	20,063	0	0
W. Irwin	19,215	18	11
H. L. Holloway	18,370	0	0
Martin, Wells & Co.	17,999	0	0
W. E. Davey	17,275	0	0
Hardy Bros.	16,565	0	0
J. Shelbourne & Co.	16,542	0	0
Gregar & Son	15,930	0	0
J. Barker & Co., Ltd.	15,826	0	0
A. T. Haines & Co.	14,656	0	0
Herbert Bros.	14,247	0	0
G. WISE, West Ham (accepted)	13,955	0	0

For enlargement of the southern outfall sewer at Crossness Fall.

J. Cochrane & Sons	£124,949	10	0
W. Jones & Sons	115,699	9	0
B. Cooke & Co.	96,826	14	3
Bentley & Loch	82,597	4	0
Kirk & Randall	79,912	5	4
W. B. SQUIRE & Co. (accepted)	73,980	2	7

LONDON—continued.

For rebuilding of Nos. 39, 40 and 43 Trinity Square, for the executors of the late Mr. C. J. Knowles, exclusive of fixtures and fittings. Mr. C. WATKINS, architect and surveyor, Glebe House, Sherborne Lane, E.C. Quantities by Mr. T. DEACON.

Lascalles & Co.	£27,300	0	0
Patman & Fotheringham	27,280	0	0
Ashby & Horner	26,987	0	0
F. & H. F. Higgs	26,938	0	0
H. Lovatt	26,250	0	0
Colls & Son	25,860	0	0
Foster & Dicksee	25,716	0	0
W. Downs	25,434	0	0
Greenwood	25,374	0	0

For alterations and additions to Charing Cross Hospital, for the Council. Mr. A. SAXON SNELL, architect. Quantities by Messrs. NORTHCROFT, SON & NEIGHBOUR.

Howard & Co.	£92,722	0	0
Patman & Fotheringham	89,300	0	0
Bywaters & Sons	87,500	0	0
H. Lovatt	87,000	0	0
Spencer, Santo & Co.	86,775	0	0
Trollope & Sons	86,470	0	0
Higgs & Hill	85,844	0	0
B. E. Nightingale	85,757	0	0
HOLLOWAY BROS., Lambeth (accepted)	82,730	0	0

For erection of forty double-tenement houses for the working-classes in Eve Road, Plaistow. Mr. J. G. MORLEY, borough engineer.

F. & E. Davey	£23,885	0	0
General Builders, Ltd.	21,797	0	0
F. G. Minter	21,591	0	0
Martin, Wells & Co.	20,850	0	0
Thomas & Edge	20,314	0	0
J. W. Jerram	18,678	0	0
Herbert Bros.	18,129	0	0
A. T. Haines & Co.	17,635	19	2
Gregar & Son	17,580	0	0
G. Wise, works manager, West Ham	16,899	0	0
Barker & Co., Ltd.	16,320	0	0
H. J. CARTER, Grays (accepted)	15,740	0	0

LIFTS

HYDRAULIC, ELECTRIC,  
STEAM, HAND, AND POWER,  
FOR

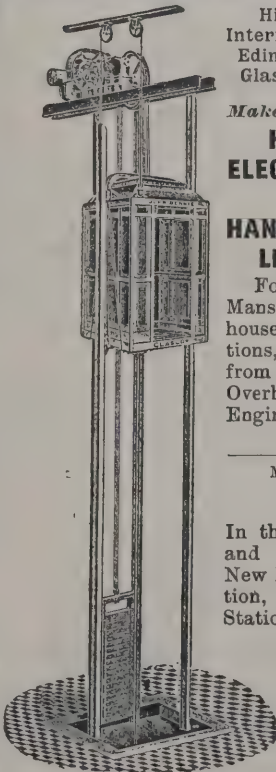
PASSENGERS  
And GOODS.

Supplied to H.M. Government,  
Railway Companies, Hotels,  
Clubs, Public Buildings,  
Warehouses, Wharfs, and  
Private Houses.

R. MIDDLETON,  
HYDRAULIC & GENERAL ENGINEER,  
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IMPROVED ELECTRIC  
SAFETY BALANCE  
PASSENGER LIFTS.



Highest Awards:  
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Maker of all kinds of  
HYDRAULIC,  
ELECTRICAL,  
STEAM, AND  
HAND-POWER  
LIFTS & CRANES

For Hotels, Clubs,  
Mansion Houses, Ware-  
houses, Railway Sta-  
tions, &c. For working  
from Town's Mains,  
Overhead Tanks, Gas  
Engines or Accumu-  
lators.

MAKER OF THE  
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In the Central Station  
and Hotel, Glasgow;  
New Bridge Street Sta-  
tion, Glasgow; Paisley  
Station, Ayr Station  
Hotel, Perth Sta-  
tion and Hotel,  
the New Club,  
Glasgow; Court  
Houses, Glasgow,  
&c., &c.

JOHN BENNIE,  
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Street, Manchester.

C. & A. MUSKER

LIMITED,

LIVERPOOL.

HYDRAULIC AND ELECTRIC

LIFTS

For Passengers and Goods.

HYDRAULIC AND ELECTRIC

CRANES.

STEAM AND

HAND POWER LIFTS,

DINNER LIFTS,

ETC.



## LONDON—continued.

For erection of laundry at the Poplar and Stepney Sick Asylum.

F. Gough & Co. . . . .	£15,994	0	0
W. Lawrance & Sons . . . . .	15,968	0	0
Foster Bros. . . . .	15,765	0	0
Vigor & Co. . . . .	13,979	0	0
Faulkner & Son . . . . .	13,470	0	0
H. Wardrope . . . . .	13,439	0	0
Yates & Co. . . . .	13,400	0	0
F. & T. Thorne . . . . .	13,389	0	0
J. Smith & Son . . . . .	13,259	0	0
J. H. L. Holloway . . . . .	13,230	0	0
Higgs . . . . .	13,137	0	0
Levy & Son . . . . .	13,000	0	0
J. Greenwood . . . . .	12,748	0	0
Almond & Son . . . . .	12,590	0	0
WATTS, JOHNSON & CO. (accepted) . . . . .	11,677	0	0

For erection of shops and flats at Lower Clapton, N.E. Mr. HERBERT RICHES, architect and surveyor, 3 Crooked Lane, King William Street, London, E.C. Quantities supplied.

W. Holt & Sons . . . . .	£15,098	0	0
A. Porter . . . . .	14,845	0	0
S. J. Scott . . . . .	14,073	0	0
J. Grover & Son . . . . .	13,650	0	0
Courtney & Fairbairn . . . . .	13,525	0	0
Todd & Newman . . . . .	13,333	0	0
Green & Smith . . . . .	13,280	0	0
Fred & T. Thorne . . . . .	13,000	0	0
SHEFFIELD BROS. (accepted) . . . . .	12,993	0	0

All estimates are exclusive of smith, plumber, hot-water and sanitary engineer and bell-hanger work, stoves, &amp;c.

For erection of superintendent's house and stores, central laundry and workshop on site abutting upon Lodge Lane and Bostall Heath, Plumstead. Messrs. CHURCH, QUICK &amp; WHINCOP, architects, William Street, Woolwich.

E. Proctor . . . . .	£14,270	0	0
Foster Bros. . . . .	14,225	0	0
Martin, Wells & Co. . . . .	14,165	0	0
H. L. Holloway . . . . .	14,085	0	0
THOMAS & EDGE, Woolwich (accepted) . . . . .	13,997	0	0

## LONDON—continued.

For alterations to town hall buildings, Westminster.

	A	B
Perry & Co. . . . .	£27,988	£504
Kirk & Randall . . . . .	26,940	560
Holland & Hannen . . . . .	26,670	720
Higgs & Hill, Ltd. . . . .	26,500	584
W. Johnson & Co., Ltd. . . . .	26,340	630
Campbell, Smith & Co., Ltd. . . . .	26,272	690
Holliday & Greenwood, Ltd. . . . .	25,930	580
Holloway Bros. . . . .	25,300	600
B. E. Nightingale . . . . .	25,272	630
Prestige & Co. . . . .	24,877	525
Maple & Co., Ltd. . . . .	24,560	360
H. Lovatt . . . . .	24,500	400
G. H. & A. Bywaters & Sons . . . . .	23,380	850
PATMAN & FOTHERINGHAM, LTD. (accepted) . . . . .	22,873	830

A. Extra if wainscot wax polished.

B. Extra if various works are in polished marble.

For supply of electrical plant in connection with the reconstruction for electrical traction of the tramways between Westminster and Tooting, &amp;c.

## A.—Continuous-current plant.

	Highest.	Lowest.
DICK, KERR & CO. (accepted) . . . . .	£35,064	£25,964

## B.—Three-phase plant.

DICK, KERR & CO. (accepted) . . . . .	55,570	46,625
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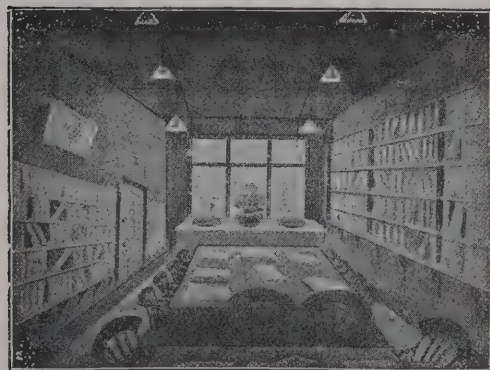
For making-up, paving and kerbing several streets in Leyton. Mr. WILLIAM DAWSON, surveyor.

Myers, Gilson & Rose, Ltd. . . . .	£14,647	7	8
D. T. Jackson . . . . .	14,574	6	6
T. Adams . . . . .	13,957	3	2
G. Wilson . . . . .	12,383	8	6
G. Porter . . . . .	12,193	12	1
G. J. Anderson . . . . .	11,951	7	6
W. Griffiths, Ltd. . . . .	11,908	11	10
W. MANDERS, Leyton (accepted) . . . . .	11,836	19	6

## THE UNION PLATE GLASS CO., LTD., POCKET NOOK, ST. HELENS

Telegrams, "Union, St. Helens." Nat. Tel. 48.

ESTABLISHED 1837.



Interior Lighted by ordinary Plate Glass.

Makers of Ground, Smoothed, Polished, Silvered, Bevelled, Brilliant Cut, and Bent Plate Glass; Rough Rolled and Rough Cast Plate Glass; also of Rough and Polished Prismatic Glass, &amp;c., &amp;c.

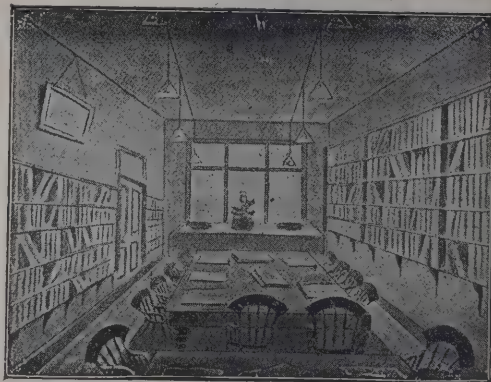
SPECIALITÉ:  
"REFRAX"

(Protected under Patent Acts).

Extracts from Testimonials received:  
"The 'Refrax' Glass is a GREAT IMPROVEMENT.""Gives EVERY SATISFACTION."  
"The Glass I am perfectly satisfied with; GREAT SUCCESS."

"Compared with Polished Plate Glass 'Refrax' gives TWICE AS MUCH LIGHT FOR EQUAL COST."

Sold by all Dealers.



Same Interior lighted by "Refrax" Glass.

## "TAYLOR'S PATENT JUNCTION"

No. 12662.

For WATER CLOSETS, WATER PIPES, ANTI-SYPHON PIPES, &amp;c.

APPROVED BY ALL SANITARY AUTHORITIES.

THIS Junction has been invented with a view to enable anyone fixing closets overcoming the difficulty of the many angles required for the various makes, also to avoid the necessity of having joints inside the walls, which are dangerous and not allowed by County Councils, Borough Engineers, Architects, &c. The 4 inch Junction can be adapted to any size from 4 inch downwards. Any plumber will see at a glance the great convenience of this article, as it only requires one junction for the many shapes and sizes. No Brass Thimbles or Calking required. A perfect Gas and Watertight Joint can be made in a few minutes by any ordinary Plumber. In fixing this Joint, all that is necessary is to cut the Lead Pipe to the required angle, place on the loose Iron Flange, then flange back the Lead Pipe 1/2 inch all round, coat the face of Flange with a little Red Lead Putty, bring the two Faces together and draw up with the Bolts, screwing up each Bolt a little at a time until they are all tight, then the Joint is made and will stand any test. Another great convenience is:—In case of any alterations or renewal of Soil Pipes, all that is required where this Junction is used is to unbolt the same, and the Closet and Pipe leading to it are left intact. With all other Junctions it is necessary to take down the W.C., break open the wall, damaging the Property and causing other inconvenience.

A—Is the front view of Junction and loose flange; the inlet being elongated, allows the lead pipe to be cut to any required angle.

B—Shows the Joint fixed and ready for tightening up, and also a few of the angles which can be got.

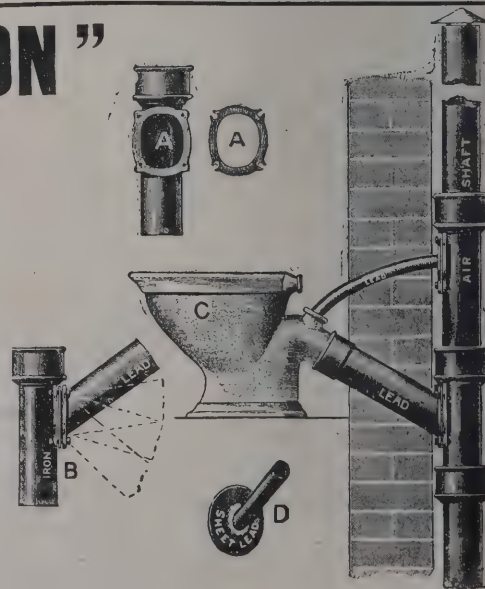
C—Shows the one size which can be adapted for 4 in. Soil Pipe, and a 4 in. x 1 1/2 in. Invert Junction for Anti-siphon Pipes, &amp;c.

D—Shows how to arrange for a small sized branch.

Made in Three Strengths—Ordinary Rain Water, 1/2" and 3/4" Metal.

PRICES AND PARTICULARS CAN BE HAD AT ALL WHOLESALE MERCHANTS, OR FROM

CHARLES TAYLOR, R.P., Sanitary Engineer, ECCLES, MANCHESTER.





LONDON—continued.

For erection of block E of the Mount Pleasant telegraph factory, for H.M. Office of Works, &c.

			A.
E. Lawrance & Sons . . . . .	£15,290	0 0	£200
J. Appleby . . . . .	14,820	0 0	60
B. E. Nightingale . . . . .	14,629	0 0	200
H. E. Tomes . . . . .	14,399	9 0	100
T. L. Green . . . . .	14,393	0 0	175
Holloway Bros. . . . .	14,250	0 0	—
W. H. Lorden & Son . . . . .	14,155	0 0	378
W. Johnson & Co., Ltd. . . . .	14,039	0 0	239
Wilson Bros . . . . .	13,939	0 0	200
J. Chessum & Sons . . . . .	13,725	0 0	120
Borrodale & Co. . . . .	13,141	0 0	—
J. THOMPSON & CO. (accepted) . . . . .	12,680	0 0	250

A. Old materials.

For erection of War Office, Whitehall, S.W., for the Commissioners of H.M. Office of Works, &c.

Martin, Wells & Co. . . . .	£632,000	0 0	
W. Pattinson & Sons . . . . .	591,000	0 0	
B. E. Nightingale . . . . .	587,420	0 0	
Pethick Bros. . . . .	583,150	0 0	
Leslie & Co., Ltd. . . . .	582,360	0 0	
J. Mowlem & Co. . . . .	570,000	0 0	
W. H. Lorden & Son . . . . .	562,200	0 0	
C. Wall . . . . .	559,640	0 0	
Holloway Bros. . . . .	551,345	0 0	
Higgs & Hill, Ltd. . . . .	545,994	0 0	
J. Shillitoe & Son . . . . .	530,000	0 0	
H. Lovatt . . . . .	527,000	0 0	
H. S. Foster . . . . .	515,000	0 0	
H. Martin . . . . .	505,000	0 0	
Maple & Co., Ltd. . . . .	497,875	0 0	
Perry & Co. . . . .	495,325	0 0	
FOSTER & DICKSEE (accepted) . . . . .	473,231	0 0	

For extension of offices for the Star Life Assurance Society, 32 Moorgate Street. Mr. ARTHUR BLOMFIELD JACKSON, architect, 26 Mecklenburgh Square, W.C.

Holland & Hannen . . . . .	£12,350	0 0	
Colls & Sons . . . . .	11,984	0 0	
E. Edwards . . . . .	11,923	0 0	
Holloway Bros. . . . .	10,728	0 0	
PATMAN & FOTHERINGHAM (accepted) . . . . .	10,693	6 10	

LONDON—continued.

For the construction of the foundations of Block III. of the new Admiralty buildings.

			A.
Foster Bros. . . . .	£30,885	—	—
J. Smith & Sons, Ltd. . . . .	29,791	—	—
Foster & Dicksee . . . . .	25,812	279	—
B. E. Nightingale . . . . .	25,175	—	—
Pethick Bros. . . . .	24,740	—	—
E. Nuttall . . . . .	24,240	312	—
W King & Son . . . . .	22,900	—	—
Higgs & Hill, Ltd. . . . .	22,460	—	—
H. C. Lovatt . . . . .	20,940	302	—
J. Mowlem & Co. . . . .	20,878	261	—
J. Allen & Sons, Ltd. . . . .	17,950	150	—
Holloway Bros. . . . .	17,880	432	—
Leslie & Co., Ltd. . . . .	17,383	—	—
Perry & Co. . . . .	17,289	428	—
J. CHESSUM & SONS (accepted) . . . . .	15,926	330	—

A.—Allowance if Limmer asphalte be used.

LONDON SCHOOL BOARD.

For erection of school, Wickham Lane site, Plumstead, Greenwich.

J. & M. Patrick . . . . .	£23,431	0 0	
J. Garrett & Son . . . . .	22,334	0 0	
W. Downs . . . . .	22,296	0 0	
J. Chessum & Sons . . . . .	22,283	0 0	
F. & H. F. Higgs . . . . .	21,971	0 0	
E. Lawrance & Sons . . . . .	21,788	0 0	
Perry & Co. . . . .	21,695	0 0	
Treasure & Son . . . . .	21,234	0 0	
KIRK & RANDALL (accepted) . . . . .	20,440	0 0	

For erection of school, Kilmore Road site, Stanstead Road, Forest Hill (Greenwich).

F. & H. F. Higgs . . . . .	£24,758	0 0	
J. Garrett & Son . . . . .	24,786	0 0	
W Antill & Co. . . . .	24,545	0 0	
Kirk & Randall . . . . .	24,172	0 0	
Perry & Co. . . . .	23,689	0 0	
Treasure & Son . . . . .	22,931	0 0	
Holliday & Greenwood, Ltd. . . . .	22,750	0 0	
J. & M. PATRICK (accepted) . . . . .	21,787	0 0	

If Walls of Class-rooms and Halls are Plastered, add

# OTIS ELEVATORS

Paris Exhibition, 1900,

GRAND PRIZE & GOLD MEDAL.

Electric, Hydraulic, Steam,  
&c.

PARTICULARS ON APPLICATION TO

OTIS ELEVATOR CO., Ltd., Mansion House Buildings,  
4 QUEEN VICTORIA STREET, LONDON, E.C.



## LONDON SCHOOL BOARD—continued.

For erection of school, West Hill site (late Broomhill Road), Wandsworth.

W. Downs	£34,825	0	0
C. Wall	34,710	0	0
Holloway Bros.	34,450	0	0
W. Johnson & Co., Ltd.	34,171	0	0
E. Parsons & Co.	33,707	0	0
E. Lawrance & Sons	32,265	0	0
W. H. Lorden & Son	31,888	0	0
Spencer, Santo & Co., Ltd.	31,063	0	0
Stimpson & Co.	30,430	0	0
J. & M. Patrick	30,009	0	0
Martin, Wells & Co.	29,555	0	0
W. SMITH & SON (accepted)	29,497	0	0

For erection of school, Church Manor Way site, Plumstead (Greenwich).

F. & H. F. Higgs	£24,227	0	0	If Walls are Plastered, add
Perry & Co.	23,842	0	0	£299
Holliday & Greenwood, Ltd.	23,630	0	0	287
E. Lawrance & Sons	23,539	0	0	261
J. Garrett & Son	23,293	0	0	270
Treasure & Son	23,169	0	0	274
Kirk & Randall	22,847	0	0	249
J. Smith & Sons, Ltd.	22,545	0	0	279
J. CHESSUM & SONS (accepted)	22,281	0	0	33

For pupil-teachers' school for the Marylebone Division, Hill-drop Road site, Camden Road, Finsbury.

Kilby & Gayford	£23,255	0	0
J. Allen & Sons	22,975	0	0
L. H. & R. Roberts	22,866	0	0
Leslie & Co., Limited	22,863	0	0
J. & M. Patrick	22,732	0	0
C. Wall	22,545	0	0
G. S. S. Williams & Son	22,515	0	0
C. Cox	22,512	0	0
Spencer, Santo & Co.	22,498	0	0
E. Lawrance & Sons	22,142	0	0
T. L. Green	21,987	0	0
F. Gough & Co.	21,874	0	0
Treasure & Son	21,730	0	0
W. GREGAR & SON (accepted)	20,933	0	0

## LONDON SCHOOL BOARD—continued.

For erection of additional accommodation at Aristotle Road school.

Holloway Bros.	£16,618	A
F. & H. F. Higgs	16,247	£339
Lathey Bros.	16,217	181
W. H. Lorden & Son	15,444	324
J. Marsland & Sons	15,425	222
Treasure & Son	15,274	180
C. Cox	15,089	190
J. Smith & Sons, Ltd.	15,035	219
Spencer, Santo & Co., Ltd.	15,014	200
W. Johnson & Co., Ltd.	14,700	170
E. Triggs	14,536	155
Holliday & Greenwood, Ltd.	14,535	193
J. & M. Patrick	14,359	204
J. GARRETT & SON (accepted)	14,342	212
		334

A. If walls of classrooms and halls are plastered add.

For accommodation 30 boys and 30 girls, total 60; consisting of two blocks of semi-detached cottages, Anerley Cottage Home for the Deaf.

C. Wall	£22,500	0	0
J. Garrett & Son	22,174	0	0
B. E. Nightingale	21,850	0	0
F. & H. F. Higgs	21,324	0	0
Kirk & Randall	21,324	0	0
E. Triggs	21,214	0	0
McCormick & Sons	20,998	0	0
Spencer, Santo & Co., Limited	20,740	0	0
E. Lawrance & Sons	20,607	0	0
Stimpson & Co.	20,570	0	0
W. Johnson & Co., Limited	19,958	0	0
J. Smith & Sons, Limited	19,916	0	0
J. & C. Bowyer	19,695	0	0
HOLLIDAY & GREENWOOD (accepted)	19,000	0	0

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For the erection of a new mixed higher-grade school for boys and girls, Leven Road site, Bromley-by-Bow.

				If Walls of Class-rooms and Halls are Plastered, add
McCormick & Sons.	£23,910	0	0	£195 0 0
C. Dearing & Son	23,279	0	0	315 0 0
J. Chessum & Sons	23,273	0	0	234 0 0
F. & F. J. Wood	23,240	0	0	310 0 0
G. Munday & Sons	23,020	0	0	291 0 0
C. Cox	22,997	0	0	323 0 0
Perry & Co.	22,974	0	0	295 0 0
Kirk & Randall	22,896	0	0	298 0 0
Treasure & Son	22,851	0	0	295 0 0
T. L. Green	22,586	0	0	1,093 0 0
E. Lawrance & Sons	22,409	0	0	291 0 0
C. Wall	22,041	15	9	210 0 0
W. GREGAR & SON (accepted)	21,477	0	0	249 0 0

LOWESTOFT.

For erection of sea defence works at Lowestoft. Mr WM. TREGARTHEN DOUGLASS, consulting engineer, 15 Victoria Street, Westminster.

T. W. Pedrette	£44,990	0	0
J. & T. Binns	44,956	0	0
Buttle & Fowler	40,044	0	0
H. Lovatt	37,026	0	0
J. C. Trueman	36,663	0	0
A. Woodhouse	35,368	0	0
V. Hill	35,063	0	0
W. T. Squire & Co.	34,463	0	0
R. Finnegan	34,000	0	0
A. FASEY & SON, Grove Green Yard, Leytonstone (accepted)	32,216	0	0
W. Gradwell & Co	29,329	0	0
B. Cooke & Co.	28,900	0	0
G. Eaton	25,630	0	0

OTLEY.

For construction of a reservoir, &c, at Otley, Yorks. Mr. JOHN WAUGH, engineer, Sundridge Chambers, Bradford.

Wilson & Son	£74,661	0	0
T. Smith	56,750	13	7
P. Drake	54,378	0	0
ARNOLD & SON, Doncaster (accepted)	49,500	0	0

PAIGNTON.

For construction of an impounding water supply, valve tower with outlet and compensation waterworks, filters, caretaker's residence, valves, castings, &c., at Holne, Devon, in connection with the New Moorland water supply. Mr. FREDERICK WILLIAM VANSTONE, engineer, Palace Chambers, Paignton.

Contract No. 1.

W. C. Shaddock	£61,475	0	0
Pethick Bros	48,240	0	0
Skinner	43,705	6	0
A. Wells & Sons	39,000	0	0
Dart & Pollard	32,341	0	0
J. Dickson	29,076	7	10
Hawking & Best	27,853	0	0
G. BELL, Manchester and Tottenham (accepted)	26,969	14	9

PLAISTOW.

For erection of two blocks of buildings in Carter Road, comprising pupil teachers', laundry and cookery centres, and caretaker's house. Mr. WILLIAM JACQUES, architect, 2 Fen Court, E.C. Quantities by Messrs. R. L. CURTIS & SONS.

A. E. Symes	£26,111	0	0
B. E. Nightingale	24,901	0	0
Stimpson & Co.	22,537	0	0
Battle, Sons & Holness	22,319	0	0
G. Sharpe	22,055	0	0
W. J. Maddison	21,615	0	0
A. Reed	21,220	0	0
GREGAR & SON, Stratford (provisionally accepted)	21,159	0	0

PORTSMOUTH.

For construction of car-shed, pits, drains and arcade at Gladys Avenue, North End. Mr. E. ROTTER, tramways engineer.

W. W. Learmouth	£19,598	0	0
Light & Son	19,143	0	0
H. Clark & Son	18,590	0	0
W. Ward	18,587	0	0
J. W. Perkins	18,350	0	0
J. Crockerell	18,218	0	0
W. W. EVANS, Brougham Road, Southsea (accepted)	17,980	0	0

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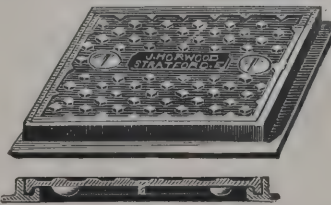
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No. A60. Open Cistern, 16 G	11/-	12/-	13/-	16/-	18/-	21/-	26/-	28/-	"
No. A61. H. W. Tank, 14 G	18/-	19/9	23/-	28/-	36/-	45/-	—	—	"

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Medium Pattern.			
5/-	8/-	8/3	11/-
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## PLYMOUTH.

For erection of schools at Salisbury Road.	Mr. H. J. SNELL,
architect, 11 The Crescent, Plymouth.	
H. E. Skinner . . . . .	£27,462 0 0
A. R. Lethbridge . . . . .	26,063 0 0
Pearn Bros. . . . .	25,789 0 0
T. May . . . . .	25,665 0 0
J. H. Blackell . . . . .	25,639 0 0
J. Cockerell . . . . .	25,397 0 0
Tozer & Son . . . . .	25,083 0 0
Wakeham Bros. . . . .	24,373 0 0
Laphorn & Co. . . . .	24,268 0 0
Allen & Tozer . . . . .	24,000 0 0
W. E. BLAKE, Plymouth ( <i>provisionally accepted</i> ) . . . . .	22,447 0 0

## SCOTLAND.

For construction of new tramways and for reconstruction of existing tramways (about three-quarter mile, double line); for construction of granite cart track, and for paving portions of street with granite setts (about 19,000 superficial yards in all). Mr. WILLIAM MACKISON, engineer.

G. Mackay & Son . . . . .	£19,141 10 8
D. & J. Stratton . . . . .	17,917 16 8
North British Granite and Whinstone Quarries Co., Ltd. . . . .	17,907 4 6
D. Murray . . . . .	17,179 18 2
W. Wilson . . . . .	15,963 9 2
R. C. Brebner & Co. . . . .	15,731 3 10
Young & Co. . . . .	15,015 3 10
R. Sheach, jun. . . . .	14,987 7 2
J. B. Hay . . . . .	14,702 19 5
T. S. Dick . . . . .	14,591 5 11
J. MCADAM & SONS, Aberdeen ( <i>accepted</i> ) . . . . .	13,687 9 6

For construction of a sea-wall, 880 yards in length (in extension of the existing esplanade sea-wall), upon the bed or soil of the river Tay, Dundee. Mr. WM. MACKISON, engineer.

R. C. Brebner & Co. . . . .	£45,550 18 3
G. Lawson . . . . .	31,887 17 0
G. Mackay & Son . . . . .	24,454 0 0
A. Will . . . . .	20,480 18 0
Clark, Simpson & Scott . . . . .	18,780 15 0
T. S. Dick . . . . .	14,775 19 0
J. MCADAM & SONS, Aberdeen ( <i>accepted</i> ) . . . . .	13,568 19 0

## ST. ALBANS.

For construction of 6,900 super yards of concrete bacteria beds with screening chamber, &c., at the outfall works. Messrs. BEESLEY, SON & NICHOLS, engineers, 11 Victoria Street, Westminster, S.W.

G. G. Rayner . . . . .	£16,550 0 0
W. Coker . . . . .	15,022 0 0
J. & T. Binns . . . . .	12,966 15 2
J. Jackson . . . . .	12,259 0 0
H. Weldon . . . . .	12,064 4 3
T. W. Pedrette . . . . .	11,984 14 6
Johnson Bros. . . . .	11,980 10 0
J. Dickson . . . . .	11,928 6 0
S. Saunders . . . . .	11,840 0 0
S. Kavanagh . . . . .	11,340 15 0
W. G. Dunham . . . . .	11,276 0 0
B. Cooke & Co. . . . .	10,814 0 0
G. Bell . . . . .	9,987 0 0

M. CUNLIFFE, Gloucester Road, Kingston-on-Thames (*accepted*) . . . . .

F. J. Coxhead . . . . .	8,475 0 0
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## SWANLEY.

For erection of the White Oak schools for the Metropolitan Asylums Board. Messrs. W. H. & P. B. STRUDWICK, quantity surveyors, New Inn Chambers, Wych Street, Strand, W.C. Messrs. NEWMAN & NEWMAN, architects and surveyors, 31 Tooley Street, London Bridge, S.E.

Balaam Bros. . . . .	£151,256 0 0
Leslie & Co. . . . .	141,450 0 0
Foster & Dicksee . . . . .	140,270 0 0
R. L. Tonge . . . . .	138,652 0 0
Stephens, Bastow & Co. . . . .	135,269 0 0
B. E. Nightingale . . . . .	133,227 0 0
Willmott & Sons . . . . .	122,915 0 0
Lorden & Son . . . . .	121,888 0 0
J. J. Wise . . . . .	116,035 0 0
Martin, Wells & Co. . . . .	115,000 0 0
C. WALL, Chelsea ( <i>accepted</i> ) . . . . .	112,324 0 0

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SELLY OAK.

For erection at the workhouse, Selly Oak, of receiving wards, porter's lodge and new pavilion, stores and offices, workshed, &c. Messrs. WHITWELL & SON, architects, Birmingham.

J. Harley & Son . . . . .	£21,350	0	0
W. Bishop . . . . .	21,254	0	0
Barnsley & Sons . . . . .	20,988	0	0
W. J. Stone . . . . .	20,552	0	0
W. Robinson . . . . .	20,370	0	0
Smith & Pitts . . . . .	20,320	0	0
B. Whitehouse & Sons . . . . .	20,269	0	0
R. M. Hughes . . . . .	19,071	0	0
W. H. GIBBS, King's Heath (conditionally accepted) . . . . .	18,700	0	0

THORPE.

For extensions and alterations to the Norfolk County Asylum, Thorpe, near Norwich. Mr. A. J. WOOD, architect, 22 Surrey Street, Victoria Embankment, W.C. Quantities by Messrs. WIDNELL & TROLLOPE, 20 Tothill Street, Westminster, S.W.

Cornish & Gaymer . . . . .	£67,157	0	0
Rudd & Son . . . . .	63,900	0	0
Johnson & Co., Ltd. . . . .	60,127	0	0
C. Wall . . . . .	59,527	0	0
Foster & Dicksee . . . . .	59,300	0	0
Patman & Fotheringham, Ltd. . . . .	59,250	0	0
Pattinson & Sons . . . . .	59,243	0	0
Kerridge & Shaw . . . . .	59,237	0	0
Youngs & Son . . . . .	58,997	0	0
Downing & Son . . . . .	58,839	0	0
G. Riches . . . . .	58,497	0	0
J. S. Smith . . . . .	57,497	0	0
H. Lovatt . . . . .	56,800	0	0
WM. KING & SON (accepted) . . . . .	52,353	0	0

WALSALL.

For erection of the proposed new municipal buildings. Mr. JAMES S. GIBSON, architect  
Armitage & Hodgson, Leeds \* . . . . . £67,650 0 0

\* Recommended for acceptance.

ILLUSTRATIONS.

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For erection of infirmary buildings on Kilton Hill site. Mr. HERBERT C. SCAPING, architect, Court Chambers, Grimsby.

T. Roper . . . . .	£19,949	10	0
J. G. Cooling . . . . .	17,880	14	6
G. Brown & Son . . . . .	17,400	0	0
G. Longden & Son . . . . .	17,020	12	6
W. Hall . . . . .	16,980	0	0
H. Vickers . . . . .	16,900	0	0
Cahill & Leverton . . . . .	16,494	0	0
R. Stewart . . . . .	16,130	0	0
M. Grantham . . . . .	16,100	0	0
G. G. Middleton . . . . .	15,950	0	0
J. Cooper & Son, Ltd. . . . .	15,616	0	0
D. Gill & Son . . . . .	15,577	0	0
J. H. Vickers, Ltd. . . . .	15,490	0	0
A. B. CLARKE, Nottingham (accepted) . . . . .	14,500	0	0

YEovil.

For construction of septic tanks, filters, &c. Mr. W. K. L. ARMITAGE, borough surveyor.

A. Wills & Son . . . . .	£24,160	14	4
S. Ambrose . . . . .	22,513	4	10
Hawking & Best . . . . .	21,639	10	0
B. Cooke & Co. . . . .	16,571	0	0
G. Bell . . . . .	16,397	0	0
S. Saunders . . . . .	15,630	0	0
H. W. Pollard . . . . .	14,883	0	0
Stephens & Sons . . . . .	14,324	16	2
BIRD & PIPPARD, Yeovil (accepted) . . . . .	14,180	0	0
J. W. & H. Childs . . . . .	13,843	15	0

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## NEW CATALOGUE.

WE have received from Messrs. Lumby, Son & Wood, Ltd., of Halifax and Greetland, Yorks, a copy of the Twentieth Century Catalogue, which contains particulars of wrought-iron and steel welded and rivetted boilers manufactured by them for heating apparatus on the low-pressure hot-water and low-pressure steam systems, also of kitchen-range boilers, Cornish boilers, vertical steam boilers, &c. This catalogue, which is excellently got up and illustrated, contains useful tables for architects and much information, and in an early issue we hope to refer more fully to it. We notice that the gold medal was awarded at the Paris Exhibition, 1901, to Messrs. Lumby, Son & Wood, Ltd.

## TRADE NOTES.

THE Union Offices, Todmorden, are being fitted with the latest improved hot-water heating apparatus by John King, Limited, engineers, Liverpool, employing their "Rahnee" radiators and "Rex" radiator valves.

MACKAY'S patent direct-acting invisible roof ventilators, supplied by Messrs. Cousland & Mackay, ventilating engineers, Glasgow and Manchester, are being used in the ventilation of the new Consumptive Home at Barnhill, Perth.

MESSRS. GENT & CO., electric-light engineers, of Faraday Works, Leicester, inform us that since the fire which took place at their works recently they have been able to secure extensive premises adjoining their own works, where they are making a start, so that little or no delay beyond the Christmas holidays will take place in the execution of orders.

MESSRS. FISHER, SON & WEAVER, of West Bromwich (Staffs), have recently received orders for the whole of the furniture, dual desks, cupboards, teachers' desks, &c.; for the large schools to accommodate 1,000 to 1,500 children each for the Swansea, Willesden (London), Croydon, Hanwell (London) and Norwood (London) School Boards. The desks selected in each case have been the new "Kingfisher Dual Desks," and each Board made the selection from samples submitted by nearly all the chief firms of school furniture makers in the trade.

THE "B. & S." Folding Gate Company have recently received orders for Kinnear's steel rolling shutters from the Nottingham Corporation, who have adopted them for their tramway depôt for fifteen entrances; four also have been fitted by them at Cardiff for the Corporation and nine are being fitted

at Wallasey and two at the new electric generating station at Bow. For the Leicester Corporation this company have just supplied twenty-eight pairs of the "B. & S." folding gates for the wholesale fruit and vegetable markets.

MESSRS. PILKINGTON BROS., LTD., of St. Helens, Lancashire, are sending out a neat and attractive little illustrated pamphlet descriptive of their patent prismatic rolled glass. For this glass, which we described on its introduction, the following advantages are claimed:—It is of good appearance and is stronger than sheet glass, being less liable to be broken. Efficiency in work is greatly promoted by it, and it virtually increases floor space. It is easy to apply; any glazier can fix it. It avoids vitiated air, dirt and blackened ceilings, caused by burning gas. The diffused light is especially beneficial to the eyesight. The heat of the sun is also diffused, contributing to a uniform temperature. It is a safeguard against fire, avoiding many dangers arising from artificial lights, and illuminating dark corners so often made receptacles for dangerous refuse. It enhances the letting value of property by improving the light, and saves gas bills.

THE Edison and Swan United Electric Light Company, Ltd., have received the honour of appointment by Royal Warrant as purveyors of electric lamps to His Majesty the King.

THE library and baths committees of the Leeds Corporation met on the 24th ult. to consider the plans sent in for the proposed baths and branch library, in York Road. Sixteen sets of plans (all by Leeds architects) were exhibited, and a selection made which will be submitted for approval at the next meeting of the Council. The recommended awards are as follows:—1st, 50%, Mr. J. A. Chapman, East Parade; 2nd, 30%, Mr. W. Bakewell, Park Square; 3rd, 15%, Mr. Percy Robinson, Albion Street. The plans preferred provide for a building of two storeys, costing some 15,000*l.* The library, which is to be built of stone and brick, will have a frontage to York Road, whilst the baths will extend down All Saints Place at the back. The ground-floor of the library is to comprise a lending library, newsroom and ladies' room; and on the first floor will be erected a lecture hall, boys' library and reading-room. The lecture hall, which is intended for public meetings, forms a novel feature of the building. A clock and ornamental cupola also enter into the design. The baths are to be fitted up in the most approved modern style.



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**ELECTRIC NOTES.**

THE town of Dingwall, N.B., contemplates the employment of the tidal flow of the canal and the Peffrey River to provide it with electric light. The total capital outlay is estimated at 4,000*l*.

ELECTRICAL engineers are unanimous in appreciating the necessity of sending out their currents at a high voltage, because the breakage of power and the waste and cost of carrying it along conductors is less.

AT Alloa, N.B., the work of laying the cables for the electric lighting of the principal streets is nearing completion. Nearly all the pillar lamps have been erected, and a section of these and also the municipal buildings were lighted with the electric light for the first time on Monday evening. It is expected that nearly all the lamps will be switched on by to-night.

IN connection with the scheme for the electrification of the Mersey Railway, a contract for about sixty cars, of the value of 40,000*l*., has been placed with Messrs. G. F. Milnes & Co., of Birkenhead, and Hadley, Salop, and cars will be built at the works at Hadley. The cars will be 60 feet long, seat about seventy persons, and will be of a very handsome style. After the disaster on the Overhead Railway at Liverpool, it is interesting to know that for a certain distance under the new cars over the motors will be placed fireproof asbestos slate. The compartments for the motor man and the luggage will also be lined with the fireproof material, so that danger by fire through the fusing of the motors will be almost eliminated.

IN order to meet the increasing demand for electric light in Shrewsbury, the Town Council have several times been compelled to extend the machinery during the four years the undertaking has been in their possession. The latest of these extensions included the erection of a new engine, and this was formally "opened" by the mayor (Mr. S. M. Morris) at a meeting of the lighting committee held at the works on the 23rd ult. The new set of machinery is of 350 brake horse-power, and the dynamos are of 242 kilowatts capacity, capable of supplying 4,000 16 candle-power lamps burning at one time. The engine was manufactured by Messrs. Bellis & Morcam, Birmingham, and the dynamos by Messrs. Thomas Parker & Co., Wolverhampton. The estimated cost was 2,650*l*., and the work has been done to specifications supplied by the borough electrical engineer (Mr. C. M. Johnston), who has from the commencement of municipal electric lighting in Shrewsbury had much to do with the success which has attended the

undertaking. He has been fortunate in having the support of an enterprising committee, with a chairman whose interest in and knowledge of the work are beyond praise.

AN important and in some respects novel installation of electrical power for manufacturing purposes has just been completed at the Saltley works of the Metropolitan Railway Carriage and Waggon Company. Electric power is now in use throughout the whole of the works, and it is generated and applied on the most advanced principles. Alternating current two-phase, Westinghouse type, "C" motors, varying in size from 50 horse-power downwards, are used in all cases. These motors require no expert attention. They are efficient, self-starting under load, have no exposed electrical parts, and no wearing parts except the two shaft bearings. The electrical system is thus the most modern of any. The method of generating the electric power exhibits a still more striking advance. Steam-engines have been abandoned in favour of gas-engines. Instead of burning coal under steam-boilers, the coal is now served to a gas-producing plant, and engines, working with this gas supply, drive the dynamos. Westinghouse three-cylinder gas-engines are used. This type of engine was introduced about two years ago, and is rapidly revolutionising methods of power-generation and workshop driving. This can be easily understood when it is considered that all the advantages of the best type of steam-engines are in this new gas-engine combined with far greater economy. This has been proved by experiments on several installations, and stringent tests recently made on the Saltley plant under actual working conditions have confirmed the truth of these claims.

**VARIETIES.**

THE Archbishop of Canterbury visited Folkestone on the 30th ult. for the purpose of opening a new Church house, schools and recreation hall, erected as a memorial to the late Canon Matthew Woodward, vicar of Folkestone for over half a century.

THE most important year's work for a period of forty years in connection with the isolation of infectious disease in the Carlisle Fever Hospital has just been completed. The hospital stands within its own grounds to the north-west of the city, and recently additions were made to it at a cost of from 3,000*l*. to 4,000*l*.

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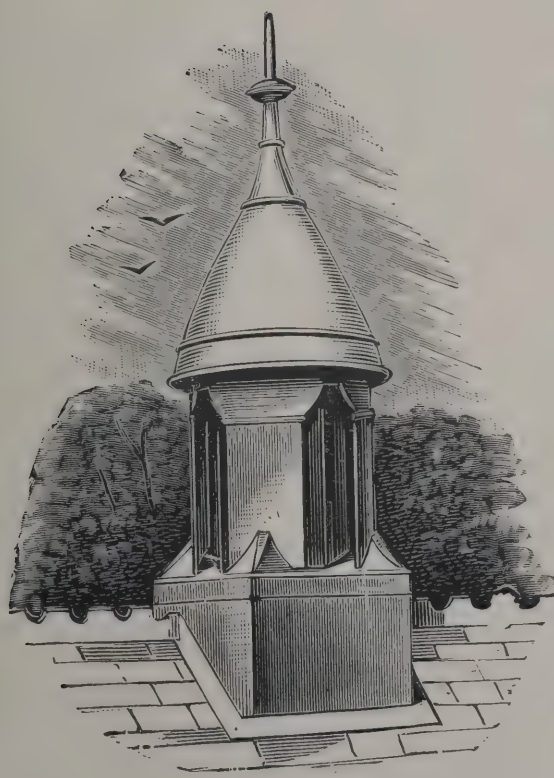
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A NEW Congregational church has been built at Victoria Park to replace the church in Hanbury Street, E., so long associated with the ministry of the late Dr. Tyler. That building has been demolished, owing to the site having been acquired by the London School Board, and the pews, gallery fronts, &c., from the old church have been utilised in the new building. Accommodation has been provided for 800, and the school and classrooms make altogether an admirably equipped block of buildings.

A SINGULAR accident occurred on the North-Eastern Railway near Choppington (Northumberland) station on the 30th ult. Bordering the railway are some brickworks, and a large chimney connected with these suddenly collapsed and fell across the line. At the time there was a guard's van in the vicinity, and the falling brickwork crashed into it. Unfortunately, a mineral guard named Beattie was in the vehicle, and he was seriously injured. Choppington station is on the Blyth and Tyne section, between Newcastle and Morpeth, and in consequence of the accident the railway traffic was interrupted for some hours.

AN old timber-built tenement in King's Court, Great Suffolk Street, will shortly be demolished. It stands opposite the site of the Bridewell that was built circa 1773 upon Hangman's Acre, where is now the junction of Friar and Hill Streets. The house was taken just 100 years ago by a congregation who had separated themselves from the Baptist community in Union, formerly Duke Street. A tradition is current that Bunyan sometimes preached in the meeting-house in King's Court, as well as in that belonging to his friend Dr. Thomas Barlow, in Zoar Street, Slutswell (since Gravel Lane), in the course of his frequent visits to London.

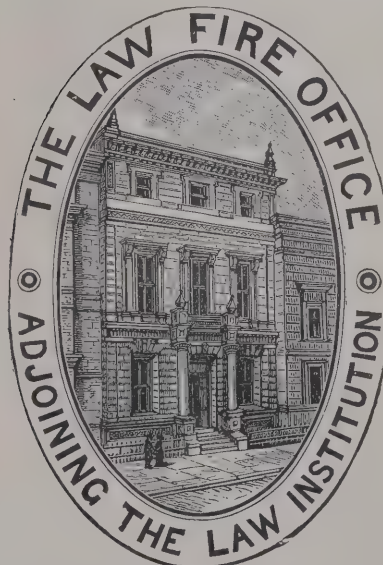
THE handsome new town hall, which has been in course of erection at Colchester for several years past, was last week thrown open for the inspection of the local public. The foundation-stone of the hall was laid by His Royal Highness the Duke of Cambridge in October 1897. The hall was designed by Mr J. Belcher, and the contractors were Messrs. Kerridge & Shaw, of Cambridge. The amount of the contract was 33,397*l*. At the south-east corner of the hall is an elegant tower, erected at an extra cost of 2,500*l*. This addition was named the Victoria Tower, by special permission of Her late Majesty. The assembly-room is a fine apartment, nearly 100 feet long by 45 feet wide. Its vaulted roof is supported by fluted columns, on whose capitals are portraits of twenty-two

English sovereigns who at various times have granted charters to Colchester.

ON the Provan branch of the North British Railway, now under construction, there has just been accomplished a clever piece of engineering. The Provan branch leads to the new gasworks, and is nearly a mile in length, one-third of it being in tunnel. The tunnel forms a horseshoe, is on an eleven and seven chain compound curve, and was wholly driven from two shafts. So accurate was the setting out that on Saturday morning, nine months from the commencement of the work, the heading came through to a fraction of an inch. The engineers of the line are Messrs. Simpson & Wilson, and the contractors Messrs. Hugh Symington & Sons. The resident engineer is Mr. Charles M'Fadzean, and the contractors' engineer Mr. James Motion.

A TABLE which has just been prepared sets out the salaries of town clerks in a number of important boroughs in England, the figures given between parentheses below being the payment made to assistant town clerks where there are such appointments:—Bristol, 1,200*l*; Birkenhead, 1,800*l* (600*l*); Birmingham, 2,000*l* (600*l*); Bolton, 1,200*l* (400*l*); Bradford, 1,250*l* (600*l*); Brighton, 800*l* (600*l*); Cardiff, 1,250*l* (300*l*); Coventry, 1,000*l* (300*l*); Gateshead, 750*l*; Hull, 1,500*l*; Ipswich, 1,000*l*; Leeds, 1,750*l* (600*l*); Leicester, 1,500*l*; Liverpool, 2,000*l* (1,000*l*); Northampton, 700*l*; Nottingham, 1,100*l* (500*l*); Oldham, 800*l* (275*l*); Portsmouth, 700*l*; Preston, 1,000*l* (200*l*); Reading, 750*l* (325*l*); Rochdale, 500*l* (200*l*); Sheffield, 1,250*l* (600*l*); Southampton, 600*l* (250*l*); South Shields, 800*l*; Sunderland, 1,150*l* (250*l*); Swansea, 800*l* (300*l*); Wolverhampton, 900*l* (250*l*). In some boroughs other offices belong to the town clerks.

A SPECIAL meeting of the governors of the Gloucester Infirmary was held on the 19th ult., Colonel Curtis Hayward presiding, to discuss a recommendation of the sub-committee that various alterations be made to the infirmary. Mr. Waller explained that it was proposed to build a nurses' home in three sections. The chairman pointed out that thirty years ago a nursing staff of only 11 was found sufficient; now they required and had one which numbered thirty-four. Temporary provision had been made for their accommodation, but the time had now arrived when something of a permanent nature must be done. The estimated cost was 6,000*l*, which, however, did not include lighting, heating or furniture. Altogether they would require at least 10,000*l*. to meet the whole of the cost of



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the proposed nurses' home. The question was as to how they should provide that money. If they took it out of their capital it meant a loss in annual income of 350*l.*, and that they could not do without reducing the number of their beds. They therefore favoured an appeal being made to the city and county to come to their assistance. After a long discussion the following motion was unanimously carried:—"That this meeting of governors adopts the report of the executive committee, and determines to carry out Mr. Waller's proposals as soon as possible; the meeting further determines that an appeal be made to the county and city and the public generally for the necessary funds."

At the committee-room in the Northampton Town Hall, Colonel W. Langton-Coke, one of the inspectors of the Local Government Board, held an inquiry into the application of the Northampton Town Council for permission to borrow a sum of 16,000*l.* for the erection of a refuse destructor and public baths on land situate between Bath Street and Castle Street. Mr. Hull, borough accountant, said the assessable value of the borough was 331,545*l.*, and the rateable value was 351,462*l.* The balance of loans under the Sanitary Acts and the Public Health Acts, including 20,000*l.* for street improvements, was 153,931*l.* Mr. Shoosmith said that the Town Council had been considering the difficult problem of getting rid of the rubbish of the town for some years, and of late they had made special inquiries into the matter. They had visited several towns and inspected the machinery and plant necessary to get rid of the ashes and rubbish, and had adopted a plan which they had seen at work at Blackburn. The site on which it was proposed to erect the works was a sort of desolate region, principally consisting of a large piece of ground which was of no use whatever, because it was too central to be worth much as garden ground, and a lot of dilapidated houses which the Corporation had succeeded in buying at a very reasonable figure. The Inspector said that the Local Government Board wanted to know what had become of the people who had left the houses, but the Town Clerk pointed out that it was impossible to tell, inasmuch as some of the houses were empty for twelve months before they were purchased by the Town Council, but particulars, so far as they could be ascertained, should be furnished. Only four houses were occupied when the purchase was made by the Town Council, and the occupants of those houses left voluntarily after the Council had completed the purchase. The remainder of the houses had, before purchase, been condemned under the Housing of the Working

Classes Act. Mr. Leask explained the plans. Mr. Gibbins produced the estimate, showing cost of land, 1,835*l.*; contract for destructor, 9,384*l.*; well, 200*l.*; slabmaking plant, 2,000*l.*; baths, 2,000*l.*; paving, &c., 130*l.*—a total of 15,549*l.*, the remainder of the 16,000*l.* being allowed for contingencies. The inspector subsequently proceeded to view the site.

## BUILDING AND BUILDERS.

MRS. ARTHUR PEASE, widow of a former member of Darlington, has offered to build and endow a church in the outlying district near the waterworks and Low Coniscliffe and Tees Grange, Darlington. Mr. Arthur Pease lived in the locality, and formerly himself conducted a service in the schoolroom at Low Coniscliffe, there being no church in the locality. The new church, which will form a chapel-of-ease to Holy Trinity, Darlington, will, it is understood, with the cost of buildings and endowment for a curate, cost 10,000*l.*

SOME excitement has been occasioned in the Bristol building trade by the Master Builders' Association giving six months' notice to reduce the wages of all employes by one penny per hour. Slackness of trade and the overflow of the labour market are assigned as the reasons, there being more men out of work than for several years past. The war has seriously affected trade, and the enhanced cost of labour and material has checked building enterprise. At present skilled workmen are receiving 9*d.* per hour, averaging 2*l.* per week, and the proposed reduction represents 4*s.* weekly. The builders' labourers, earning about 27*s.*, will suffer more seriously than the mechanics by the threatened reduction, which is viewed with dismay.

MR. C. H. WILSON, M.P., takes a deep interest in the question of housing working men, and he has for some time past been engaged in the promotion of a scheme for the erection of homes for working men in the new Great Passage Street, Hull. Three blocks of buildings will be erected, to be known as the Victoria Mansions. The capital of the company is 30,000*l.*, in 3,000 shares of 10*l.* each, of which it is now proposed to call up 5*l.* The cost of the mansions will be about 26,000*l.*, and accommodation will be provided for 400 men, there being this number of cubicles, with a dining-room, smoking and reading-rooms.

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A SCHEME is being formulated at Dowsby, South Lincolnshire, for the better drainage of the fens of that parish and Aslackby, which seriously suffer from flood water in times of heavy rain. The idea is to amalgamate the two fens, which adjoin each other, and to control the scheme by a drainage board under one management. The proposed system of drainage is by means of engines and pump, and the cost is estimated at about 17. per acre. In a circular letter issued to the landowners of the two parishes, it is stated that the land cannot now be put to the best advantage owing to the risk of flooding, and it is believed that if the idea is carried out all this would be obviated, and that the selling value of the land would be increased by 8. or 10. an acre.

A MEMORIAL-STONE was laid on the 27th ult. in the Nautical College in course of erection in Commercial Street, Leith. This college will be the first in Scotland to be specially constructed for, and wholly devoted to, the purposes of nautical education, and is being erected at a cost of 3,000. It is situated close to the dock gate opening on to the west pier, and is on ground granted by the Dock Commission, with a frontage to Commercial Street of about 50 feet. The building will consist of three storeys. On the ground floor there will be a library, instrument-room and nautical-experiment room. The first floor will be divided into classrooms by means of sliding partitions, and can be converted into one large lecture hall. Above the attics a tower will be constructed for the purpose of taking astronomical observations. The building will be heated from the basement, and will be fitted up with electric light.

THE Town Council of Linlithgow have accepted the offer of Messrs Blair & Whyte, contractors, Glasgow, for the construction of the sewage disposal works which are part of the drainage scheme for the burgh. The works are to be carried out on one of the biological systems, and are to be constructed on a site extending to about 4 acres, situated at Joustinghaugh, about half a mile to the north-west of the town. The tank is to be in two divisions, so that, if necessary, one can be thrown out of operation for cleansing or repair while the other is keeping the contact-beds supplied. The tank effluent will then be dealt with in a series of six to eight contact-beds, on to which it will be delivered by spraying. A portion of the ground acquired for the works consists of open porous beds of sand and gravel, with an admixture of soil, and can, at a comparatively small outlay, be converted into land filters, which will take the effluent from the contact-beds, and so complete the

final stage of the purification of the sewage before the effluent passes into the stream adjoining. The sewers in connection with the scheme have for the most part been already laid, and the disposal works are to commence immediately. There is a prospect of the entire scheme being completed by the end of next summer, when the objection on the part of summer visitors and residents alike to Linlithgow's beautiful loch being used as the cesspool of the burgh will be removed. The contract for the laying of the sewers is also in the hands of Messrs. Blair & Whyte, whose total estimate for both branches of the scheme amounts to 9,700. being 5,420. for the laying of the sewers and 4,280. for the disposal works. The engineers engaged in connection with the scheme are Messrs. Warren & Stuart, Glasgow.

At last week's meeting of the Dudley Board of Guardians, Mr. J. T. Homer presiding, the building committee recommended the acceptance of plans prepared by Mr. Marshall, architect, Nottingham, for the erection of a new laundry at the workhouse capable of meeting the requirements of 1,000 persons, provision to be made for a boiler-house, stack, engine-house, &c., and that Mr. Marshall be instructed to carry out the work. In moving the adoption of the report, Mr. Mantle remarked that the Board having rejected what had been called "the 20,000. scheme," and confirmed the appointment of Mr. Marshall as architect, it became necessary for the committee to consider a fresh scheme. Mr. Marshall had accordingly submitted new plans for the erection of an infirmary, administrative block and laundry, including boiler and engine-house, &c., at a total cost of 25,000. The committee, after carefully considering the matter, decided to only adopt that part of the scheme relating to the laundry. The plan of the laundry building submitted by the architect provided for the requirements of 1,100 persons, but the committee considered that as 900 was the largest number of inmates that had yet been in the house at one time, it would only be necessary to make provision for 1,000, which would reduce the estimated cost of this building from 4,500. to 4,100. The total estimated cost of the new laundry scheme was 8,450., including 4,100. for the laundry building, 3,000. for the boiler-house, stack and engine-house, and 1,350. for the machinery, electric motor, &c. Deducting this from the total of 25,000. made the estimated cost of the infirmary 16,550., which, in the event of provision being made for 180 beds, would represent an average cost of about 92. per bed. The chairman seconded the resolution, which was adopted.

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DIARIES AND CALENDARS FOR 1902

THE City Diary (W. H. & L. Collingridge & Co.) has now reached its thirty-ninth year of publication, and still retains its pristine vigour. It contains as usual a complete list of the names and addresses of the Corporation. Full particulars of the City guilds and companies, clergy and ministers and their churches and chapels, hospitals, asylums, schools, clubs, &c., are given, while the diary portion, which is interleaved with blotting-paper, allows ample space for notes.

WE have received from the Electrical Power Storage Company an excellent combined calendar, diary and desk blotting-pad. It is very handsomely got up and its large size renders it a valuable adjunct to the writing-table. The highly ornate tear-off calendar issued by the Rugby Portland Cement Company will be welcomed in many an office, while Messrs. Douglas Young & Co., Bradbury, Agnew & Co., Spottiswoode & Co., Ltd., John M. Henderson & Co. and the Sun Insurance Office each send useful and ornamental specimens of hanging calendars, supplemented in the case of the last named by a handy blotting-case and an elegant little pocket calendar, decorated with a reproduction in colour of the picture in the Royal Exchange of the Fire of London, by Stanhope A. Forbes, A.R.A.

FROM Messrs. Robert Boyle & Son, Limited, of 64 Holborn Viaduct, we have received an elegant little celuloid pocket tablet in case, having on the obverse a calendar in gold and on the reverse a three-inch measure and one marked according to metrical measurement.

A YEAR'S BUILDING IN THE NORTH.

IF the reports on the year's building which reach us from Scotland and the North can scarcely be regarded as enthusiastic, it must nevertheless be admitted that they could well have been less satisfactory, and that on the whole some good work has been completed or is in hand.

The least satisfactory account comes from Edinburgh, where we are told that notwithstanding that there was a falling off in the value of work passing through the Dean of Guild Court in 1900, amounting to 347,317*l.* less than the previous year, it is again to be recorded that the year now ended

shows a further decrease of 199,610*l.* From the statistics of the Dean of Guild Court for 1900 the number of warrants granted, including minor warrants, reached the total of 884, of an approximate value of 829,950*l.* These warrants referred to 57 villas, 74 self-contained houses, 225 public and other buildings, 590 alterations, and 82 tenements, containing 43 shops and 962 dwelling-houses. Last year the work passed through the Court represented 782 warrants, of an approximate value of 630,340*l.* These warrants embrace 36 villas, 126 self-contained houses, 148 public buildings, 398 alterations, 56 tenements of 15 shops and 537 dwelling-houses. There has thus been a considerable diminution on all classes of buildings during the year, with the exception of self-contained houses. About 57 per cent of the tenements passed during the year still remain to be built, and a number of the buildings erected during the year form part of warrants granted during the two previous years. It is expected, however, that as there is now a time limit to the duration of the warrants a number of buildings will be proceeded with during the ensuing year. It is evident from the increase of self-contained houses that they are more in demand than houses in tenement property. Public and other buildings, more than any other for some time past, have received considerable attention, notably the Caledonian Railway Hotel, the North British Railway Hotel and the *Scotsman* Office buildings, the Municipal Buildings, additions to the Register House, Merchant Company premises, Rose Street; Macvitties, Guest & Co's premises, Rose Street; M'Vittie, Guest & Co's premises, Princes Street; Mackie's premises, Princes Street; new premises to be used for postal purposes, Frederick Street; Royal Insurance premises, St. Andrew Square; large addition to Heriot-Watt College, the reconstruction scheme of the United Free Church Assembly Halls, additions to Royal Infirmary, large and commodious premises at Tollcross for Players' Riding School, new Commercial Bank at corner of Queensferry Street and Shandwick Place, and the Wesleyan Methodist Mission Hall at Tollcross. The St. Cuthbert's Co-operative Association are erecting large new business premises in rear of their present property, and this same body have another very large building scheme on hand in another part of the town. Continuing public buildings in the Merchiston and Slateford district, the largest contract is for the North British Rubber Company, Gilmore Park, on the east and west side, where opportunity has been taken of making a considerable widening of the street. Large additions have been made to M'Ewan's Brewery, Fountainbridge. There has



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also been an addition of considerable magnitude to the North British Distillery at Slateford, and an important piece of ground has been acquired for a further extension at no distant date. In the northern district one or two schemes of note have been carried out, as the widening of Stockbridge Bridge, the erection of the Tivoli Theatre in St. Stephen Street, the McDonald Road Library, extensive business premises in Hamilton Place, Wariston Road, Abbeyhill, Moray Park, Easter Road and London Road. The bonded stores at St. Leonard's, recently destroyed by fire, are being reconstructed on a very much more extensive scale as a building of Scottish Baronial character, while a large addition is also being made to St. Leonard's Brewery. Neither educational nor ecclesiastical buildings have been wanting. While the new United Free church at Gorgie and St. Stephen's United Free church have been opened during the year, there is in course of erection at the present time for the Established Church denomination a new church for the Dean parish, also a new church at the foot of Dalkeith Road for the Prestonfield congregation. Large additions are in progress to Merchiston Castle school, and also to the Episcopal College in Orwell Place. During the year three new schools have been erected, viz. New Street, Parson's Green, "Flora Stevenson," Comely Bank, while in Ashley Terrace, for the Merchiston district, a new school will shortly be fully equipped. Workrooms, laboratories and cooking classrooms are being attached to many of the existing schools throughout the city. The Lord Provost and magistrates have been mindful of the housing of the working classes, no fewer than 196 houses having been erected, situate in West Port, 61; Bedford Crescent, 20; Dean Street, 18; Potterrow, 31; Pipe Street, 66. The St. Giles's Dwelling-House Association, Limited, having acquired the old property in Grange Court, Causewayside, are at present reconstructing the whole premises, which, when finished, will provide thirty-seven houses.

From Leith, too, we learn that the building trade during 1901 has not been so brisk as in former years. The prices of building materials reached such a height that the erection of new property, especially tenements by speculative builders, was considerably checked, and though prices have now fallen, this branch of the trade will take some time to recover. The erection of villas in the Trinity district has continued steadily throughout the year. The directors of Leith Hospital have erected in King Street a home and laundry for the accommodation of the nursing staff of the hospital, and where the

laundrywork in connection with that institution can be done also. The existing building and the new home are connected by a subway which runs under King Street. There is also in course of erection, in Commercial Street, the Leith Nautical College, the memorial-stone of which was laid on the 27th ult., and the old Seafield baths are being converted into workmen's houses by ex-Provost Aitken. On Trinity Hospital ground at Easter Road a large envelope and paper-shaving factory is in course of erection, adjoining which Messrs. Younger & Co. are building large maltings. In the same district cooperages are being erected by Messrs. Dryburgh, and opposite Lorne Street, and between Lorne Street and Thorntree Street, tenements are being erected, so that the large area between Quarryholes Cottage and the Cork Factory will be well taken up with buildings in a year or two.

In Portobello district, a little more activity is to be noted than last year, partly in consequence of the extended boundary to the south, where for some years past the tendency for villa residences has been noticeable. In all some ten villas have passed the Dean of Guild Court. Some have been completed, and others are still in progress. A large addition to Duddingston Road school has been carried out during the year. In Argyle Crescent five villas have been completed, and three are in operation. In Bailliefield Road, at the corner of Fishwives' Causeway, plans have been approved by the Dean of Guild Court for the erection of six workmen's cottages. Two villas are in course of erection in Portobello on Craigen-tinny estate, between the home farm and Wheatfield; three tenements were passed to be erected in King's Road. Only one of these has been erected. An additional storey is in course of erection to the Royal Hotel, in order to supply the growing demands for bedroom accommodation. A landmark has been removed in George IV. Bridge by the demolition of the County Buildings, to make room for the new and more commodious premises required for county administrative work.

From Glasgow the news is more favourable, the various trades connected with the building industry in this district being described as in a very satisfactory condition. It will be remembered that early in the year the operatives connected with one of these trades submitted gracefully to a small reduction in their standard wage. Those connected with another resisted a demand made by their employers for a slight reduction, which caused a cessation of labour to some extent for some weeks in that trade. But as a large number of the employers had contracts which had to be completed to enable

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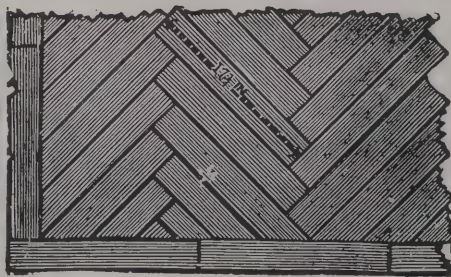
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the premises to be occupied at the term of Whitsunday, and as the Exhibition buildings were in the hands of a large number of the operatives of that trade, a cessation of labour at which could not be thought of at the time, the result was that the short struggle terminated in a nominal victory at least for the operatives, although reductions in many instances have since taken place, and the standard rate in the trade is not altered. During the past year there has not been so much dwelling-house property of the tenement class built as there was for some years previous, but a considerable amount of villa and cottage property has been built in several of the suburbs, which has been well taken up, and in many cases has changed ownership at remunerative prices to the builder, notwithstanding the high prices paid for building materials, and there are good prospects of the demand for this class of property continuing for some time yet. In the period a considerable amount of warehouse and office property has also been erected, but there are ominous indications that the supply of this class of property is at present somewhat in advance of the demand, notwithstanding there are some important contracts in preparation. The railway extensions which have been in progress for the last two years, and are still going on, have had a good effect in keeping the operatives employed, and these are by no means exhausted yet, but will employ a large number throughout the present year. The Corporation as improvement trustees have also some large contracts in preparation as well as in progress, and all things considered, those engaged in those trades may look forward with hope as well as back with pleasure.

An unusual number of buildings of a public or semi-public character are at present in course of erection or have just been completed in the burgh of Ayr. Chief among these is the new town-hall, which is being reconstructed on the old site from designs by Mr. J. K. Hunter, architect, Ayr, at a cost of about 10,000*l*. A new theatre, the first real theatre that has ever been in Ayr, with all modern improvements, is being erected for a company on the site of a previous wooden structure in Carrick Street by Mr. J. McHardy Young, architect, Ayr, at a cost of over 7,000*l*. The structure is of red brick, and it has been set back with a view to the eventual widening of the whole street. A new drill hall and headquarters for the 2nd Volunteer Battalion Royal Scots Fusiliers has been commenced at the south end of Alloway Street from designs by Mr. James A. Morris, architect, Ayr. The drill hall, when completed, will be 96 feet by 50 feet, and will be the largest hall in Ayr. The

structure includes an armoury for 300 rifles, a gymnasium, a reading-room, a billiard-room, an officers' mess-room, a sergeants' mess-room, ladies' and gentlemen's cloak-rooms, artists' room and platform. A very handsome block of buildings is being erected in High Street for the British Linen Banking Company, whose present premises are in Newmarket Street. The building occupies a site nearly opposite the Union Bank of Scotland. A large addition to the Ayr Corporation electric-light and electric tramways station in Mill Street is nearing completion. This includes a large suite of offices and committee-rooms, while the accommodation for engines and boilers has been doubled. A large new church is being built in Midton Road, to be known as Trinity United Free church, for a congregation who have been for some years worshipping in a hall on the same site. The hall will form part of the church buildings. The Glasgow and South-Western Railway Company have in hand in the vicinity of Newton-on-Ayr station the installation of a complete set of plant for the manufacture of oil gas for the lighting of their railway carriages, to obviate the necessity of having to supply the light from Glasgow. The buildings have been completed, and the erection of the machinery and plant nearly so. The new iron railway bridge for the same company across the upper end of Ayr harbour, and giving access to the south side of the harbour and the Ayr shipyard is being finished, and will soon be ready for traffic. A large new shoe factory for Mr. Andrew Greenlees, Maybole, has been erected in the neighbourhood of Newton-on-Ayr station, and is now in operation. In addition to these, a large number of dwelling-houses, comprising villas and blocks of superior workmen's dwellings, are being erected in all parts of the town, where there is vacant ground, and especially in the Craigie district.

In Leeds the building trade has been fairly active—thanks largely to the extensive operations in and around Briggate, which are gradually transforming this well-known street into something architecturally presentable. Among the contracts recently completed are the County Arcade and thirty-five shops in Queen Victoria Street, while on the opposite side of Briggate a new street is about to be made. Among public buildings being re-erected are the School of Art and the Women and Children's Hospital. Another large undertaking is the building of the new Roman Catholic Cathedral in Cookridge Street, just beyond the present cathedral at the top of Park Row, which has been purchased by the Corporation, and is to be demolished in order to do away

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with an awkward curve in the tram route at the junction of the two streets. The speculative builder has hardly been quite so active during the past twelve months as in some recent years, the number of houses erected—about 2,000—being considerably less than in the year before. With regard to the sudden rise of scores of handsome shops in parts of the city which have hitherto been regarded as lying just outside the rather narrow shopping area, considerable curiosity exists as to whether it may not be found that there has been some unwise speculation.

Quietude has characterised the trade in Halifax throughout the year, but still things have been a little more brisk than in 1900 in regard to cottage property. Very few workshops or factories have been built these last two or three years, but house property will have to remain quiet for some time yet unless it is built in really good positions. There is a great number of houses to let just now in the town. Competition is very keen in this district, where work is to let by tender, which is a proof that the building trade is bad, and there is not much prospect of it being better for a little time. Building materials, such as stone and some kinds of wood, are a little cheaper, but other materials are about the same. The principal works now in progress are the following:—Additions to tram dépôt; Board schools in Battinson Road and Haugh Shaw; houses on the Mayfield Estate, in Victor Terrace, Rothwell Road, Wyvern Place, Albert Road, Spring Hall Lane, Greenroyd, and at King Cross, Wheatley, Trimmingham, &c. There seems to be a feeling abroad that the Corporation will have to considerably modify the by laws with regard to cottage building before much more house property is erected.

In Bolton, if not quite so numerous as in 1900, the number of buildings erected during the past year is by no means discouraging, and that of the mills which have been erected, or are nearing completion, with the numerous extensions to existing factories and warehouses, implies a healthy state of affairs in the local textile world. One feature of the year's building operations is the amount of work executed or in course of execution for the various religious denominations in the town. The new church of SS. Simon and Jude has been completed and consecrated, the Victoria Wesleyan church schools in Grecian Crescent have been transformed, a new place of worship is being erected in Beverley Road for the Independent Methodists, and a new Wesleyan church in Chorley New Road is contemplated. Messrs. Potts, Son & Hennings are responsible for designs of many churches, &c., including the new Independent

Methodist church and schools, in Beverley Road, Bolton, for the trustees. The church will hold about 400 persons and the schools about 500 scholars, the cost of both church and schools being about 4,000*l.* The contract has been let to Messrs. Atherton & Norris, builders, Bolton. The new day and Sunday schools for the Victoria Wesleyan church, Grecian Crescent, two storeys high, will accommodate 854 scholars for day school purposes. The cost will be about 6,000*l.* The work has been entrusted to Messrs. W. Townson & Sons, Ltd. Plans for a new Wesleyan church situated on Chorley Old Road, adjoining present schools, have been prepared. The seating accommodation will be 650, and the cost about 5,500*l.* A large proportion of the architectural work of Mr. John Ormrod, has been executed out of town—at St. Annes-on-Sea and near Prescott. Buildings in Bolton district comprise the following:—Extensive additions to Messrs. Hodgkinson & Gillibrand's hosiery works, whereby the capacity of the works has been almost doubled. The Park Mill Spinning Company have raised their No. 1 mill one storey, making this five storeys in height; a large water tower has also been built over a portion of No. 2 mill in Gaskell Street, whilst a four-storey warehouse is now in course of erection, &c. Messrs. John Morris & Son have designed for the Bolton Corporation tramways committee new car shed, waiting-room and caretaker's house, Chorley New Road, Horwich, which was completed last July. It is a large and handsome block of buildings, and the shed will accommodate eight cars. The waiting-room adjoining is well lighted and fitted with seating all round. The inspector's house communicates with the waiting-room and faces Chorley New Road. Amongst the work in hand or completed during 1901 by Mr. R. Knill Freeman, diocesan surveyor, Bolton and Manchester, is the new church and schools of St. Simon and St. Jude, Great Lever. The schools were completed in 1900, and were opened early in the past year, and the church is now completed, and was consecrated on November 5 by the Bishop of Manchester. The accommodation provided is for between 600 and 700. The church and schools group well together, and provide ample accommodation for the spiritual wants of the neighbourhood. The completion of the Corporation Baths, High Street, has from various causes been delayed, but recently more rapid and satisfactory progress has been made. They will be opened to the public early in the present year, and when completed will provide full and up-to-date accommodation for the district in which it is placed. Other works by



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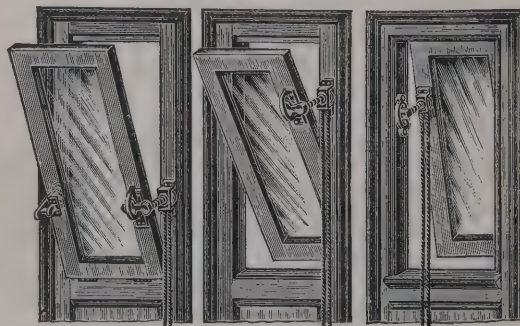


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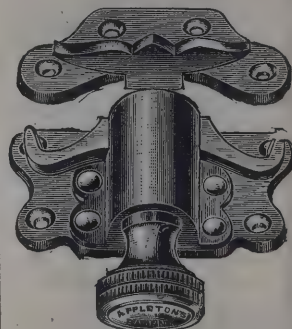
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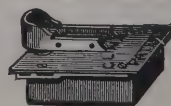
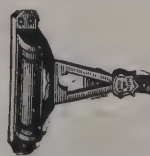
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Mr. Freeman comprise alterations and additions to St. Stephen's and All Martyrs schools, Lever Bridge; a new cookery school in connection with Markland Hall school; parish schools, Farnworth; St. Matthew's schools, Little Lever, &c.

To some of the important business concerns in the district additions have been made by Messrs. Bradshaw & Gass Messrs. T. M. Hesketh & Son, Ltd.; Messrs. John Harwood & Son; Messrs. Walter Mather & Co., Ltd.; Messrs. Ormrod, Hardcastle & Co., Ltd., and other business firms have had building done, and Messrs. Robt. Entwistle & Co., Ltd., have much extended their weaving shed and built additional warehouses. Mills, &c., have been erected at Oswaldtwistle, at Stalybridge and at Leigh. Other manufacturing concerns in the Bolton neighbourhood have also made extensions. At the Corn Mill, Spa Road, Messrs. John Jackson & Son are building a large new warehouse, and Messrs. Fletcher, Burrows & Co.'s new coal offices, stables, &c., in Dawes Street have been completed. Among the shop premises of which Messrs. Bradshaw & Gass have been architects are the large extensions of Messrs. Constantine Bros., Deansgate and Bridge Street, the size being practically doubled. In Bradshawgate, Mr. Jonas Proctor has erected new shops and offices on the site of the old district bank. In domestic work additions have been made to several houses. Brierfield, Sharples, the residence of Messrs. Herbert & Walter Mather, is being much enlarged; and at Vale Bank, in the Haulgh, Mr. Thomas Fallows has had enlargements and alterations; whilst at the Beeches, in the Haulgh, Mr. A. Greenhalgh has built an exceptionally fine music-room, and has probably the largest private organ in the district. At Turton Mr. Waddicor has built a new residence and the warehouse for Messrs. Waddicor & Co. has been completed.

### BIRMINGHAM IN LONDON.

NOT many years have elapsed since Holborn presented so dull an appearance as to justify Charles Dickens when he fancied a megatherium or other ancient beast waddling up Holborn Hill. The hill has vanished, and with the Viaduct which took its place a new spirit seems to have come into what was a long unlovely street. It is now as varied in its architecture as any other great thoroughfare, and, what is more remarkable to those who were acquainted with Holborn in the old days, every shop-window endeavours to display goods to the greatest

advantage. The extent of the innovation can be judged by a few survivals which recall the time when Holborn lived by permanent customers, and was indifferent to those who could be attracted suddenly by some article which met their gaze.

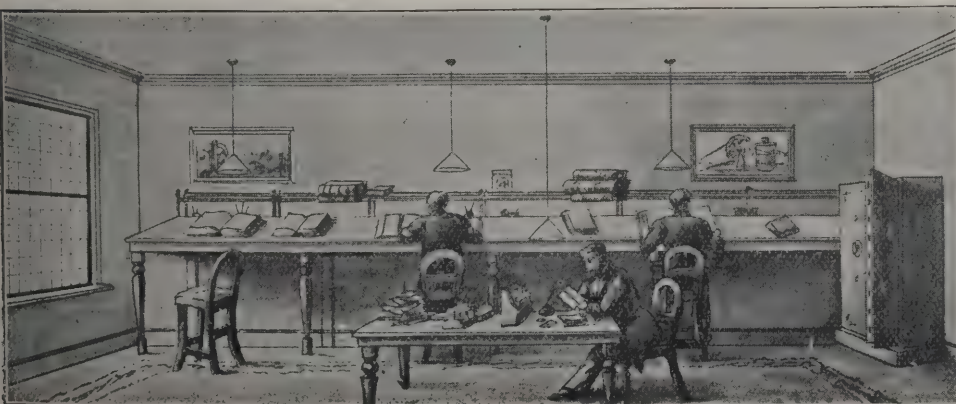
In No. 54 High Holborn we have a building which unites past and present. Standing nearly opposite Chancery Lane, it is in the most frequented part of the thoroughfare, but in the two great windows there is nothing to draw the attention of those who pass by. It might be a bank or an assayer's laboratory, an insurance office or a sharebroker's on a large scale. But from its plainness and indifference to external adornment it must have secured attention from students of what may be called the physiognomy of London buildings. The only indication of its purpose is the inscription over the doorway, "Nettlefold & Sons." The observer may say to himself, "Screws!" and wonder, if he is not engaged in construction, why so simple an article should have a building with so large a frontage devoted to it.

England is the country of specialists, and those who are fortunate in gaining an association of their name with any kind of production have to pay the penalty imposed by the law of compensation of being supposed capable of producing nothing else. Screws, no doubt, are an important item in the business of the universally known Nettlefolds, but as we shall see there is much else to be found at No. 54 High Holborn of a different class. It is a conventional description of a well-filled ironmonger's shop to say that everything from a needle to an anchor can be found in it. But the variety of metalwork, and especially of general and builder's ironmongery, is so multifarious in No. 54 that the premises can be characterised without exaggeration as Birmingham in London. Nowhere else to our knowledge is so vast a collection to be found of Birmingham productions of the best class. There may not be work in the precious metals, including jewellery, but in much of the brasswork we can see the qualities of design which are to be found in more expensive articles. It should also be clearly understood that the art is not that which was once known as "Brummagem." The people in the Midland capital have realised that if they are to hold a position in the markets of the world they must compete with Germans, Frenchmen and Americans not only in cheapness, but in beauty of forms and surface decoration. The success which has been attained since the emancipation of the schools from South Kensington influences is exemplified in many of the cases which are to be seen in the Holborn house of the Nettlefolds.

## WILSON'S PATENT "MULTILUX" WINDOWS



The above illustrates an office where the light coming from the sky falls on to the floor and is absorbed, thus leaving the back part of the room dark. The illustration below shows the same room with WILSON'S PATENT MULTILUX WINDOW fixed. This refracts the rays of light, and throws them horizontally, thus preventing them falling on to the floor, and lighting up the whole room.



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As we have remarked, the exterior of the building is unpretentious, but the extent of the premises is surprising for London. Without a large area it would be impossible to arrange articles which to the stranger appear to be countless in their variety. The highest quality of method is supposed to be exemplified in having things in their proper places, and a student of philosophy would find a practical illustration of Coleridge's definition by a walk through the various departments. There is one catalogue, for instance, which contains over 9,000 items. Each of these has some peculiarity which claims attention, and each has its local habitation and its name. Now, if we multiply those articles by the dozen or by the gross we may obtain some notion of the system which must preside over the everyday business that has to be carried on in the various departments. To those who pass in front of the building, and to the practical purchasers who do not expect to be delayed a minute before obtaining what they require, Nettlefolds may appear as only a shop, but it should be regarded as an emporium in which everything that is most useful or most pleasing in builder's ironwork is represented, and all who may be desirous of specifying or ordering the latest products in various classes can satisfy themselves by a reference to the contents of the cases. Nettlefolds, in fact, can be compared with the London Directory, an encyclopædia, or one of the great dictionaries, as a treasury which can be consulted with the conviction of finding whatever is sought and in the best form.

With so large an area to deal with, top-lighting has to be adopted. It has the advantage of allowing of the arrangement of divisions relating to different classes of work. A visitor who is pressed for time has only to mention his requirements and he can be at once conducted to the room where the articles he requires are exhibited. For instance, lock plates, knockers, bell levers and ornamental door furniture of many forms can be compared almost at a glance and a selection made with the utmost facility. The only drawback is that where so much which is well made and well formed is placed before the eye, choosing sometimes becomes a difficult operation. People who imagine that it is necessary to employ a "craftsman" in order to obtain a beautiful example of brass-work on a small scale will be disillusioned, for much of what is to be seen is of a character that would command a place in any exhibition of metalwork.

There is, as we have said, a profusion of all classes of goods which are comprised under the familiar head of "builders'

ironmongery." Patented inventions abound, such as sash-fasteners, blind furniture, spring hinges (of which the "New Idea" is a noteworthy example), draught excluders, floor springs, door springs, fanlight openers, panic bolts, locks of all sizes and descriptions, American as well as English, latches, ventilators, &c. One room is assigned to "black goods," which in a builder's eyes are of great importance. Both cast-iron and malleable cast goods are available. Sanitary ware, baths and all appliances conducive to health can also be examined. Then there are builders' tools, forge fittings, &c. In fact, Nettlefolds can supply aids for all the stages of building construction, as well as the articles in metal which are necessary to insure pleasing and satisfactory buildings. The premises form an industrial museum in which modern work of the best classes is brought together. The name of the firm is a guarantee of the quality of their own manufactures, but after going through the departments in No. 54 High Holborn the visitor will conclude it is no less a guarantee of whatever is selected, and the appearance of another manufacturer's goods anywhere on the premises is to be taken as evidence of excellence and fitness for use. For that reason architects and builders, by visiting Messrs Nettlefolds' London building, can be saved the loss of time and trouble often involved in the search for appliances which hitherto were only to be seen far apart in London. For in Holborn they will be found to be brought together, and can be inspected with as much convenience as if they were collections in an industrial museum.

This firm has lately introduced several novel lines in door furniture of Japanese design, make and finish, and those who know how our friends of the Far East turn out their goods will not be surprised when these are described as something unique and beautiful.

#### A NEW TIDAL WEIR AT GLASGOW.

THE tidal weir on the Clyde at Glasgow Green, the construction of which has occupied a period of close upon, if not quite, seven years, has now been completed, and its formal inauguration took place on Saturday last, the ceremony being attended by a large number of members of the Corporation and representatives of the Clyde Trust and other public bodies. Precisely at noon, in extremely inclement weather, Lord Provost Chisholm lowered the sluices and formally declared the weir open. The structure is the fourth which has been erected on

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the river for the control of the up-stream waters, its predecessors, each of which was in turn removed, being situated respectively on the west side of Jamaica Bridge, at the old bridge at Stockwell Street, and about 140 yards above Hutesontown Bridge. The last of these was demolished in 1884 under the idea that its removal would facilitate operations in the river, and would result in at least a diminution of the dredging necessary. The step, however, resulted instead in disaster, great and costly inroads taking place upon the banks of the river, and serious injury to the navigation arising from delay of the tide, formerly impounded by the weir, passing without interruption into the higher reaches of the river, and the enormous quantity of material from the bed and banks of the river which was carried down into the harbour. These considerations, among others, induced the Corporation in 1894 to obtain an Act of Parliament to empower the re-erection of the weir on its former site, but on a different design, the distinctive principle of which is the removable character of the three ponderous gates that form the dam. These travel in delicately adjusted guides on roller bearings, under the control of equipoises, which enable each gate to be moved with perfect facility, a mechanical arrangement which was the invention of the late Mr. F. G. M. Stoney, M.Inst.C.E., of the firm of Messrs. Ransomes & Rapier, Ltd., Ipswich and London, the contractors for the superstructure and the working parts of the weir. The original arrangement between the Corporation and Messrs. Ransomes & Rapier was that the construction of the weir should be carried on in cofferdams, in the same manner as had been adopted in erecting a similar weir on the river Thames at Richmond, and a commencement was made in this manner, but the first cofferdam was wrecked by an exceedingly high flood on December 5, 1895, and the condition of the bed of the river was so seriously changed by the down-rush of 11 feet of storm-water, travelling at a velocity of eight miles an hour, that it was resolved by the Corporation, after consulting with Sir Benjamin Baker and Messrs. Ransomes & Rapier, Ltd., to adopt another method of construction for the foundations and piers of the weir. In accordance with the new plan suggested by Sir Benjamin Baker, a curtain wall of concrete enclosed in steel caissons has been constructed under pneumatic pressure across the whole width of the river, to provide a secure rest for the abutments, piers and sill of the weir. This curtain wall, 30 feet in depth, has been with great difficulty carried down through the foundations of the old weir. The work occupied

of necessity a very long time, but it was eventually accomplished in the most satisfactory manner, each separate caisson being tested in position by a load of 1,400 tons of iron before the erection of masonry was commenced, so as to insure beyond possibility of doubt that no movement of the superstructure could hereafter take place. This part of the work was carried out by Messrs. Morrison & Mason. The motive power for raising and lowering the sluices is supplied by hydraulic energy from the Corporation supply. It is expected that the effect of the weir will be the maintenance of continuous high water in the upper reaches of the river, as it is not intended to raise the sluices during the ebb tide unless an undue volume of flood water renders that action necessary. In addition the restoration of the stability which the new weir provides is expected to arrest the decay of the river margins, and reduce the expenditure that would otherwise be needed for their preservation. A separate result will be the restoration of the opportunity for boating. Much advantage it is further anticipated will accrue to navigation on the river, the loss to vessels of a foot of depth all the way to Greenock, which has existed for the past fifteen years, being now removed. The cost of the weir was estimated at 45,000*l.*, but this sum has been very considerably exceeded.

### NEW ACADEMY AT IRVINE.

A NEW Academy which will prove an important addition to the educational resources of Irvine, N.B., was opened by the Earl and Countess of Eglinton on the 27th ult. This building, which has been erected by the Burgh School Board at a cost of about 13,000*l.* or 14,000*l.*, occupies the site Irvine's old Academy formerly stood on at the south end of Irvine Moor, and is one of the most completely furnished educational institutions in the West of Scotland. On approaching it from the north one cannot help noting the imposing appearance and massive look the building possesses, as it seems to guard the town moor and to give a finish to this long stretch of level green with its walls of red Ballochmyle sandstone. It is much higher and larger than the old building, but at the same time bears a resemblance to it in outward form. In the interior the school has been designed on the corridor system, so as to give the maximum amount of teaching space, and everything possible has been done to secure the comfort of pupils. So far as classrooms go,

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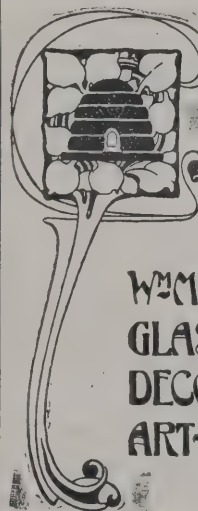
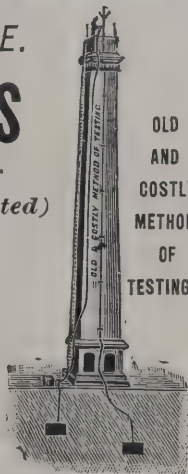
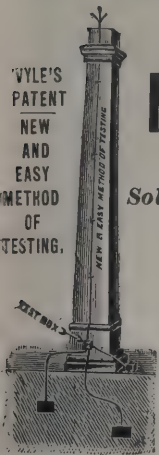
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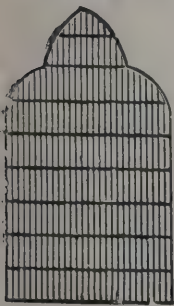
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the school has roughly been divided into two sections, those on the lower floor being devoted to the teaching of ordinary subjects, while the upper storey has been furnished in a most complete manner for the conducting of technical and higher branches of study. The building has been constructed after the Grecian style of architecture, and great care has been taken to secure as much light as possible, and, where possible, to secure that light from the side rather than from the back or front. Amongst the special features possessed by the school must be included the gymnasium and workshops, which form a separate building on the site of the old archery butts, and which, like the other departments, are fitted up in the most complete manner.

### ELECTRIC LIGHT AT MAIDSTONE.

MAIDSTONE wore an unwonted air of brightness on the evening of the 19th ult., when the electric light, which has been installed in accordance with a scheme devised by Messrs. Stevens and Barker, was switched on by Mrs. Edmund Morgan, the wife of the deputy-mayor, who is chairman of the electric-light committee. The cost of the installation, which has been excellently carried out, amounts to some 40,000*l*. The contractors for the various sections of the work were as follows:—Buildings and shaft, Messrs. G. E. Wallis & Sons, Maidstone; steam dynamos, balances and boosters, Messrs. Thomas Parker, Ltd., Wolverhampton (Messrs. Davey, Paxman & Co., Ltd., Colchester, sub-contractors for engines); boilers, Messrs. Davey, Paxman & Co., Ltd.; surface condenser, Messrs. Cole, Marchant & Morley, Ltd., Bradford; switchboard, Messrs. Kelvin & James White, Ltd., Glasgow; storage battery, the Chloride Electrical Storage Syndicate, Ltd., Manchester; travelling crane, Messrs. Carrick & Ritchie, Edinburgh; underground mains and arc lamps and posts, Callender's Cable and Construction Co., Ltd., Erith; pipework, Messrs. Aiton & Co., Willesden Junction, London, N.W.; electricity meters, General Electric Co., Ltd., London, E.C. The total amount of the contracts, with the exception of the buildings and shaft, was 28,733*l*.

A feature of the inauguration was the illumination of the exterior of the works by a festoon of lights, fixed and completed within one hour. Altogether 450 lamps were used in the decoration. The work was undertaken by the Electric Lighting Boards, Ltd.

### HOUSE DRAINAGE DEPARTMENT, MANCHESTER.

THE ratepayers of Manchester, in common with those of other large towns, seldom display great interest in the details of municipal government. Comparatively few people, for instance, says the *Manchester Guardian*, have any idea of the extent of the operations of the sanitary committee of the City Council, with its eight or nine sub-committees, each having its own well-defined duties. The house drainage sub-committee is little known—save perhaps to property owners and their agents, to whom the knowledge has been brought home in a very practical and effective manner. Yet this department has been in existence, as a branch of municipal enterprise, for nearly six years. It was formed in April 1896 for the purpose of carrying out a certain class of work for which, nominally, the sanitary committee and the paving and highways committee were jointly responsible, but which, as a matter of fact, was then often neglected. It was another example of the unhappy results of a system of dual control.

The new department found no lack of work coming to its hand. According to a report presented in January 1898 by the manager, Mr. H. Prescott, the department was immediately deluged with work that had been standing over for months, and even years. At first there were only three inspectors, but it was soon found necessary to appoint two more, and now there were seven inspectors at work in the city under Mr. Prescott's directions, while in the offices of the department at the town hall a staff of eight clerks are engaged. The need for organised effort in dealing with the important matter of house drainage was amply proved by some facts and figures which were put forward by Mr. Prescott in the report in question. Of the drains examined by the inspectors 95 per cent. were found to be defective, while fully 80 per cent. were described as being in a "deplorable" condition. Of the orders of the sanitary committee executed up to that time by the House Drainage Department, over 35 per cent. originated through death, fever, or other sickness on the properties concerned. During the past few years the work of the department has grown steadily. In the financial year ending March last a sum of 26,903*l*. was expended on repairs, this being 1,205*l*. more than the amount so expended in the previous year. The total cost of work done between April 1896 and March 1901 was 125,774*l*. The actual working

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expenses of the department are most reasonable; they amount to something like 4 per cent. of the expenditure. Some idea of the extent and nature of the operations of the inspectors may be gathered from the fact that last year the number of houses dealt with was 5,258, and the number of business premises and public buildings 894, a total of 6,152. All this work—and it is work of the soundest and best character—cannot fail to have some little effect in the direction of improving the drainage of Manchester. That there is considerable room for improvement cannot be doubted. In the course of their duties the inspectors have made some remarkable discoveries. "Butt-ended pipes," without sockets, were found to be common, and so, as a consequence, were cesspools under dwelling-houses. What was described at the time as "a perfect death-trap" was brought to light recently beneath a refreshment-house quite in the centre of the city. It was a pool 17 feet deep, which had been lost sight of for many years, and its existence of course was at the time of its discovery quite unknown. The department in carrying out repairs insist upon the best material and the most efficient appliances being used. "Butt-ended pipes" are not tolerated; all new pipes must be socketed and must have proper cement fittings. The whole of the work is done by contract, according to fixed schedules of prices. At the Town Hall there is set out an interesting little "museum" containing full-sized specimens of work executed according to the department's specification and requirements. Here in effect contractors are shown a standard which they are expected "to live up to," and as a warning and an example to them there are also preserved specimens of work which would not now be tolerated—glaring examples of what can be done by careless and incompetent persons. For a time there were kept upon the premises certain strange curiosities in the way of drainage appliances which had been brought to light by the inspectors, but these became so numerous in the course of time that the interesting collection had to be dispersed. For the purpose of contracting, it may be mentioned, the city is divided into six districts, or rather into three districts—the north, central and southern portions of the city—each of which is in turn subdivided.

The department's system of working may be briefly described. When a nuisance is reported to the sanitary department, notice of fourteen or twenty-one days is served upon the owner of the property or his agent by the superintendent. If the necessary work has not been executed at the expiration of the notice one of the sanitary inspectors visits the property

and submits a report, and then the case is referred to the house drainage department. The next step is to issue a notice to the owner or agent that the Corporation is about to proceed with the work. If this is not effective the house drainage department, after a brief interval, instructs its contractor for the district in which the property is situated to remedy the nuisance. The repairs are carried out under the close supervision of one of the inspectors, and when the task is ended—before the work is covered up—the inspector thoroughly tests the drains (by means of the water test), measures up the work and submits an exact account of it to his department. He has previously reported upon the structural condition of the buildings, he has also prepared the necessary plans and has marked upon the Ordnance map the course and condition of any new drains. The department having received the inspector's final certificate, thereupon pays the contractor and forwards the bill to the property owner. If the bill is a large one and the owner is not able to pay it at once, he is allowed to extend his repayments over a considerable period, being charged interest at the rate of 5 per cent. until the account is discharged. The charges under the contract system are moderate, and the inspectors see that the work is well done. It is satisfactory to learn that complaints from property owners are practically unknown. On the contrary, owners are constantly requesting the department to execute work for them on signed orders, and many property owners and estate agents declare that they prefer that the department should take necessary repairs in hand. The inspectors are carefully selected. They are all trained men, and before they are appointed are required to pass a technical examination in the duties which they will be called upon to perform. The list of questions recently submitted to a candidate for the office of inspector is interesting as showing the nature of the work of the department. The candidate was asked to describe his method of laying new pipe-drains and jointing and testing them. He was requested to distinguish between a combined and a separate system of drainage, to define a single private drain, to state what kind of mortar he considered best for brickwork underground, and to enumerate the defects usually to be met with in house drainage. He was shown a complicated plan of drainage work, and was asked to indicate the portions repairable by the property owner and by the Corporation, and, finally, he was called upon to describe the precautions which should be taken in laying a drain through treacherous and water-logged ground. It will be understood from what has been written

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that the House Drainage Department is organised upon business lines, and that it carries out its important duties in an efficient and satisfactory manner.

### ELECTRICITY AT MANCHESTER.

A MEETING of the electricity committee of the Manchester Corporation was held on the 23rd ult. The chairman (Dr. Bishop) presided. It was announced that the second of four engines, each of 3,000 horse-power, for the new generating station at Bloom Street had been completed and set in motion during last week. As a result the department is enabled to increase the supply to its customers to the extent of upwards of 50,000 candle-power lamps. The committee had under consideration the question of tenders for the provision of twelve boilers, with coal economisers and feed-pumps for the supplementary installation, equal to 12,000 horse-power, designed by Mr. Metzger, the chief electrical engineer, for the station at Stuart Street. It should be stated, in regard to the tenders for boilers, that an advertisement, with specifications, was prepared by the committee on November 8, and that the advertisement was inserted in the electrical engineering papers on their next issue, November 15. It also appeared in some other newspapers on the same date. It was requested that tenders should be in before noon on December 4. Between November 15 and that date, however, the chairman, the deputy-chairman (Mr. Hesketh) and the engineer discovered that the specification stated that "each boiler is to be fitted with Babcock & Wilcox's superheater, having a heating surface of 509 square feet," and that words which should have followed—"or other approved type"—had been omitted. It was obvious that the clause, as it stood, restricted competition, and it was resolved by the committee not to open the tenders which had come in, but to issue fresh specifications, leaving out entirely the names of Babcock & Wilcox. The clause, in its amended form, read, "each boiler is to be fitted with a superheater, having a heating surface," &c. The amended specifications were issued on December 7 to all persons who had applied for copies of the original specifications and had paid the customary deposit of 5 guineas, free of charge. The error was pointed out to them, and they were asked to tender afresh, and to revise their tenders if they thought necessary. The tenders received have been adjudicated upon, and the committee recommend the Council to accept that of Messrs.

Babcock & Wilcox, as being absolutely the lowest tender. With regard to automatic stokers, the original specification stated that "the stoking-gear is to be of the chain-grate coking, or other type," so that no limit was placed upon contractors, who were at liberty to use whatever type they thought proper. The committee recommend that the contract for coal economisers shall be placed with Messrs. Green, of Manchester, and that for feed-pumps with Messrs. Blake & Knowles, of London. These contracts will come before the City Council for approval or otherwise at the next meeting in the present month.

### THE INSTITUTION OF CIVIL ENGINEERS.

THE second general meeting of session 1901-2 of the Glasgow Association of Students was held in the Institution rooms, Bath Street, on the 23rd ult., the president, Mr. C. C. Lindsay, in the chair, when Mr. Jas. Conacher read a paper entitled "Notes on Design of Small Span Bridges." In the course of his lecture Mr. Conacher summed up the various causes of vibration in railway bridges which produce a resultant action, which will lie somewhere between one and two times the action of an equivalent dead load, and proceeded to quote the opinion of many eminent engineers expressed at a meeting of the Institute of Civil Engineers about two years ago, when the effect of a moving load on bridges was discussed. Summing up all these opinions, he came to the conclusion that some allowance to cover the effect of impact and vibration should be added to the live load, and that, as Sir Benjamin Baker had pointed out on that occasion, deflection is no test of the maximum stress in a girder as it may be initially stressed. The opinion of several authorities was then given as to how much this percentage of live load to be added should be. The general design of bridges was next considered, the author dealing specially with the important question of the strength of cross girders and their connections with main girders, and the respective advantages of the different types of trusses commonly employed in main girders. The author strongly favoured the use of single systems. Proceeding next to the question of the connections between diagonals and booms in trusses, the disadvantages of several types of joints were pointed out and a design of an ideal joint shown. In conclusion, the author strongly emphasised the importance of simplicity in design, with a careful consideration of details, without which no design could be thoroughly efficient. An

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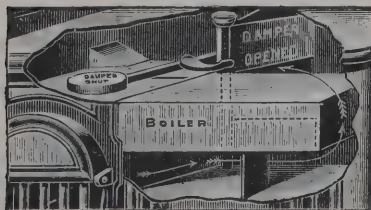
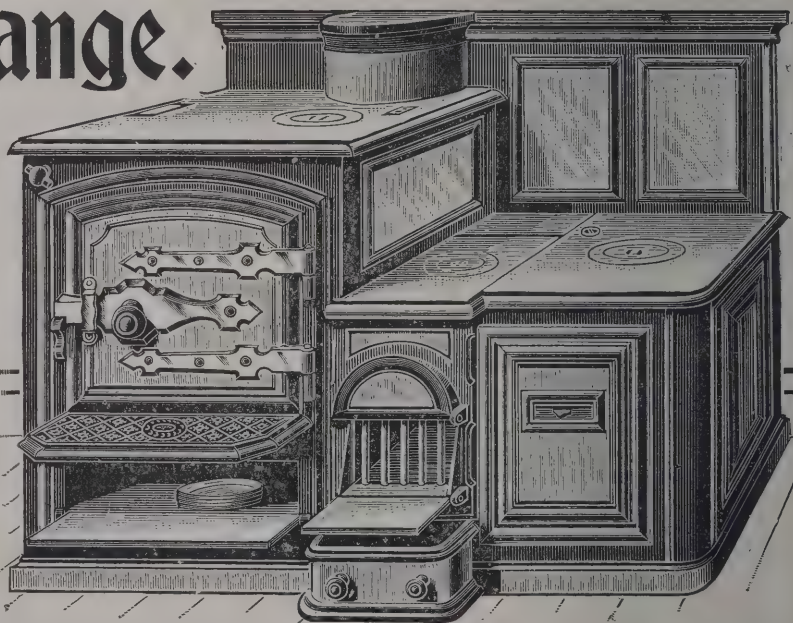
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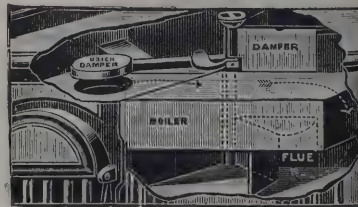
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A Fire Brick Dome and damper is fitted over the fire, which enables the heat to be concentrated at pleasure on the hot plate or boiler, the waste heat of either passing under the other, thereby utilising what is usually lost.



The above shows the heat of the fire concentrated on the hot plate and the waste heat passing under the boiler.

The casing and oven door are lined with slag wool and a third oven can be arranged if required



interesting discussion followed, and a hearty vote of thanks to the author terminated the proceedings.

### AMERICAN HIGH BUILDINGS.

THE civil engineering work called for in the design and construction of a modern high building is, says the *Engineering Record*, like all more or less complicated affairs, the result of natural development, but a development in classes of work of far greater variety than is often contemplated. The largest building of thirty or forty years ago involved practically no engineering work of an advanced grade. The foundations were formed of simple masonry walls on footing courses sufficiently wide to produce a pressure which would generally be considered safe in the judgment of a mason. The opinion of a civil engineer was seldom considered necessary, and consequently seldom sought. Although real estate in spots was held at a high valuation, it had not then reached that point of value at which it becomes necessary to go as far heavenward or as deep as possible in the opposite direction to obtain the maximum rental space. Hence foundation loads were in all cases small, and foundation problems had practically not yet arisen. The same general observations can be applied to the superstructure. Simple brick or cut-stone walls, carried to a height of about five storeys at most, required no engineering design; it was simply the work of a mason to build an enclosing wall of moderate thickness, whose carrying capacity would ordinarily be far in excess of the loads to come upon it if laid up with reasonably good mortar. Within these walls were found the simplest arrangements of timber floors, carried either on timber columns, or possibly those of cast-iron, no feature of which, save possibly the cast-iron columns, was ever subjected to any very serious process of engineering design.

All this has been radically changed; the elevator and the steel frame have done their work most effectively. Floors to the number of twenty or twenty-five rise into space, and with their loads are carried on steel frames, which also support the exterior walls. The latter no longer support themselves, for sufficient thickness at the lower floors to perform that function would trench far too largely upon the available floor space of the building. The walls simply serve to protect the interior from the weather, and play the part of curtain walls only. The loads carried by the steel frame include the total weights of the entire structure and its contents above the supporting pedestal

blocks at the bases of the columns. These loads are necessarily enormously heavy. They may be uniformly distributed by devices arranged to accomplish that distribution over a considerable part or all of the foundation site; or they may be concentrated at suitable points where the columns rest, usually either upon pneumatic caissons or upon pile foundations.

The building proper is a piece of structural work involving some of the nicest questions of design in steel. All parts of the metal frame being concealed by the interior and exterior finish of the building, there is absolutely no evidence of the amount or quality of thought and care expended upon the disposition of the steelwork in order to meet the exacting demands of good design in the most effective and economical manner. This class of engineering work has always been considered of an elementary character, as it involves only rather simple combinations of beams and columns constantly under similar conditions. While this is true in many cases, as a matter of fact there are some questions involved in the design of columns for high buildings which have not yet been treated in a perfectly satisfactory manner. Whether the columns are cast-iron or of built-up steel sections, the loads which they carry are seldom or never applied at the centres of column section. The ends of the rolled or built beams which convey loads to the columns usually rest upon cast-iron brackets, or are bolted to cast-iron columns, or finally they may be rivetted to steel columns. Even in the latter instance they can seldom reasonably be considered as centrally applied. This is a point which rarely receives the attention which it deserves. Occasionally a detail equivalent to a diaphragm between the two sides of a column is employed, but without such a saving device heavy bending will be imposed upon the member designed to carry vertical loads only.

Great niceties of theory have been employed to compute the stresses induced by eccentric column loads. The trouble with such refined processes lies in the fact that the conditions assumed are practically never realised, and in spite of the utmost theoretical care no little stress uncertainty results. The highest grade of engineering design work is required to meet such exigencies, and it must usually consist in the introduction of conditions which avoid the causes of uncertainties and afford a design of unqualified strength and stiffness for a practically central load.

No less advanced engineering work is done in the foundations of these high buildings. Wherever they can be built directly upon rock, as north of about Fourteenth Street in New



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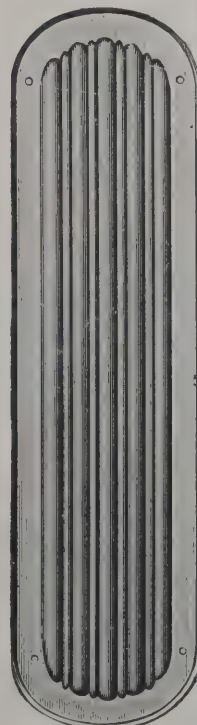
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York city, all foundations are obviously the simplest possible, but in the lower part of Manhattan Island foundation problems arise which call for the most skilful treatment. Although some of the heaviest buildings have been supported in an eminently satisfactory manner on piles or on plates of concrete reinforced in some places by embedded steel, it has become the fashionable method to employ pneumatic caissons. The latest advances in this latter class of work are most interesting. The caissons not only carry the vertical loads, which is their normal function, but they act as dams as well. The row of caissons around the boundary lines of the lot are so constructed and placed as to constitute a watertight enclosure. The result is that the basement volume below the water-level, as well as that above it, may be used for power storage or other purposes. In addition to the Mutual Life building now approaching completion in New York, this watertightness of the caisson dam or enclosure was secured by placing the caissons about a foot apart and then sealing this opening by the process of stock ramming, a considerable amount of clay in cartridges having been used for the purpose. It was a rather novel as well as successful application of the process, but it has rendered available basement space to a depth of about 60 feet below the natural surface of the ground. In the foundation of the Stock Exchange building the rectangular pneumatic caissons placed along the exterior lines of the lot were sunk end to end practically in contact with each other, provision having been made for an oblong well to be filled with concrete, half of which is formed by opposite recesses in the adjoining ends of two caissons. The details of these foundation constructions have been given in full in the *Engineering Record*, and a reference to them cannot fail to impress one with the value of these improvements in building foundations, which constitute a distinct advance in the application of pneumatic caissons to this class of engineering work.

#### A BUILDING CONTRACTOR'S EXPERIENCES.

A WELL-KNOWN building contractor, who has been in business in London for upwards of thirty years, and employs a large number of men, confirms most of the statements which have appeared in the *Times* in regard to the restriction of the quantity of work done by bricklayers and others connected with the building trades; for the evil is equally rife in the carpenters' and masons' shops and among painters and others.

As a rule, the contractor affirms, when a man is under the strict supervision of his society, he does not give half the quantity of work per day that he could and does give, often enough, when he is not conscious of the presence of the society "spy." "Directly that person is away," says the contractor, "you know it by the different manner in which the men go to work. You never know who the spy is, but you feel his presence." As an instance in point, he gave his experience in regard to the putting in of the foundation of a large chimney, when the bricklayers engaged upon it averaged 2,000 bricks per man in the day. Asked if this would not be considered "slop" work, he answered, "Decidedly not." It was careful work, but, being thick work, the trowel could be dispensed with, the bricklayer, after the mortar had been spread on the course, taking a brick in each hand and laying them side by side. Of course this could not be done if the workman would not lay down his trowel, which he often enough would not do if the society spy were about.

The contractor instanced another case in which men doing the best kind of work only recently set from ten to twelve hundred bricks per day. This was on a gentleman's house, at present in course of erection, just outside the London radius, and the average was the one for the whole of the work, not for any inferior portion of it. The contractor accounts for the high average of work in both these instances by the difficulty of society supervision, or, in other words, to the absence of the spy. In the case of the 2,000 bricks per day the work was done in a deep hole, which could not easily be overlooked. In the other case—that of the 1,000 to 1,200 bricks per day—the job is an hour's railway journey from town.

The contractor has invariably found that when a foreman is a man of character and energy, and not afraid of the society, the men will do more work. But if he belongs to the local society, and has not the power of asserting himself, there is no end of dilly-dallying work and time wasting. The method is this: the bricksetter will take up a brick, turn it round, lay it down again, and then handle and examine another in the same way, finally laying it after he has spent time enough over it to have laid, with diligence, two or three bricks. Thus there is a show of work, although it is calculated with the view to waste time.

The building contractor here referred to considers that this evil of restricting work has been greatly augmented during the last ten or twelve years, that is, since the London County Council undertook to do its own work. He cites instances in

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which bricklayers working for the London County Council have laid but from 150 to 250 bricks a day. These cases were brought before the Council by their own architect, and were much commented upon at the time by the trade journals. "But," remarks one contractor, "the apathetic public, who, as the ultimate paymasters, are most concerned, allows the thing to go on, and will, no doubt, continue to allow it until the enormity of the thing brings about its own remedy." He cites instances in which work done by the Council's workmen cost more than double the price asked by a contractor. Curiously enough, a builder formerly under the London County Council, who was present during part of the conversation which elicited the above facts, threw in a confirmatory remark in the following terms:—"That is so. That job which you know my mate did cost 2,000*l.*, whereas the contractors' price was 900*l.*"

The contractor thinks there are signs that the evil is likely ere long to right itself. He holds that much of the evil has arisen from the fact that the trade union societies have been "run" very much in the past by the younger and less responsible members—that is, by the men who have not established homes of their own, and to whom it is life and amusement to attend the society meetings, fight the battles of the union, and feel important. To the older men, fathers of families, with other interests, the bother and turmoil of the societies have been a nuisance, and have, in consequence, had little of their attention. But our contractor now sees signs of a change. The shadow of trade shrinkage is before them, and they are, in consequence, beginning to feel that they must do something to secure themselves when there is not enough work to go all round. The contractor gives an instance—a unique one in his experience. On one of his jobs some bricklayers reported their foreman to the society because he was "badgering" them to give their employer a fair day's work. He was called up before the society, but, when the charge had been heard, it was the men who got the reprimand, not the foreman. To him the society officials offered an apology, telling him he had done nothing but his duty, and that they intended to put a stop to this sort of thing—that is, to the conspiracy among workmen to defraud employers of a fair day's work. They furthermore compelled the workmen who made the complaint to go to their foreman and beg his pardon.

It is worthy of note in this connection that the contractor, while severely condemning the tyranny of the societies and the immoral—because unmanly—practices which they have engendered, is by no means hostile to the trade unions, and

indeed holds that they have, on the whole, done great good. Another point worth mentioning is the fact—strongly attested by the contractor—that the workman in the building trades to-day is superior to his predecessor of twenty years ago in intelligence, education and moral character; but he is under the evil system established by his union, suffers under its tyrannous methods, and does not know how to break away and free himself. The contractor gives one instance of the way in which this tyranny works; it speaks volumes. The best foreman he ever had—one who was determined to do his duty—was, after paying twenty years to his society, defrauded of the benefit of his subscriptions because he was reported against by reason of his determination to have a proper day's work out of his men. Of course, he put himself technically in the wrong by getting a little behind in his payments. But it was because he resisted the union's methods that he became a marked man, and he was in the end driven to adopt another calling.

### VENTILATING AND HEATING.

AT the last meeting of the Edinburgh Architectural Association a paper was read by Councillor Mackenzie on "Ventilating and Heating." The lecturer began by calling attention to the necessity for a full supply of fresh air in the dwelling-house, and pointing out how little this cardinal doctrine was apparently understood, or at least carried out. Incidentally, he mentioned that eight or more persons often travelled in a single compartment of a railway carriage with the doors shut, so that they had only about 245 feet—30 cubic feet per head—and he characterised that as a veritable death-breeding trap. He went on to say that some of the sleeping berths of the London trains, where a person was locked up for eight hours, were almost as bad, and that all that took place whilst authorities alleged that a healthy adult in repose required 2,000 cubic feet of fresh air for healthy breathing. Mr. Mackenzie's strongest indictment, however, was made against the want of fresh air in the dwelling-house, and more especially in the bedroom, which most people thought should be as closely secured against any incoming air as it was possible to make it, and he was persuaded that more consumption and other diseases were contracted through foul air in bedrooms than in any other manner, by the lowering of the vitality of the body and making it a fit breeding-place for all kinds of infectious and other diseases. He next adverted to the venti-

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lation of churches and public buildings, and while admitting the desirableness of good ventilation in these, expressed some surprise that so much should be made of having to sit for one hour and a half in the week in a polluted atmosphere in the church when no objection was taken to sleeping seven hours per day in the poisonous atmosphere of the unventilated bedroom. He did not think the lower classes were much more to blame than the classes above them, as he often found the most deplorable want of education on this subject among educated people. Crowded schools should be as thoroughly ventilated as possible by mechanical means, and it was not there, he said, that economical ideas of cheapness should be entertained. Passing on to the second portion of his subject, namely, heating, he expressed his very strong partiality for the open fire as the cheeriest and the healthiest means of heating and promoting ventilation. He admitted its want of economy as compared with the close stove, but with all its drawbacks he put the open fire first. In large rooms he would supplement the open fire by fixing hot-water radiators where most suitable, but condemned altogether the hiding of hot-water pipes or coils in cases or behind screens, where they could not be regularly cleaned. Putting the open fire first, Mr. Mackenzie put the gas-stove without a chimney last. That, he thought, was the worst possible means of heating. A gas-stove, vomiting out poisonous fumes into the atmosphere of a room, was nothing else than a poison manufactory, and should be prohibited by law. The fact of such a stove not giving off an offensive smell only added to the danger from the apparatus. He pointed out that when gas was burned carbonic gas must be given off, which, although not directly a poison, did not support life, and polluted the air. He went further, and said that often from imperfect combustion carbonic oxide—a most deadly poison—was generated, the effects of which had often proved fatal. He believed gas had a great future before it as a heating agent, but he trusted that effectual means would always be taken to get rid of the fumes. Passing on to deal with the principle on which hot-water heating was carried out, Mr. Mackenzie explained from a cartoon how, when heat was applied to the boiler of a hot-water apparatus, circulation was set up, and the water in the flow-pipe of such an apparatus rose up away from the centre of gravity in apparent defiance of the great universal law of gravitation. He explained this by pointing out the effect of the expansion of water by heat, and the consequent greater pressure downwards of the colder and denser column of water in the return, which was

really the cause of the flow upwards of the water in the flow-pipe. Reference was made to the system of hot-water heating by small-bore pipes, known as Perkins's system, and, whilst admitting its advantages, he pointed out that, from its greater complexity, its liability to freeze when not in use, and the impracticableness of having valves to shut off portions of the apparatus, it was rapidly losing favour. He next mentioned the various systems of steam heating, pointing out that in heating large buildings steam was essential from its greater range and flexibility. He advised that, in estimating the amount of heating for any building, a basis of 25 deg. of frost outside should be taken, in order that when the cold weather came—though it might not come for years—the apparatus might be able to keep 50 or 60 deg. Fahr. inside. He quoted figures for arriving at the proper quantity, but pointed out the difficulty of any formula which could be applied universally without the application of experience and common sense. Finally, he made allusion to the usual mode in which architects proceeded in getting three or four heating engineers to give schemes and estimates, which had no common basis, and which varied widely in cost, the upshot often being that the cheapest scheme was taken, which frequently turned out to be the dearest, because the worst, in the end.

Mr. A. Hunter Crawford moved a vote of thanks to Councillor Mackenzie.

Councillor Purves, who was present, and was asked to join in the discussion, said there was a great future for gas heating, and also a great future for gas in other ways. It had the advantage over other forms of illumination in that it was a means of ventilation, and in that respect it was very useful in many of the large halls in the city. He hoped, however, that the question between gas light and electric light would in Edinburgh always be, as it had been in the past, one of friendly rivalry; and he went on to say that all who were interested in public health affairs could not fail to take a deep interest in the question which was under discussion that night.

Mr. D. Macfie said that with regard to ventilation generally in this country they owed a good deal, perhaps their lives, to the loose-fitting joiner work, and they should not be too severe on the scamped work if it resulted in greater ventilation.

Mr. W. M. Page seconded the motion of thanks, and it was heartily agreed to.

Councillor Mackenzie afterwards briefly and humorously replied to the discussion.

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# The Architect.

## THE WEEK.

ACCORDING to the Public Health Act of 1875, "the re-erecting of any building pulled down to or below the ground-floor, or of any frame building of which only the framework is left down to the ground-floor, or the conversion into a dwelling-house of any building not originally constructed for human habitation, or the conversion into more than one dwelling-house of a building originally constructed as one dwelling-house only, shall be considered the erection of a new building." A case was brought before the last meeting of the Bognor Urban Council in which there was some difference of opinion whether some buildings which are now in progress in the town constituted new buildings. The surveyor declared in the affirmative, and reported that the buildings were not in accordance with the by-laws. The owner of the buildings, who was present as a member of the Council, maintained that what was done was no more than an addition to a building and could not be subjected to the by-laws. The Clerk said that if the Council accepted the surveyor's opinion fresh plans should be deposited. The Council resolved that the owner should be asked to deposit plans. If an ordinary builder had neglected to observe the by-law, his plea that he was simply adding to an old building would be rejected. In such cases there should be uniformity of practice, and instead of having one course for members of a Council and another for non-members, all departures from by-laws should be treated in the same impartial way. Similar cases are constantly occurring in other towns, and it is time the Local Government Board interfered and insisted on one manner of dealing with all infractions of by-laws.

THE explorations by French archaeologists at Delphi continue to be carried on with energy. The director is M. THÉOPHILE HOMOLLES. The operations have lasted about ten years. The Temple of Apollo was the reward for the labours between 1892-96. In 1898 the gymnasium and the palaestra were fully revealed. What by some is considered the principal work is now in hand, and that is the opening out of the terrace. No less than five temples stood within this precinct. The first was in the Doric style, measuring 30 metres by 15 metres and having a tately pronaos. The building suffered through an earthquake. It has been found possible to set up four of the columns, which had a height of about 13 feet 6 inches. There were two treasuries; the foundations of one remain, and a larger part of the second structure, which was erected in the sixth century before our era. Perhaps the most remarkable discovery is a circular temple of about 5 metres in diameter; the roof was supported by twenty columns, which were admirable types of the Doric style. A great many capitals were met with in excellent condition, which present many similarities with the Propylæum of Athens. The metopes of the temple were at one time filled with sculpture. Unfortunately not one is complete, but many fragments of the figures remain. Evidently they were advanced in style. For another temple a blue marble was used by the builders. It is believed to have been the temple dedicated to ATHENÆ, and presents a combination of the Doric and Ionic styles. A museum is to be erected at the cost of M. SYNGROS, a Greek. It will probably be opened in April, and by that time the work of the explorers will be nearly completed.

THE late A. C. LAMB was not satisfied with writing a book on "Dundee: its Ancient and Historic Buildings," but he spent a great part of his life in collecting articles relating to the history of the town. Dundee, it should be remembered, can claim to have antiquity, and it is supposed several of the kings of Scotland resided within the walls. In CROMWELL'S time it was one of the wealthiest cities in Scotland, and the Parliamentary soldiers who took part in its capture were able to reward themselves by plun- der. Mr. LAMB utilised opportunities, which are every year becoming more rare, to secure many things

which in the eyes of the student of history and archaeology have interest. His collection contains about 10,000 articles. Through the liberality of Mr. EDWARD COX, they have been secured for the advantage of the inhabitants of Dundee, and at present they are shown in the Victoria Art Galleries. The number of towns which possess evidence of life in past times is limited, one reason being that men of the class of the late A. C. LAMB are rare. The ordinary collector is indifferent about the source of his acquisition, but what is to be desired is the devotion of men to illustrating the past history of a particular town or parish. As knowledge extends people take more and more interest in local collections, and would prefer specimens of the garments worn a couple of hundred years ago rather than mummies from Egypt or war-clubs from South Sea Islands.

THE immense labour which is often expended on the foundations of buildings is, from the character of the work, quickly ignored. It cannot be stated on a building that the foundations descend 20 or 30 feet, and ordinary people therefore assume that the depth is no more than a few feet, and involved no difficulty. Anyone who was acquainted with Paris when the foundations of the church of the Sacred Heart at Montmartre were laid must have been amazed at their extent and costliness. An English builder would say it would have been far more economical to have sought a site in some other position; but the desire was to dominate Paris by means of the church, and with that object more money was expended on subterranean masonry than would have been required to construct as large a church elsewhere. The outlay seemed more extravagant because the whole of the site is rocky, but the white limestone of Paris is full of interstices, and the promoters of the memorial church were resolved that no settlement should occur. Consequently an immense proportion of the subscriptions was devoted to invisible work and a long time had to elapse before masonry was to be seen above ground to represent so much expenditure. The anxiety to gain security was misinterpreted by some of the opponents of the church, and an official inquiry was made into the allegation that a source of danger to Paris was being created. The specialists who examined the hill of Montmartre decided there was no cause for alarm. Now that the building has been nearly completed similar stories are heard. It is only necessary to observe the absence of all signs of settlement in the masonry for a Parisian to be assured that he may set up his residence in the neighbourhood of the church without any fear that he will be overcome by the stupendous masonry.

ANYONE who will glance at a map of Paris of the date 1850, or later, will perceive that the streets in the two divisions of the city left and right of the river appear as if they were laid out to form two independent cities rather than one. The bridges across the Seine are so numerous, they form a remarkable view, especially when seen from a height. But generally speaking the streets running north and south, by which the bridges are approached, do not form direct lines of communication. The Boulevard Saint-Michel and the Boulevard Sébastopol may still be regarded as the most important thoroughfare between the two parts of Paris. The Avenue de l'Opéra is one of the streets in Paris in which a crowd is commonly found, but it is necessary to take an oblique course from it by passing either through or round the Louvre in order to reach the Quartier Latin. It is now proposed to form a new means of communication. The Rue de Rennes is a fine modern street which connects the Gare Montparnasse with the Boulevard Saint Germain; but from the latter the approach to the river is by the tortuous Rue Bonaparte. An extension of the Rue de Rennes to the Quai at the Institut has been suggested, and then a skew bridge to join it with the Rue du Louvre, where is the central telephone station and post office. In that way communication with the principal boulevard will be facilitated. It is intended that the bridge shall be constructed in a costly manner, as if it were to be a rival to the Pont Alexandre III. The operations will not require the demolition of any of the old landmarks of Paris.



## CONSTRUCTION AND INSURANCE.

SOME days ago a fire arose in Dublin in one of those general warehouses or shops in which everything is obtainable that is required by ordinary purchasers. Like the majority of structures of its class the supports were reduced to a minimum, in order that as much free space as possible should be left for the exhibition of goods and the accommodation of customers. The buildings quickly succumbed. The loss to the owners is, we believe, amply provided for by insurances.

Most people will see nothing extraordinary in the occurrence. A group of buildings and a large amount of stock have been destroyed, but they can be replaced by the payment of some hundreds of thousands of pounds by insurance offices. If the latter have to suffer it will be said that was only to be anticipated. Premiums are paid, and therefore risks have to be accepted. New buildings can be erected and a fresh supply of goods imported. The business world then revolves with its usual regularity and smoothness. Meanwhile, however, appeals are made on behalf of the hundreds of employes who find themselves without occupation in the winter season. For the misery to which a great fire subjects many men and women there is no compensation, and they must often depend on public charity.

What has happened in Dublin is only the latest of many cases which are constantly arising, and which should be enough to make people reflect that the conflagration of a building and the annihilation of its contents should never be looked upon as a trivial affair, an incident in commercialism. There is an absolute loss of property in such cases which can rarely be afforded, and it is only a very narrow view of social economy which is taken whenever it is concluded that by the payment of premiums to insurance companies the results of destruction by fire are counteracted. The supposition that an evil ceases to exist because the effects of it are transferred from an individual or individuals to a public company is one which should be refuted in an authoritative manner. The American humourists, who constantly treat the subject as if it were one of the tricks of trade, are not serving the cause of honesty.

The various companies who provide for the effects of fire are obliged to recognise their position. They know that the public in general will always take a philosophic view of the losses which the fire offices are compelled to meet. As a consequence they have endeavoured not only to urge the necessity of adopting the best means for coping with fires in order to prevent the destruction of property, but they have also as far as possible insisted in their own interests on the necessity of a kind of construction which will not quickly succumb whenever a fire arises. It must be allowed that municipal authorities as well as the public in general have not always shown a disposition to co-operate with the insurance companies. It is assumed that the latter are not disinterested and are merely seeking to increase their profits. The only means open to the societies is to place a high rate on buildings which do not come up to a certain standard, or, in other words, to premiate construction that will not be quickly consumed. From time to time information is given about the standard adopted, and the latest we are about to describe. The rules were prepared two or three weeks since by the associated fire offices, with the object of encouraging the construction of buildings which will possess more fire-resisting qualities than many of the structures which are now ordinarily classed as "fireproof."

It is not to be expected that in dealing with a subject so multiplex as buildings an elaborate system of classification must be adopted. Business could not be carried on in the insurance offices unless the rates were as nearly as possible of an uniform character. All calculations of risk have to be based on averages. No more than two varieties of standard fire-resisting buildings have been recognised by the latest arrangement. The first division comprises ordinary buildings used as salesshops, warehouses, factories, excluding cotton mills and buildings occupied for other similar textile trades. The second division comprises buildings occupied as cotton mills, woollen mills, as well as buildings for other textile trades.

*Height and Cubical Contents.*

In the first division the height is not to exceed 80 feet, measured from the lowest point of the land-level or

ground line of the site on which the building stands to the level of the highest part of the roof. The cubical content of any one compartment are not to exceed 60,000 cubic feet. The contents are to be computed on the whole surface area, including half of the party walls and the whole of the external walls, and the actual height from the surface of the lowest floor.

In the second division the height is not to exceed four storeys and cellar. The ceiling of the cellar is not to be more than 3 feet above the lowest point of the land-level or ground line of the site on which the building stands. The superficial area of any one compartment must not exceed 25,000 square feet internal measurement, excluding area of window recesses and doorways. The height of any compartment, excluding cellar, should be not less than 12 feet, measuring from the floor level to the highest point of the ceiling.

*External, Party and Internal Walls and Partitions.*

The suggested regulations are as follows:—Brick, terra-cotta, and (or) cement concrete composed of broken brick, burnt ballast, furnace slag, clinker, or other similar hard and burnt material to be employed. No external or party or division wall to be less than 13 inches thick in any part or if of concrete 20 inches. Stone to be used externally only as ashlar or facing, with a backing of brickwork not less than 13 inches thick, and for dressings, sills, string courses and cornices. All internal partitions to be of incombustible material, excepting only office enclosures of hard non-resinous wood with or without glazing, there is any building adjoining, the dividing or party wall to extend at least 3 feet above the roof of the fire-resisting building.

*Flues.*

There is also uniformity in the specification for flues the two divisions of buildings, viz.:—All flues to be built of brickwork, no part of which towards the interior of the building is to be less than 9 inches thick, and all furnace flues to be lined with fire-brick throughout for a distance of at least 20 feet from the furnace. No timber or woodwork to rest in or be plugged into the brickwork of any flue.

*Openings in Walls.*

The directions for openings in walls of the first division are as follows:—The total superficial area of openings in each external or area wall of any storey above the ground storey not to exceed one-half of the area of the wall (measured as to height from floor to ceiling of the storey in which the openings occur). All loop-hole or teagle doors and frames and window frames and sashes to be of iron or other hard metal. All windows above the ground storey to be glazed with glass not less than  $\frac{1}{4}$  inch thick, in sections not larger than 2 superficial feet, or wired glass not exceeding  $\frac{1}{8}$  inch mesh in sections not larger than 4 superficial feet. Every window or other opening above the ground storey opposing (whether directly or diagonally) and within 20 feet of any window, skylight, or glazed or other opening in any other building (whether such latter window, skylight, or opening be protected or not), or overlooking (whether directly or diagonally) and within 20 feet of the roof of any building, to be protected by "fireproof" shutters or "fireproof" doors.

In the second division the rules relate to openings in any storey, and there is an omission of the part concerning glass. But for all practical purposes the two classes of buildings, we suppose, may be considered as alike in respect of openings.

*Floors.*

The following is laid down for floors in buildings of the first division:—Brick arches, terra-cotta, fireclay or concrete as above described, the floor being in no part less than 6 inches in thickness, and carried on metal joists, girders and columns, or brick walls or piers. Floors of wood not less than 9 inches thick, ceiled with plaster on nailing lathing and with the floor-boards laid on the bearers without intervening space are allowed. Wooden flooring laid on concrete allowed, provided there is no space between the wood and the concrete. Wooden fillets not exceeding 2 inches deep permitted if bedded flush in the concrete. Scuppers to carry off water, the opening of each of which shall not be less in area than 21 superficial inches, to be



provided in the external walls to each floor above the ground storey at intervals of not more than 12 feet. In buildings within the City of London, or within the area controlled by the London County Council, scuppers are not essential.

In the second division brick arches, terra-cotta and fire-clay are mentioned as well as concrete, as materials on which modern flooring can be laid. The wooden fillets are not to exceed 3 inches deep, and the scuppers are to be provided at intervals of not more than 25 feet.

#### *Roofs.*

Concerning roofs in the first division, it is laid down:—Roofs to be entirely of the incombustible materials as described for floors, except that 4 inches be substituted for 6 inches in thickness. Glass not less than  $\frac{1}{4}$  inch thick in sections not exceeding 36 superficial inches, and wired glass not exceeding 1 inch mesh, in sections not exceeding 144 superficial inches, in either case set in metal, shall for the purpose of this rule be deemed incombustible. Outlets on to roofs rendered necessary to satisfy the requirements of the Factories and Workshops Acts permitted, provided that all doors and frames be of iron or cased in iron plate at least  $\frac{1}{8}$ th of an inch thick, and that they be self-closing.

The only difference between the foregoing rule and that for the second division is the following addition:—"There may be erected above them [the roofs] light shelters or roofs constructed entirely of incombustible materials."

#### *Protection of Metalwork.*

The rules for the protection of structural metalwork are identical in both divisions, viz.:—All columns or stanchions to be covered with brickwork or porous terra-cotta (at least 2 inches thick), or with cement, concrete, or plaster at least  $1\frac{1}{2}$  inch thick, keyed into metal supports and protected by a metal guard up to a height of not less than 4 feet from the floor where cement, concrete or plaster only used. Girders, joists, lintels and all structural metalwork (other than columns and stanchions, but including framework of roofs), where not covered with brickwork, to be completely encased in porous terra-cotta at least 2 inches thick, securely anchored, or cement, concrete or plaster at least 1 inch thick, keyed into metal supports. Space must be left at the ends of girders and joists to permit of expansion.

#### *Linings and Ceilings.*

In both divisions it is stated "that no lining of wood or textile fabric to any part of the walls, partitions, ceilings, or roof is advisable."

#### *Floor Openings.*

From an insurance point of view no subject is of more importance than the floor openings. For the first division of standard fire-resisting buildings the subjoined particulars have been agreed on:—

No openings through any floors allowed except as follows:—

(a) Holes to admit driving shafts, pipes and iron or earthenware tubes for electric conductors. Shafts to fit closely in metal collars, and all pipes and tubes to be cemented round the full thickness of the floor.

(b) Staircases and hoists of which the enclosures are constructed entirely of brick or cement concrete as above described at least 9 inches thick, with a regulation fireproof floor to every opening. Stairs and landings within said enclosures to be constructed of incombustible material. Where the building is within the City of London or in the area controlled by the London County Council, hardwood doors to openings may be allowed instead of fireproof doors. Where the staircases and hoists extend to the top floors they must have a glass roof protected externally with strong wirework, and the enclosing walls must be carried through and 18 inches above the roof of the building. In factories and workshops in the area controlled by the London County Council a glass roof protected as above is only to be provided in cases where the enclosing walls and staircases are carried through and 18 inches above the roof of the building, and also above the roof of the adjoining premises. Otherwise the roof must comply with the requirements of the London County Council.

(c) Belting and rope races enclosed as for staircases and hoists.

In the second division the particulars given are:—

No openings through any floors allowed except holes to admit steam, gas and water pipes, and iron or earthenware tubes for electric conductors. All pipes and tubes to be cemented round the full thickness of the floor.

All staircases, hoists, rope and strap races, and gearing towers to be external to the four walls of the building and constructed entirely of brick or cement concrete as above described at least 9 inches thick.

Hoists must be constructed in the staircase enclosures, and no opening thereto to be less than 6 feet from any opening into the building. Excepting hoists the enclosing walls must be carried through and 18 inches above the roof of the building, and the roofs, stairs and landings of said enclosures must be constructed of incombustible material. No openings permitted between the building and the rope and strap races and gearing towers, and each opening from the staircase into the building to be protected by a fireproof door.

#### *Shafting through Walls.*

The following regulations are the same in both divisions:—

Shafting where passing through walls to fit closely into wall, or have wall boxes closed with iron plates not less than  $\frac{1}{4}$  inch thick, leaving no open space.

#### *Communicating Compartments.*

The following rules are given for the first division:—

Two or more compartments, each constructed in accordance with these rules, may communicate, whether by double "fireproof" doors or otherwise, provided that their aggregate cubical contents do not exceed 60,000 cubic feet.

Two or more such compartments, whose aggregate cubical contents exceed 60,000 cubic feet, can only be allowed to communicate across a fireproof compartment built up from the basement with walls of solid brickwork, and constructed in all other respects in accordance with these rules so far as the same are applicable, and having all openings protected by "fireproof doors" at least 6 feet apart.

Except as above, no communication allowed between a compartment constructed in accordance with these rules and any other building or compartment.

It will be observed that the associated Fire Offices do not interfere with the conditions laid down in the by-laws, which are mainly intended to prevent the spread of fire from one building to another. The foregoing regulations are intended to serve for confining a fire to the minimum space within a building.

### OLD MASTERS EXHIBITION.

WHETHER the exhibition of works by old masters which was opened at the Royal Academy on Monday is to be associated with the name of RAPHAEL or of CLAUDE will be a subject of discussion among amateurs until the middle of March. Numerically CLAUDE is the greater power, for two rooms have been assigned to his works and drawings. On the other hand, to have eleven works by RAPHAEL on view is a unique occurrence in the annals of English exhibitions. The collection should perhaps be regarded as one of great Italians. There is a work by RAPHAEL's master, PERUGINO; two by FRA BARTOLOMMEO, who exercised much influence over the young painter from Urbino; five by TITIAN; three by TINTORETTO; three by VERONESE; three by LUINI, and there is a *Mona Lisa*, which is ascribed to LEONARDO. Many other Italians are represented. There are also works by several Dutch and Flemish artists in the rooms; three by MURILLO and five by VELASQUEZ. The French school asserts itself, for there are pictures by CHARDIN, GREUZE, the two POUSSINS and LESUEUR. ALBERT DÜRER, KNELLER and HOLBEIN present some of the characteristics of the German school. The mere catalogue is enough to indicate how delightful an exhibition has been provided by the efforts of the Royal Academicians. Since the series commenced in 1870 we doubt if one has been held which was more interesting and more useful to the English student of art.

The first work that is likely to attract the attention of



the visitor is *The Madonna of the Iris*, by ALBERT DÜRER. The Virgin and Child are seated in a garden in which there are not only plants, but thin stems of trees that seem to be the beginning of a summer-house. The artist was fond of devising symbolism, and in thus suggesting the formation of a natural structure he may have had a meaning that is yet to be explained. In the background is an arch, but some of the stones forming the abutments project in a marked way beyond the general vertical line. This arrangement, which is not pleasing in a pictorial sense, must also have had a signification, and is likely to have some connection with the espalier near the figures. The Virgin wears a red robe, on which a butterfly is painted. She is of the German type, with flaxen curly locks. It is a strange work, but is further evidence that DÜRER'S province was one of black and white. The small miniature *Salvator Mundi*, by JEHAN BELLEGAMBE, is as interesting from the exquisitely carved frame as from the painting. The subject is the Adoration of CHRIST by an abbot who wears a grand cope, and has his shield painted on the desk at which he kneels. Another *Virgin and Child* is by ANDREA PREVITALI, of Bergamo; the Virgin places her hand on the head of the donor, which must have been a favourite attitude in the painter's eyes, because it is repeated in a picture by him in the National Gallery. By BENOZZO GOZZOLI is a *Virgin and Child with Angels*, which is finely finished; it is almost Byzantine in expression, and suggests the pupil of FRA ANGELICO. *The Church of St. Giles at St. Denis*, by a master of the Flemish school, is one of the most elaborate interiors to be found in the exhibition. A priest is saying Mass at an altar having a splendid reredos in gilded bronze, the central panel being occupied by a figure of CHRIST holding a cross and the book of gospels. As is usually the case whenever there is an archæological subject to be mentioned, the catalogue erroneously informs us how "on the back of the panel is a figure of St. PETER by another hand." Kneeling at one side of the altar is an emperor, and near him are several courtiers. The church is Gothic and abounds in sculpture, which is painted with the utmost elaboration of detail.

The two panels for cassoni, or trunks for bride's clothes, by PESELLINO, are among the most charming works in the room. They represent the story of DAVID and GOLIATH and the procession of SAUL and DAVID from Gath to Jerusalem. Each measures 17 inches by 70 inches, and both are crowded with figures of men, women and horses. Most of the individuals were probably inhabitants of Florence in the early part of the fifteenth century. As compositions the treatment of the subject is naive, for the incidents are represented as if they were synchronous instead of successive. Difficulties were created, such as in the foreshortening of horses, in order to display skill in overcoming them. But the general effect is decorative, and they are as quietly gorgeous as any of the old-fashioned golden tea chests which at one time used to be treasured.

There are four small pictures on the wall by RAPHAEL, viz. *The Agony in the Garden*, *St. Francis of Assisi*, *The Carrying of the Cross*, and *St. Anthony of Padua*, which with another panel that has found its way to America formed the predella to the great altar-piece in the third gallery known as the *Colonna Raphael*. The four are remarkably simple in style, the *St. Francis* and *St. Anthony* being the most complete of the series. Probably the panels were overshadowed by the framing of the big picture, or were partly obscured by altar candlesticks or other instrumenta, for the execution suggests the prentice hand in a way which is not common with the master. *The Flagellation*, by PERUGINO, was, we believe, reproduced by the Arundel Society. There are three figures. CHRIST is attached in the centre to a pillar of beautiful marble with a Corinthian capital, and behind is a fine arcade with medallions in the spandrels. There are two executioners, each in the act of using a corded scourge, but not the least scar is visible. PERUGINO had not a reputation in his own time for being as devout a man as many contemporary painters; but in this case he must have either thought it would be degradation of CHRIST to represent Him bleeding, or a degradation of his art to appeal to sensationalism. It is to be regretted that CARLO CRIVELLI has not left us a fruit-piece, or one in which fruit, architecture and draperies

would be combined as an example of still life. No fifteenth-century painter took more delight in introducing fruit. In the picture by him in the exhibition, apples and other fruit are suspended about the chair in which the Virgin and Child are placed. The painter was not afraid to clothe his saints in the richest garments or to adorn them with jewels and whatever was costly. There is more beautiful head in the room than *La Bella Simonetta*, the lady-love of GIULIANO DE MEDICI. SANDRO BOTTICELLI it is evident was satisfied with faithful portraiture in this case. The hands cannot be called successful; the great mass of pearls around the neck give a fantastic appearance to the subject. *The Portrait of a Man*, from the National Gallery of Ireland, evidently extends to the hands of the violinist, and from them we can judge of his style of playing. A representation of the hands of Herr JOACHIM placed beside them would almost be a revelation of the difference between ancient and modern instrumentation.

We suppose few visitors will care to bestow a look on *The Misers* of QUENTIN-MATYS, and it is a pity all the repetitions of the work have not long since shared the fate of better pictures. There are doubts whether the painter perpetrated so many replicas, and they ought to be kept concealed from the public gaze. *The Portrait of a Man*, by ANDREA DEL SARTO, is more like a young lady masquerading as a doctor, and would serve admirably for the young and learned doctor of Rome called BALTHASAR, better known to Englishmen as PORTIA, the lady of Belmont, who rescued ANTONIO merchant of Venice, from the knife and scales of SHYLOCK. ANTONIO POLLAIUOLO was a sculptor, and his painting *A Sacrifice*, seems like a copy of a bas-relief or a design for one. The portrait of *Girolamo Benivieni*, by RIDOLFO GHIRLANDAIO, would be sufficient by itself to uphold the artist's reputation as a portraitist. The old man in black with the clenched mouth, who looks so steadily at the spectator, was probably an able politician, and, like so many men of his class, may have helped by his ability to enslave Florence. There are three Holy Families by BERNARDINO LUINI in the room. They should be prized for they have the sweetness of expression in the principal figure which this painter alone acquired from his master LEONARDO. *The Adoration of the Shepherds*, by GIOVANNI BELLINI, somehow is more suggestive of BASSANO than the teacher of TITIAN and GIORGIONE.

If we are allowed to judge by the contents of the second gallery, we cannot avoid the conclusion that CLAUDE must be numbered among the painters whose reputation is not enhanced when several of their works are brought together. The pictures by him in Burlington House are generally very dull, for the glowing effects could not resist the power of time, while a few which are of extraordinary brilliancy appear unreal from the vicinity of the faded scenes. Several of the subjects are seaports, and show magnificent buildings on the shores. The architecture was a creation of CLAUDE'S, for in such parts, as GOETHE remarked, the painter attained the highest truth without showing the least trace of actuality. But in modern times artists have over-emphasised the realities of all coast and river scenes, and therefore CLAUDE'S Classical ports seem less truthful than his views of the interior of a country. He appears to have been a man of serene disposition, and he represented nature in conditions which corresponded with his own mind. Winter scenes, views on stormy days and whatever marred the severity of the seasons were avoided by him. We who live in northern climes are compelled to consider the slighted world which CLAUDE depicted as inadequate, if not unreal. With a single picture of his there cannot be objections raised except on account of idealism. But when we have from twenty to thirty similar views then we must be discontented with the limitation of the artist's selection. With him the earth was always enjoying calmness and sunshine. We think it will be found that the sixty drawings which are in the Black and White Room receive more attention. It is true they are not always transcripts from nature, and CLAUDE still seems indifferent to the variety which land offers the landscapist by means of the four seasons, but they suggest open-air work, and critics are not likely to be analytical when the drawing is so spirited and when less formalism is seen than in the paintings.



In Gallery No. III. the first picture met with is *Moses and the Burning Bush* by BASSANO. It is a very dark picture, and all that can be distinguished on a gloomy day is a figure lying on the ground, with a dog and some sheep. FRA BARTOLOMMEO'S *Holy Family* includes St. ELIZABETH and St. JOHN. The figures have the naturalness which is characteristic of the painter who, although a monk, was satisfied with the beings in the streets of Florence as models. SUSTERMANS'S *Cardinal Capponi* is a full-length seated figure, and reveals a prelate who seemed born to command. There is a pathetic *Christ at the Pillar* after the scourging, with two sympathising angels, by MURILLO. It has more tragic power than is usually seen in works by the Spanish artist. *The Death of Peter Martyr* is a copy by ANNIBALE CARRACCI of the picture by TITIAN which was destroyed in 1866. The first impression it makes is one of coldness, which is not usual with the Venetian master. But it is well to remember that, although he did not represent the martyr and his brother monk in the garb worn by the Dominicans, he wished to suggest their black and white robes. There is not a trace of red in the picture or other warm colour. But the contrast with the majority of the works of TITIAN may have helped to increase the effect which the original work made on spectators. A *Virgin and Child* by RAPHAEL, belonging to Miss MACKINTOSH, departs from the painter's types of Madonnas, or rather those which are generally accepted as his work, but it is a charming picture, and more expressive than many of RAPHAEL'S women. TINTORETTO was known to his contemporaries as Il Furioso, for he was said to be competent to produce as much work in a couple of days as would occupy another artist a couple of years. On that account he might be regarded by the Venetian populace as the equal of TITIAN, but we cannot believe that most potent, grave and reverend signiors would accept that judgment. The *Delilah and Samson* tells its story clearly; the courtesan is calmly watching the operation of the hair-cutting, and the man with the scissors performs his function in a businesslike way. DELILAH wears an abundance of jewellery, but she wants the witchery which was imparted to Mr. S. J. SOLOMON'S figure. It is possible to have a superstitious reverence for old masters, and when they are excelled by living English painters the fact should be announced. The *Marchese Savagno* by TITIAN, being larger than life, is suggestive of a Venetian GOLIATH. He is soberly clad, and the contrast offered by the crimson sash against the dark robe was at one time more marked than at present. The painter's own portrait expresses mental power, which is absent from engravings of TITIAN. He was able to see through men, however exalted, and the insight he possessed did not fail him when he made himself a subject. Looking at this portrait we feel that TITIAN was qualified to rule Venice in other ways besides art, and an emperor was not demeaning himself when he stooped to lift the painter's pencil. Another portrait by TITIAN is of a very young man, and in a different style.

The large *Virgin and Child Enthroned, with Saints*, known as the *Colonna Raphael*, and which Mr. PIERPONT MORGAN has acquired, is about 8 feet in height and 5 feet 6 inches in width. It was painted in 1505 for the nuns of St. Anthony of Padua, in Perugia. They objected to the introduction of a nude child in the altar-piece, or it may be were desirous to see the Infant CHRIST in the habit of their confraternity or guild. Accordingly the Madonna holds a Child wearing a white robe with a badge or scapular on the shoulder. St. JOHN, St. CATHERINE and St. ROSALIA are near the throne on which the Virgin is placed. Below are figures of St. PETER and St. PAUL. There is a lunette above, in which the Almighty is seen holding a globe with an angel on either side, whose streamers fill the intervening spaces. Beneath the principal panel were the small pieces to which we have referred above. As RAPHAEL was born in 1483, he was a very young man when he undertook so large an altar-piece. Indeed he had only left PERUGINO'S atelier in 1504, and the influence of his master was still oppressive. In 1505 he was in Florence, and derived a spirit of sympathising with living people from FRA BARTOLOMMEO. Whether the picture which now hangs in the middle of the third gallery was entirely painted before or after the visit to Florence cannot be ascertained. When it formed one of the ornaments of the royal palace at Naples it was usually

spoken of as being in RAPHAEL'S first manner, and there is something Peruginesque in the Madonna. But the figures of St. PETER and St. PAUL are suggestive of incipient power of another kind, and they might well be considered as a revelation of Florentine teaching. It is a marvellous picture to have been produced by a youth of twenty-two, but it would be unfair to RAPHAEL'S memory to compare it with works painted subsequently to 1505.

*The Adoration of the Magi* is another version of the picture in the Dresden Gallery which we once reproduced. In every line is shown the strength of PAUL VERONESE. It is true that a very simple scene has been aggrandised by the painter. But in Venice it was perhaps impossible to make people realise how humble were the beginnings of Christianity. Standing in front of the picture, we must feel that whatever was undertaken by VERONESE, he was competent to treat it, and efficiently. We may object to his interpretation, but we must acknowledge that all he saw either before his eyes or in his mental vision he could depict with consummate effect. His lines have the vigour of a relief in bronze, and his figures are as dignified as if senators served for the models.

In the neighbourhood of such works VANDYKE'S *Sir John Suckling* appears frivolous. The cavalier-poet is represented as studying SHAKESPEARE, having a folio resting on a rock, on which is inscribed, "Ne te quæsiseris extra," advice which might well be followed at the present time. MURILLO'S *Flight into Egypt* is a scene he is likely to have often witnessed—a Spaniard with a broad hat leading an ass on which his wife and child are seated. Two Holy Families, one by PALMA VECCHIO and the other by BONIFAZIO, form excellent pendants, for both have a homeliness which was not always attained in Italian altar-pieces.

We re-enter the secular world with a portrait of DON ALONZO DE CANAMAS, by ESPINOSA, which is very vigorous, and emphasises the gravity of the Spanish noble. By FRANK HALS is a portrait of a lady dressed in black satin with gold braid. She is not handsome, but appears unaffected and honest. JORDAENS'S portrait of Baron WAHA DE LINTER suggests deep potations, which, however, increase good humour. The left hand rests on the hip in a manner that is unusual in paintings, but which, we presume, was taken from life. The landscape by JACOB VAN RUYSDAEL compels admiration by the great groups of trees which form part of it. There is another vivid portrait, a man, by FRANK HALS. A lady in a long red dress is by VANDYKE, but, somehow, the head seems too small for the robe. An Austrian cardinal in armour is by RUBENS. *Las Meninas*, showing VELASQUEZ painting the portrait of a Spanish princess, is amusing if not comic. Mention must also be made of two portraits by REMBRANDT. The whole of the pictures uphold the associations of a gallery where many famous works were visible in past years.

#### RENOVATION OF THE EXTERIOR OF ST. MARY, ISLINGTON.

THE old church dated back to the year 1483, and was taken down in the year 1751. The present church was built in the year 1754, and opened by Mr. J. COLEBROOK, who laid the foundation-stone. It took two and a half years in building. The architect was a Mr. DOWBIGGIN. The contract was 6,319/. It has eight bells in the tower—six were taken from the old church, and two added. Out of all the ancient monuments and tablets in the old church not one has been preserved or handed down. The one to Lady OWEN was a very beautiful work, and no drawing of it now exists; it ought to have been re-erected in the present church. The illustration shows how the exterior could be improved. The side windows to have pediment over and carried up higher, as also in the west elevation, a Portland stone open balustrading carried over the cornice all round the church, the present circular portico taken down and a light and beautiful Ionic portico, at right angles with the wall built, with flight of steps up. The side windows and on the west elevation would be raised with stone ashlar and cornice over the top. The belfry windows would have pediments over. This also includes a new chancel. The church has been allowed to fall into a most shameful state



of dilapidation by the neglect of past churchwardens. The tower and spire, with its white stone quoins, is one of the most picturesque in London, but of course not equal to WREN's Bow Church, or St. Bride's, Fleet Street, in beauty, or DANCE's St. Leonard's, Shoreditch, in dignity. The design is by Mr. R. PAYNE.



WEST ELEVATION.



SIDE ELEVATION.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. John Slater, vice-president, in the chair.

The Hon. Secretary announced the decease of Mr. E. H. Martineau, elected associate 1851 and fellow 1860; Mr. Hugh Leonard, elected hon. associate 1878; Mr. E. W. Smith, hon. associate 1900.

Dr. A. S. MURRAY read a paper entitled

### Two Ionic Capitals in the British Museum.

He said that Professor Meurer, of Rome, visiting the Museum some months ago, identified one of the Ionic capitals in the collection as from the Temple of Wingless Victory at Athens. It was an angle capital from the south-west angle, and was brought over by Lord Elgin, together with some slabs of the frieze. The temple had four Ionic capitals at each end—none along the sides; hence, probably, the later name of the temple, Wingless Victory. The official name was Athena Nikè, which was definitely confirmed some years ago by the finding of an inscription in the form of a public record ordering the building of the temple. The inscription is on marble, and states that the designs were to be left to Callicrates, whose name is familiar as one of the architects of the Parthenon. The date of the inscription is agreed to be not earlier than 450 B.C., but not much later—that is to say, about ten years before the completion of the Parthenon. It does not follow, however, that the work had been put in hand at once. There is another inscription added on the same slab obviously some years later, about 430 B.C. Accordingly, between these two dates, 450-30 B.C., the temple had been built. At the latest it is therefore older than the Erechtheum. In the Elgin Room at the Museum can now be studied an angle capital of the Erechtheum side by side with the newly-identified capital of Athena Nikè. The capital of the Erechtheum is exuberant in its beauty; the other is simplicity itself. The author went on to describe the capital of Athena Nikè, indicating various characteristics in the treatment of the ornament which go to prove its greater antiquity. There is in the Museum a fragment of an angle capital of the Ionic order from the temple at Bassæ by Ictinus, the colleague of Callicrates in the building of the Parthenon. It would be satisfactory if the newly-identified capital could be claimed positively as the work of Callicrates. The Bassæ fragment, however, Dr. Murray considered both simpler and grander in its lines, and there was still the question whether the commission given to Callicrates about 450 B.C. for the Victory Temple had ever been executed by him. Incidental reference was made by the author to a small terra-cotta capital, archaic Ionic, obtained from Gela, in Sicily, two or three years ago, which bears traces of colours—red, white and blue.

Coming to the second capital to be treated of, the author referred to the Ionic capital from the archaic Temple of Diana at Ephesus, described in his paper on "The Sculptured Columns of the Temple of Diana at Ephesus," read at the Institute in 1895. To a large extent this was a reconstruction from fragments of the old burnt temple found under the later one, and fortunately those fragments were enough to enable the reconstruction to be made without recourse to much conjecture. But there remained over some other fragments of capitals from the same archaic temple. As they lay in the Museum room they were almost unintelligible. After much doubting he (Dr. Murray) decided to take certain of them in hand. The author then described the fragments and the ornament upon them, and went on to show, by the aid of lantern slides, how they had been pieced together, the result being a restoration, fairly justified by the remains of an archaic capital of an entirely new character. One particular feature the author did not think there was any other instance of among the remains of Greek architecture. A fragment of the rim presented on the outer face a double moulding with a sharp groove between. Into this groove had been pushed a thin strip of lead which first had been doubled back. The doubled edge is at the bottom of the groove; at the top the two edges of the lead are brought close together and hold in the manner of a vice a very fine thread of gold. Pliny mentions as still existing in his day at Cyzicus a shrine on which a fine gold thread had been inserted in all the joints of the marble, so that the interstices shone with the finest hair-like threads. Fragments from the capitals show that much red or vermillion had been employed on them. Some leaves show a white edging, others white with red edging.

There remain two fragments from the archaic temple at Ephesus which the author thought must also belong to a capital, though it is not yet clear how they are to be combined into one. One shows the head of an ox in very high relief, the other part of his back and haunch, with the tail thrown up over the haunch, as often seen in archaic Greek sculpture. There is in the Museum a huge capital from Cyprus in which the heads and shoulders of two oxen were employed to support



the abacus. The author concluded that if he was right in his assumption that these two fragments belonged to capitals, we have thus at least three types of capitals from one and the same archaic Ionic temple. We have also at least three types of bases, and considering how few are the surviving fragments, no one can say but there may have been other varieties. Pliny says of the later temple that thirty-six of the columns were sculptured. The older temple also had sculptured columns. These enriched columns would be capable of carrying off some variety in the capitals. The moral is that if the architects of the Classical Revival in this country had been aware of the inventiveness of the early Greeks the aspect of our towns would have been very different.

In conclusion, Dr. Murray acknowledged his indebtedness to the foreman of the masons and the well-trained men under him in the various restorations and rearrangements that had been made in the Museum during the past fifteen years.

Mr. HUGH STANNUS added some remarks on the buildings and temples of the Acropolis, and moved a vote of thanks.

Mr. R. PHENÉ SPIERS seconded, Messrs. PAUL WATERHOUSE, BERESFORD PITE, W. D. CARÖE and E. W. HUDSON also spoke.

The next meeting, announced for January 20, will be for the award of prizes and studentships, and a paper on the "Architectural Discoveries of 1901 at Stonehenge," by Mr. Detmar J. Blow, will be read.

### THE BIRMINGHAM GENERAL HOSPITAL.

A MEETING of the general committee of the new hospital, Birmingham, was held on December 31 under the presidency of Sir John C. Holder.

Mr. W. N. Fisher, honorary secretary, presented a report in which it was stated that such had been the care with which the question of additional work or extras had been watched by the architect and building committee that the officers had the gratification to report that out of a total payment of 144,196*l.* to the contractors for buildings and other works the comparatively small sum of 4,434*l.* represented the only additions. The outlay on the work was as follows:—Purchase of land and properties, law charges, &c., 49,288*l.* 9*s.* 3*d.*; payments to the contractors for buildings and other works, including ventilating and heating, electric lighting, boiler and hot-water supply, &c., as certified by the architect, Mr. William Henman, 144,196*l.* 18*s.* 10*d.*; consulting architect, costs of competition, clerk of works and sundry incidental expenses, including printing, advertising, postages, &c., 4,162*l.* 19*s.* 7*d.*; furniture and internal fittings, including theatre and dispensary appliances, &c., 14,273*l.* 8*s.* 11*d.*; architect's commission and expenses, 7,537*l.* 10*s.* —219,459*l.* 6*s.* 7*d.*

The following report from Mr. Henman was presented:—

Gentlemen,—Now that my work in connection with the erection of buildings in Steelhouse Lane is about to be closed, I may remind you it is just ten years since I was invited to submit a design, and venture to recall the principal features in connection with the undertaking. In the printed report which accompanied my drawings I clearly stated that the sum then proposed to be expended would be quite inadequate for a hospital such as was contemplated, and that in my opinion it was best to design a complete building and erect such portions as funds would permit, trusting to the liberality of the public for its ultimate completion. You took a still bolder step and determined to carry out the entire design; the wisdom of that course is proved by the liberal response made to the appeal for needful funds. The hospital has been carried out in all essential features as originally designed by me with one important exception, viz. in the method employed for heating and ventilation. After very careful examination of buildings in which Mr. William Key, of Glasgow, had introduced the "Plenum" system of ventilation combined with steam heating, you decided to adopt his methods and employ his services. Had I realised the enormous amount of additional labour and responsibility which devolved upon me by the adoption of "Plenum" ventilation in so extensive a building I might have hesitated to have given that system its just due when asked to report thereon; but when adopted I spared neither time nor trouble in mastering its requirements and adapting the construction of the buildings so as to insure its permanent success. By adding a storey to the small pavilions the accommodation for patients was increased by forty-two beds, bringing up the total to 346. On November 23, 1892, a tender of Messrs. Barnsley & Son was accepted for the foundations and basement of the out-patients' department, in order that work might be proceeded with on a portion of the site then available. The generally expressed opinion that "Birmingham ought to have a hospital second to none in the kingdom" led no doubt to an expensive class of material being specified; and, as tenders for the complete

work were invited upon a rising market, they came in at a higher figure than you considered ought to be expended. A revision of the design was thus required which entailed several months of labour; for, although reduced cost was principally brought about by the substitution of less expensive materials, minor economies ran all through the buildings, necessitating practically a new set of working drawings and specification, for which I have claimed no remuneration. Although I regret the loss of some architectural embellishments to the back portions of the buildings, I have no such feeling in regard to the elimination of large quantities of glazed brick lining originally provided, having become convinced that glazed brickwork within a hospital is not a suitable material; and, as regards stability and utility, I do not consider the buildings have suffered by the modifications necessitated in order to reduce the cost. Fresh tenders having been obtained, that of Messrs. Barnsley & Son was accepted for completing the works and a second contract was signed on March 12, 1894. The works were continuously proceeded with and the buildings were occupied by patients in October, 1897. During the progress of the works, slight modifications in the design and materials employed were necessitated, and some additional works, principally in the nature of fittings, were required and sanctioned by you. After deducting such additions I was gratified at being able to report that the cost of the works executed under the second contract was 776*l.* less than the contract sum. I desire to take this opportunity for acknowledging the confidence which you have throughout placed in my conduct of the works, and to express my appreciation of the admirable manner in which they were carried out by Messrs. Barnsley & Son and the numerous sub-contractors, as well as to thank Messrs. T. H. Mansell and Charles Henman for the painstaking care displayed in their duties as quantity surveyors.

Able supported as I have thus been in my endeavours, I have no hesitation in stating that you have excellent value in handsome, sound and useful buildings. The science of hospital design may progress, but Birmingham holds the proud position of having at the end of the nineteenth century boldly made a new departure, which has already led to fresh developments intended to secure additional comfort and convenience for both patients and staff, as well as to facilitate the work of administration in these noble institutions, built and supported for the cure of disease and alleviation of suffering among the poorer classes of the community.

The Chairman moved the approval of this report. They were, he said, to be congratulated on having had Mr. Henman as their architect. From the time Mr. Henman submitted his design there had not been a single room altered. That spoke well for the way the work had been carried out. They had been fortunate also in having so few extras. It was almost unique. When they decided to put in the foundations of the out-patient department they roughly estimated that that work would cost 5,000*l.* The tender came in at 4,780*l.*, and the settlement was 4,880*l.* 10*s.* The second contract they roughly estimated at 118,000*l.* and the tender was 117,888*l.*, while the actual payment was 117,581*l.* 15*s.* 11*d.* There was an item of close upon 4,000*l.* for additional work, but Mr. Henman was not altogether responsible for that. It was in connection with the heating and ventilating, the boiler-house and laundry. The small amount of the extras was marvellous. The portion of the total cost for which Mr. Henman had been responsible was 144,000*l.*, and they had very good value for their money. If the hospital had to be built at the present time he questioned whether it would be done for 20 or 25 per cent. more. Mr. Henman had been a most agreeable colleague to work with. He did not think there was a better building or a better arranged and equipped hospital either in this country or abroad. He had seen most of those in this country, and while in America he took the opportunity of seeing what they had there. When he saw their best he was still very much pleased with the General Hospital. There was not one equal to it.

Mr. J. Howard Cartland seconded the proposal, and it was adopted.

A Record of the repairs done to the fabric of Winchester Cathedral has been cut in stone and recently placed in the west end of the nave. It states that the repairs to the roof were begun in March 1896 and finished in December 1898; the cost was 12,670*l.* 10*s.* 11*d.*, and the total area treated 31,973 feet super, or about three-quarters of an acre; weight of lead removed and recast, 156½ tons, put on 197½ tons; weight of new oak, 198½ tons; weight of pitch pine in battens, &c., 326½ tons; length of battens, 93,510 feet, or about seventeen miles. The work was carried out by Mr. J. Thompson, of Peterborough, under the supervision of Mr. J. B. Colson, F.R.I.B.A. A great deal of necessary work on other parts of the roof remains to be done and the repair fund is still open.



## NOTES AND COMMENTS.

ON the last day of 1901 Mr. FREDERICK W. HORN-BLOWER, who was well known in Liverpool, passed away after a long illness. He was the eldest surviving son of the late LEWIS HORNBLLOWER, with whom he was associated in practice for many years. He was associated with his father in the laying-out of Sefton Park, Liverpool, and their joint plans were awarded the second premium when the designs for similar work at Roundhay Park, Leeds, were under consideration. Among their works was an extensive "model" village on fireproof principles at Millom, Cumberland, and the laying-out of a building estate of some hundred acres near Preston. He was also successful in taking the second place with the plans which he submitted in conjunction with Mr. FRANCIS USHER HOLMES for the art museum and library buildings at Dublin, the first place being taken by an Irish architect. Mr. HORNBLLOWER was also entrusted with the execution of a large amount of private work, among others by the members of the LAIRD family, Lord BRASSEY, Sir THOMAS BROCKLEBANK, Sir F. G. HESKETH, Bart., &c. He took a prominent part some years ago in the reconstruction of the Liverpool Architectural Society, of which he was for eight years hon. secretary and subsequently vice-president. Mr. HORNBLLOWER ceased to take an active part in his profession about two years ago in consequence of ill-health. His loss will be regretted in Liverpool and elsewhere.

As far back as 1851 FRANÇOIS-NICOLAS CHEFFLART won the Prix de Rome. To have gained that distinction at a time when there were able rivals might well be assumed as the commencement of a prosperous career. But, like other artists, CHEFFLART was remarkable for his extreme political views. As he was not in favour with the Imperial Government he received no commissions. When the Empire vanished he may have imagined he was to have his chance, but politics got the better of him, and, like COURBET, he engaged in the Commune. On its failure all hopes of commissions from public or private patrons came to an end. He was ignored by all but a few friends, and recently passed from this life as obscurely as he had lived. When the inevitable sale followed, between 200 and 300 paintings and drawings were evidence both of his constant industry amidst many difficulties and of the neglect of the public. They were all disposed of for about 300*l*. A large painting, *The Battle of Cannes*, was purchased by the City of Paris for the small sum of 60*l*., and as it will appear in the new Musée, it may be assumed the value of CHEFFLART'S works will be immediately increased.

STATISTICS are not easily compiled, especially when they relate to foreign countries. It is not surprising, therefore, that the returns of the French Customs Department relating to the Paris International Exposition of 1900 should be so long in appearing. It appears that the value of the objects which were contributed by the fifty-nine countries that were represented in the Exhibition amounted to 250,564,000 frs. The machinery amounted in all only to 26,062,000 frs., while the objets d'art were valued at 190,970,000 frs. It will thus be evident that art in the official sense of the word could claim to possess nearly four-fifths of the total value. In some cases the proportion was still larger. Italian art, for instance, was worth 22 millions of francs out of 26 millions; Hungary 40 millions out of 43 millions; Austria 19 out of 23; England 14 millions out of 20; while German art held the proportion of 9 millions to 23 millions. Germany thus contrived to be supreme in manufacturing industries. Spain is not included in the return, for so many of the works of art were beyond any known market price, a valuation of them was not furnished.

A NEW use has been found for the automobile: By its means large groups in sculpture can be conveyed to their destination without being taken to pieces. This has been

exemplified in the case of the equestrian statue of *Vercingétorix* by M. BARTHOLDI. It weighs about 5 tons, and is to be set up in a public place at Clermont-Ferrand. From its size it could not be sent by canals or railway, and if it were drawn by horses it would be necessary either to take the statue to pieces and to despatch workmen to again unite the parts, or to pay a large sum for a special conveyance. A gentleman who is an enthusiast offered to convey the sculpture by an automobile car of his own. It was necessary to make the flooring of extra thickness and to strengthen the wheels as a preliminary precaution. The conveyance and its load were to be seen in the late Automobile Exhibition in the Champs-Élysées, and as the journey was safely made through the streets of Paris, there seems little doubt that M. BARTHOLDI'S work will reach Clermont-Ferrand without any injury. The experiment is of interest to sculptors.

DURING several years the coast scenes of EDWIN BRETT, A.R.A., were at once recognised in Academy exhibitions. Possessing some geological knowledge he endeavoured to represent cliffs and rocks in a manner which could be appreciated by men of science. In attaining so much accuracy art was occasionally sacrificed, for with so much detail it was impossible to treat large masses with adequate breadth. He also found it necessary, in order to show the peculiarities of his rocks, to restrict himself to representations under strong light. For the same reason his seas were generally either calm or only gently disturbed. But, in spite of the limits he accepted, EDWIN BRETT'S paintings were always welcome to visitors, and, moreover, they were survivals of the pre-Raphaelite endeavour to represent things in all their fulness. On Tuesday the painter's career came to an end. He had reached his seventieth year, but until lately he appeared to have many years before him. His loss will be felt, for by one class of amateurs EDWIN BRETT was esteemed as the most accurate of seascapists, and for the multitude he recalled coasts as they were seen in summer holidays.

It used to be accepted as incontrovertible that the Pantheon of Rome was erected by AGRIPPA in order to form part of his baths. M. CHEDANNE was, however, able to discover that the building dated from about 150 years after AGRIPPA'S time, or in the reign of HADRIAN. It was, however, believed that the site was once occupied by a temple which AGRIPPA had raised. A little book has been written by Mr. JAMES THOMAS (Messrs. SWAN, SONNENSCHN & Co., LTD.), in which it is contended that the circular chamber was first erected in the days of SEPTIMUS SEVERUS. It is admitted that bricks bearing HADRIAN'S stamp may have been found, but it is believed to be possible "that, as material belonging to the ruined building reinstated by SEVERUS, the sound bricks would be used again in a new structure, while the fragments would be ground up for concrete." The Corinthian façade, according to Mr. THOMAS, belongs to the Augustan age, but the building is of a different period. It would appear that the temple was not always kept in sound condition, and the restoration would not be in keeping with the original idea. Mr. THOMAS'S book shows that the references of Roman writers to the Pantheon are sometimes to be distrusted, and if they are careless in one case why not in others? There is much for reflection, therefore, in the pages. But the author is not free from censure, for why did he allow a representation of a part of the frieze of the Parthenon to appear in gold on the cover of a book dealing with the Pantheon?

## ILLUSTRATIONS.

ST. MARY'S CHURCH, ECCLESTON: NAVE, LOOKING EAST.

SAVINGS BANK, GLASGOW. THE BOARD-ROOM.

VILLA TIJUGA, VILLEFRANCHE.

ST. PHILIP'S CHAMBERS, BIRMINGHAM.



## THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last, Mr. W. H. Seth-Smith, president, in the chair. Messrs. A. D. Thacker and G. M. Page were elected members.

It was announced that the Spring term of the day school would commence on January 13.

The following are recent donations towards the New Premises Fund. The total receipts amount to 3,436*l.* 2*s.* Mr. T. G. Jackson, R.A., 50*l.*; Mr. F. T. Baggallay, 31*l.* 10*s.*; Mr. A. Saxon Snell, 26*l.* 5*s.*; Mr. E. J. May, 21*l.* 10*s.*; Mr. S. Flint Clarkson, 10*l.* 10*s.*; Mr. H. J. Blanc, 10*l.*; Mr. C. Harston, 5*l.* 5*s.*; Mr. T. H. Russell, 5*l.* 5*s.*; Mr. E. Howley Sim, 5*l.* 5*s.*; Mr. B. H. Webb, 5*l.* 5*s.*; Mr. G. B. Carvill, 5*l.* 5*s.*; Mr. E. R. Chambers, 5*l.*; Mr. A. Hill, 5*l.*; Mr. H. S. Noblett, 5*l.*; Mr. A. H. Belcher, 3*l.* 3*s.*; Mr. W. Stewart, 3*l.* 3*s.*; Mr. W. L. Lucas, 2*l.*; Mr. C. M. Armstrong, 1*l.* 1*s.*; Mr. W. J. Devlin, 1*l.* 1*s.*; Mr. A. S. Tayler, 1*l.* 1*s.*; Mr. J. T. Woodard, 1*l.* 1*s.* Mr. J. A. GOTCH read a paper entitled

### The Development of Domestic Architecture in England from the Twelfth to the Eighteenth Century.

The subject is large; so large that one-half of it has filled the four portly volumes of Messrs. Turner and Parker on the "Domestic Architecture of the Middle Ages," and as that work would take, on a moderate computation, four-and-twenty hours to read aloud to you, without any interval for rest or refreshment, it is quite obvious that the view which we take this evening of the subject must be cursory, and confined to but a small part of the whole range of research.

It will be impossible to enter into minute details of style, decoration and fittings, but it may be of interest to show, by means of plans and views, how the stately homes of England grew from their small beginnings, and what were the most important influences which affected their disposition and their appearance. We are accustomed to take the memorable houses of the country very much for granted, each one being characteristic of its own period. What I want to do is to show, if only by glimpses, how these great houses grew, and what relation they bear one to another.

In the present day we should classify the accommodation of a house in three main divisions: the reception-rooms, the bedrooms and the kitchens or servants' quarters. Going back to the times of the early Georges, the same classification holds good, but the bedrooms were less important, and the reception-rooms much more so. Still further back, in Elizabeth's days, the same division is applicable, but we find the chief apartment among the reception-rooms to be the great hall. The bedrooms were largely left to take care of themselves. In all three periods the kitchen department is fairly commodious. But if we go back to the thirteenth or, further, to the twelfth century, the bedrooms practically disappear, and only the reception-rooms and the kitchens remain. Indeed, when we reach these primitive times it becomes necessary to alter our classification somewhat. There are still three kinds of rooms, but they consist of hall, solar and kitchens, the solar being the private apartment of the master or, to use a more appropriate word, the lord. These three rooms are the nucleus from which grew the vast mansions of Elizabeth and Anne, and the development of domestic architecture consists largely of the development of this one single apartment for the lord into the separate apartments which are now provided for each of his household.

There is this initial difficulty in investigating the houses of the early Middle Ages—that most of them have disappeared. They were as a rule built of wood and plaster, only some of the more important being of durable materials. Those which have survived have suffered so many alterations in the course of their existence that their original arrangements are not always to be made out. Nevertheless, from such remains as survive, and from the rare references to such matters as have come down to us in contemporary writings, it is quite clear that houses consisted of, first and foremost, a hall, then at one end the solar or sollere (as it is also called), and at the other the kitchen with its subsidiary apartments. Writing about the year 1180, one Necham, who rose from being the master of the grammar school at St. Albans to being Abbot of Cirencester, enumerates the apartments of a house as consisting of the hall, a private or bedchamber, the kitchen, larder, sewery and cellar.

The houses of that time were comparatively limited in number. There were the king's houses, of which he had a good many in different parts of the country, the houses of the great barons, and the manor-houses. Besides these there were the great religious establishments, which, however, had their own special arrangements, hardly falling within the scope of this paper.

Many of the great barons lived in highly fortified houses which we call castles, some of which were actually military strongholds. In the case of others, it is not easy to draw a

distinct line between the castle and the house, for they were all more or less fortified. But at present it is not the military strongholds which are under consideration, but those dwellings which were only fortified in order to secure their inhabitants. Such a house was the Peak Castle, in Derbyshire, which was built on a steep hillside on a triangular piece of land, protected on one side by one of the numerous and precipitous dales for which Derbyshire is famous, on a second side by the sheer descent of the gorge into which the Peak Cavern opens, and on the third by the steep hillside, at the top of which was the outer wall of the castle. The dwelling part of the castle was the keep or tower, the ruins of which still crown the summit of the isolated piece of land. This keep resembles the pele towers of the Scottish Border, many of which still remain both in Northumberland and in the Lowlands of Scotland. It is a square tower of three or four storeys, each floor containing one room. The basement was a cellar, the floor above it contained the hall, over the hall was the lord's private apartment. This arrangement is very primitive, and represents what must have been the minimum in the way of accommodation which was tolerated. This vertical disposition of rooms, one over the other, soon gave way to a disposition which placed most of them on the ground floor, or if they were not on the ground floor they were spread out into a form less rigidly vertical.

Whatever arrangement was adopted, however, the hall was the chief apartment. It was the largest, the most permanent and the most central. It was, in fact, the dwelling-place of the household, and became synonymous with the house itself, which was in most parishes known as "The Hall." In this apartment the whole household lived, ate and slept; all save the lord and possibly his family, who had a separate room into which they could retire, already mentioned as the solar. The solar appears to have been almost always an upper chamber, built over an apartment which was often used as a store place; but there are so few remains of these very early houses that the exact arrangements can hardly be made out with certainty. The solar seems to have been approached in many cases by an outside staircase. But, at any rate, this much is clear, that the hall stood in the middle, between the solar and the kitchen, the latter being the third of the three main classes of rooms which these early houses contained. The cooking was not done in the hall, but in a separate building devoted to the purpose, attached to which were a few subsidiary rooms such as the larder, where the food was kept; the sewery, where provisions, linen and table furniture were stored; the cellar, which was used for general stores and wine; and the buttery, where the drink was distributed. These smaller rooms were not always provided; their presence depended on the importance and size of the house; but there were always and in every house the three divisions of hall, solar and kitchen, the hall lying between the other two. The arrangement of the hall was simple, and remained the same in principle from the earliest times down to the seventeenth century. It then underwent a change which marked a complete revolution in domestic architecture, and which will be described in due course.

The hall, lying, as already said, between the solar at the upper end and the kitchen at the lower, was entered, close to the latter, by a door in its side wall. Through the lower end wall were doors leading to the kitchen department, sometimes two, sometimes three. Of these, one opened into the buttery, one into the kitchen or kitchen passage, and the third (if there were a third) into the pantry. There was usually a screen stretching across the hall to keep off the draught from the open door, and more particularly to screen off the kitchen traffic, for draughts would still come through the windows, which were seldom glazed in early times. There were doors (generally two) through the screen into the hall itself, and there was a ceiling to the passage cut off by the screen, which formed a gallery usually known as the minstrels' gallery, although it is tolerably certain that very few of the ordinary households could have supported a private band. At the end of the hall, away from the screen, was the dais, which was a raised platform some few inches high, whereon the lord and his family and principal guests sat to dine. In this upper end of the hall was a doorway leading more or less directly into the solar. Both the solar and the kitchens were sometimes built of wood, as were also many of the subsidiary apartments. Such fragile buildings have disappeared, leaving in some cases little besides the hall to tell of the former extent of the house. This may have been the case at Oakham Castle, where the hall alone remains of the building erected about the year 1180 by Walkelin de Ferrers. But this hall is an extremely fine example of its kind; it is of considerable width and the roof is carried in three spans, one over a central nave and the other two in the shape of a lean-to against it—an arrangement similar to that adopted in churches, and serving to remind us of the similarity of treatment adopted in both ecclesiastical and domestic buildings. The windows are small and low down, and they have, in common with the doorway, the characteristics that distinguish the transition from Norman to Early English. The interior might well be taken for that of a church, with nave



and aisles, but the position of the doorways in the end walls, the treatment of the windows on the inside, as well as the absence of any indication of a chancel, would put the wary inquirer on his guard. The hall stands alone, the solar and kitchens—which must have existed—having disappeared. It may be that they were burnt, for accidents of that kind happened not infrequently. One, indeed, happened in 1182, two years after this hall at Oakham was built, to no less a person than Abbot Samson of Bury St. Edmunds, who, we are told, was nearly burnt to death in his solar, the only door being locked and his Early English windows being too narrow to admit of his getting through them.

If not burnt down these rooms may have been blown down, as were the royal kitchens at Oxford in the seventeenth year of Henry III.

It seems quite clear from these and other specific references that many of the subsidiary rooms were built of wood, although the hall was of more durable materials. Its permanent character arose from the nature of its use. It was the sheltering place of the whole household. Temporary kitchens might be and sometimes actually were erected, so might a temporary bedroom. But in the hall the family and its retainers ate and slept; in it also the lord held his courts and received those who came to see him on matters of pleasure, of business, or of strife.

Personal comfort was not much studied in those days; men were content to sleep where they could, and when there was no room in the hall they sought, without reluctance, the equally refined shelter of the stable. There was no indignity put upon Ivanhoe in sending him to the stable; his fellow-knights often shared his fate in this respect. A little after his time we learn that Henry III. ordered the wood-cellar at Clarendon to be fitted up as a chamber for the knights in attendance on him. As they were not particular about their beds, so also they had simpler views than we have about the heating of their rooms. In some houses only the solar had a fireplace; the hall was heated by a fire in its midst, the smoke finding its way out of a louver in the roof. Here and there the hall had a fireplace of its own. The smoke from the central fire found other vents than the louver, for but few of the windows were glazed; wooden shutters served to keep out the weather. In some grand houses the part above the transome was glazed, while that below retained its shutters. But people were susceptible to draughts even in those hardy days, for Henry III. directed a window in the queen's room in the tower to be glazed, "so that the chamber might not be so windy."

It was in his reign, too, that the practice of wainscotting rooms—that is, lining the walls or the roof with wood—was introduced, and there are several instances in which he ordered a certain number of bays of a roof to be wainscotted, presumably in order to keep the draught from his own head and those of his principal guests.

But I must not enter too much into details; these matters have been mentioned rather with the view of showing how small an amount of what we call comfort was expected in those days, and how, therefore, it is not surprising that very few rooms satisfied the domestic needs of the times.

At Stokesay, which was built in the thirteenth century, the main dispositions conform to the usual type. There is the large hall entered at the end of one of its sides. At its upper end is a door which eventually gave access to an outside staircase leading to the solar. At its lower end is a cellar, over which is an apartment with a fireplace. This room was reached by a staircase in the hall, standing in what would ordinarily be the screens. Of the kitchen there do not appear to be any remains. Beyond the upper end of the hall is a tower which was used for defensive purposes, upon the particulars of which it is not now needful to dwell. The details of the work are characteristic of the thirteenth century. The hall windows are of two pointed lights surmounted by a circle. The lights, which are divided horizontally by a transome, were provided with shutters, but the circle was apparently always open for the winds of heaven to blow through, and doubtless it was through them that most of the smoke from the central hearth escaped.

Yanwath or Yanwith Hall, in Westmorland, was built early in the fourteenth century, but underwent considerable alterations in the sixteenth. The same arrangement was adopted here as in the former examples. The great hall was approached through a passage, which was enclosed by a stone wall on both sides instead of having one side formed by the wood screen of the hall. On the left of the passage was the kitchen, on the right was the hall. The hall itself had a fireplace instead of a central hearth, and this fireplace was at the lower end of the hall. In later times it was more usually placed near the lord's end. There is also a bay window, a feature which became subsequently of universal adoption. The solar, in this instance, is developed into several rooms, situated in a tower, and exhibiting the usual characteristics of the accommodation of a pele tower, namely, one fair-sized room on each floor surrounded by thick walls, in which are

contrived various diminutive apartments, access being obtained from floor to floor by means of a narrow newel staircase.

In addition to the usual accommodation which has hitherto been mentioned, Yanwath had a number of other rooms arranged so as to form an enclosed courtyard, one side of which has, however, disappeared. The entrance to this courtyard was through a gateway nearly opposite to the hall door. This courtyard idea, which arose from the necessity for defence, lingered on, as we shall see, for reasons of appearance, long after the need for defence had ceased.

At Sutton Courtney, in Berkshire, is a house, built about the middle of the fourteenth century, in which the usual disposition of rooms is again found. The hall is entered at one end through the screens, and the roof is made to agree with the framing of the screen itself. At the lower end is a doorway which led to the kitchens; at the upper end is a wing which contained the solar on the first floor, reached by an external covered staircase. There is no bay window, but it is worthy of note that below the main window at the dais end is a low side window, probably contrived for the pleasure of the occupants of the dais. In later times, while the hall windows were almost invariably high up from the floor, the bay window of the dais was equally invariably brought down low enough to afford an outlook. The lofty hall roof still remains (or remained when Turner and Parker wrote), and the general character of the work led to the hall being called the chapel, another illustration of the widespread, but fallacious notion that Gothic forms must of necessity indicate a religious edifice.

The hall itself was usually a lofty building, with an open-timbered roof. It divided the house into two separate halves, which, if they were of two storeys, had to have their own separate staircases. The walls of the hall were often plastered, and for ornament they were hung with the spoils of the chase, or else with pikes, guns and bows, with old swords and bucklers that had borne many shrewd blows. A good example is to be seen at Cothele, in Cornwall, and also at Haddon Hall, where the fifteenth-century wood screen still remains.

Haddon is a fine example of a large fifteenth-century house built round two courts, and still exhibiting a considerable desire for defence. The hall, as was usual in double-courted houses, was placed in a wing between the two courts, thus being in the most central and best-protected position. It was flanked, according to the usual custom, at one end by the buttery, pantry and kitchen, and at the other by the family apartments, hitherto confined to the solar, but now developing into the parlour and other rooms, including a number of separate bedrooms. This plan of Haddon shows the great chamber and the long gallery, but it should be remembered that the great chamber was probably not so called prior to the sixteenth century, while the long gallery was contrived over the walls of a number of earlier rooms, towards the close of that century. The kitchens here are much more elaborate than in any of the previous examples, and they go to show that the wants of a large household and a hospitable lord were both great and permanent, and not so liable as in ancient days to interruption from hostile visitors.

The possibility of such interruptions was never absent from the minds of the builders of those days. Houses were nearly always surrounded by a moat where the nature of the ground permitted it. The entrance gateways still followed in many cases the ancient fashion of placing an archway between two towers. The courtyard plan still held the field in houses of any pretensions. As the years went on the character of the ornament changed just as it changed in churches. The tracery disappeared from the windows, which became flatheaded; doorways likewise became less aspiring, and assumed the obtuse angle of the Tudors. Fan tracery made its appearance in various places, such as the ceilings of bay windows and porches; circular stairs were placed in turrets, which were carried up above the main block of the building and crowned with lead cupolas. The splendid brick chimneys of Henry VII. made their appearance, with all their intricacy of cut and moulded brickwork.

Then came the Italian influence, which first made itself felt in unimportant ornament and then spread to shaping the building itself, reducing it to symmetry so far as the exterior was concerned, but leaving the interior still to be arranged after the old fashion.

It brought also that exotic feature, the loggia, or open arcade, which, however, never obtained a really firm footing in English houses. Indeed, all through the sixteenth century and the first quarter of the seventeenth, the new Italian influence never overmastered the old irregular English habits. But under the accomplished Inigo Jones, as we shall presently see, symmetry, which had hitherto been kept to the outside of the house, invaded the inside as well.

However much the character of the ornament may have varied, the character of the plan moved but slowly and always in one direction. Haddon and Apethorpe, two large houses, have shown how the old type grew at its two ends, the hall remaining as of old, but the kitchen and the private apart-



ments undergoing considerable increase and development. On a smaller scale Canons Ashby tells the same story. So do the plans of Elizabeth's time, such as Canons on a small scale and Kirby on a large scale, both taken from Thorpe's book. In looking at these plans it is obvious that the old idea is still the foundation of the arrangements, although in a great place like Kirby the accessory apartments have become vastly multiplied, and all thought of defence has been abandoned. Houses are no longer built for safety, but for show. Windows which once were sparingly introduced into the outside walls, that is, the walls looking out on to the country, are now used without restraint, and are regarded quite as much from the point of view of how they will help the composition of the design, as from that of usefulness in lighting the rooms. Cheerfulness, splendour, comfort (of a kind), these are the qualities now sought after. The hall had long ceased to be used as a sleeping apartment; when the family and servants retired to rest, it was left to Puck and the fairies, to Oberon and Titania and their train, who

Through the house give glimmering light  
By the dead and drowsy fire.

It was not always used even as an eating place, at least by the master and mistress and their family, for many families had already sought a smaller and snugger room for their meals, where they could enjoy more comfort and privacy. Not only had the ancient solar developed into the parlour, but the parlour had been developed into the summer parlour, the winter parlour and the dining parlour. It was no longer on the upper floors, but close to the hall on the ground floor. It was no longer the only bedroom, for bedrooms had been indefinitely multiplied, and, under the name of "lodging," fill up any space in old plans to which no more fitting name could be given. The solar had still further developed. In addition to the parlours on the ground floor, there had arisen the great chamber on the upper floor, and the long gallery—that feature peculiar to Elizabethan houses.

The finishing and embellishment of these rooms had developed along with their number. In the days of Henry III. we hear of plastered walls and wainscotted walls and roof, but the rooms were extremely draughty, and the smoke from the central fires must have been almost intolerable; there was, indeed, no great inducement to abolish draughts so long as the smoke hung about the room. But the discomfort of draughts and smoke gradually told, even on the iron constitutions of Mediæval knights, and by degrees fireplaces with a special flue for the smoke grew more common and the smaller rooms were furnished with them. Draughts were excluded by filling the windows with glass, and later by plastering the ceilings as well as the walls. Indeed, the ceilings were plastered more frequently than the walls, which were usually covered either with tapestry or with panelling. The plaster on the ceilings was not kept plain, as it usually is in our days, but was worked into an infinite variety of ornamental patterns. Indeed, by the period at which our story has now arrived, the fitting up of rooms had reached a point of development beyond which we have not gone very far. We have introduced a number of refinements in detail, but with the exclusion of the weather, the furnishing of a means of heating and the embellishment of the walls and ceiling, our ancestors of Elizabeth's time had really surmounted the chief difficulties of making an individual room pleasant. Its relation to the general scheme of the house is another matter.

Down to the end of the sixteenth century, and, indeed, as far as the first quarter of the seventeenth, the old type of house-plan was still used—the old type which had prevailed in the days of the Norman kings. It is true that the ancient idea had been greatly developed; the kitchen department had been so much enlarged as sometimes to require a court to itself. The single private room, the solar, had been multiplied into several parlours, the great chamber, the long gallery and many "lodgings" or bedrooms. But the hall still remained the centre of household life, and the *daïs*, which indicates its use as a living-room, is shown on nearly all the plans in Thorpe's book. This enormous development of household convenience and comfort would, of course, have been impossible had the first idea of the builders been, as of old, to secure safety; but it was not, and as the certainty increased that a man need not depend upon his own efforts to preserve his security, but the public authorities, so he found more leisure to attend to his comfort, and for securing greater privacy for himself and the members of his household. The great hall began to feel the influence of this change; it had long ceased to be used as a sleeping apartment, and now it ceased to be used for meals. The family withdrew at one end, the servants at the other, and it became merely a vestibule. Concurrently with this change of use there went a change of idea in planning. The symmetrical disposition of houses which the Italian influence produced demanded that the hall should be central. Long-established custom demanded an entrance at one end of the hall, in the "screens," which,

therefore, could not be in the centre of the façade. There are a number of examples, both in Thorpe's plans and in actual houses, of how these difficulties were surmounted. But when the hall was no longer wanted as a living room, there was no longer need for the entrance to be in its old position at the end, and the imperious demands of symmetry were satisfied by placing the hall in the centre of the façade and the entrance door in the centre of the hall. This point is curiously illustrated by comparing Thorpe's plan of Aston Hall with that of the house as built. Thorpe shows the door in the old-fashioned situation at the end. It was actually built in the centre, and the hall here definitely ceased to be a living-room and became a vestibule. This change is a momentous one; it brings us out of the Mediæval idea into the modern.

But although at Aston the plan shows a new departure so far as the hall is concerned, it still follows the old lines in its general grouping, and so does the external appearance. The triumph of foreign fashions over native was, however, near at hand, and it was Inigo Jones who brought it about. At Raynham Hall the plan is no longer founded on the old type. The hall is not the chief apartment, with the family at one end and the servants at the other. The latter have descended into a basement, and the whole ground floor is occupied by family rooms. Traces of the old fashions remain in the projecting wings and in the gables with which they are roofed. But in Coleshill, another house of Inigo Jones, the foreign influence is even more marked, the plan is still more symmetrical, the elevations are still more Classic. In neither house are the windows mullioned; they have sashes, and the change from mullions to sashes marks the final disappearance of the last traces of Mediæval treatment.

The lesson in foreign fashions which Jones gave his countrymen was continued by Wren, and bettered by his successors in the eighteenth century. At Raynham and Coleshill one cannot help thinking that the snugness of home is sacrificed to the demands of stateliness; but at Blackheath and Kedleston it is lost altogether, and the inhabitants of those great houses must daily pay a penalty inflicted by grandeur. The component parts of the house are divided into separate blocks with tiresome corridors of communication. The great houses of the eighteenth century make a brave show, but they exhibit a profound scorn for the small amenities of household life. They were built in an artificial age, and like the huge wigs which their builders wore as an indispensable part of their costume, they were intended rather for the admiration of the beholder than the comfort of the owner.

But the pursuit of comfort, which was the propelling force in all the changes of domestic architecture which we have been tracing, although it was neglected by the great in the days of Anne and the Georges, was still followed by persons of humbler ambitions, and in the smaller houses of the eighteenth century there is much that is admirable. Much skill and care was expended upon their internal embellishment, and the woodwork of that period is always worth our careful study. This is not the occasion upon which to enter on a minute description of the respects in which it differed from that of Elizabeth's time; this only need be said, that it followed the general tendency of domestic architecture in adopting largeness of scale and dropping minuteness of parts. The two examples from Wilton House and the Brewers' Hall will be sufficient to indicate the change of treatment.

This long story must now come to an end. It has not dwelt much on details; it has rather sought to show by means of actual illustrations, as distinguished from mere assertions, that our domestic architecture has undergone a real process of evolution, and that it has reflected, as indeed one might suppose that it would, the habits and wants of well-to-do English people. The feudal lord, surrounded by his retainers, was satisfied with one great room for his household, a small room for himself when he desired rest and privacy, and a place to cook his food; the more important added to these a chapel. These few rooms were securely placed behind a surrounding wall. The feudal lord's Elizabethan descendant was no longer concerned about the safety of his household. This had increased in number rather than diminished, and while the courtier of the Virgin Queen still kept the old hall of his forefathers, he added a vast array of rooms in one direction for his household, and in another for his great guests and their retinues. His descendant of Queen Anne's time no longer made even the pretence of living in the midst of his household. His servants were banished to a basement or a distant wing, and his chief concern was to have stately halls for the reception of his guests, after whose departure he and his family sought the seclusion of such rooms as were of a reasonable size. But just as these habits were of a slow growth, so the changes which they wrought in the houses were quite gradual. A continuous thread runs through the whole series from the Conqueror to the Georges, and the vast palace of Blenheim can trace its origin back to the lonely little tower perched on the hill above the Peak Cavern at Castleton.

Mr. J. DOUGLASS MATHEWS proposed a vote of thanks to



Mr. Gotch. Mr. H. H. STATHAM seconded. Messrs. ARNOLD MITCHELL, G. M. NICHOLSON and N. F. BARWELL supported the motion.

### ARCHITECTURAL OUTLOOK IN AUSTRALIA.\*

IN giving a ten minutes' impression of the outlook of the architectural profession under the Commonwealth it can safely be anticipated that under federation the general advancement of the whole of Australia will be helped forward and the natural advantages of various parts be more generally known. It can also be assumed that the leading position occupied by Victoria will be maintained, and this may possibly be greatly due to the climatic as well as geographical advantages it possesses. Anyhow, I anticipate that the members of our profession here will hold their own, and their works compare favourably with those of other parts of Australia.

Unfortunately, there has been in the past a feeling that cheapness and showy appearance was the principal matter to be observed, and a more substantial class of work generally has been erected in adjacent States. Personally, I am pleased to find that there is an improvement in this feeling, and I anticipate that with a more settled political condition there will be a better class of buildings erected in the future.

Unfortunately, at the present time there is such uncertainty in commercial circles as to the results of federation, and the present proposals for taxation, that it prevents many building operations from being carried out, which we all devoutly look forward to; but in spite of the political gentlemen who so readily undertake to manage us, the natural resources of Australia must be rapidly developed, and thus give opportunities for the employment of architects in the practice of their profession.

The man who has been properly trained, and who, while not posing as a genius, has artistic feeling combined with the necessary knowledge of mankind to deal with clients and workmen, will get a fair proportion of this work, and I cannot see that the new conditions will alter the fact that it is not all luck which gives one man more commissions than another.

Unfortunately there is the difficulty to be faced that there is even at the present time a great scarcity of really good workmen in nearly all trades—many of these men have left Australia. I have found them engaged in country pursuits, and the attractions of that life are sometimes sufficient to prevent them returning to their trades, although their present earnings are less. And apparently there is not that system of training for young tradesmen which warrants us looking forward to their being able to fill the places of those who have gone, or who must, from natural causes or the result of decisions of wages boards, cease work at a time when all their experience would be for the production of quality of work if not quantity.

While I have great admiration for the efforts made in the training which may be imparted at the working men's college, or the various technical classes of schools of mines, this alone will not give that practical and methodical experience which we want in the men who, however good the architect may be, must carry his ideas into practical form. I am in hopes that in time the workmen—and I mean skilled tradesmen—will come to the conclusion that a trades' hall should be instituted for other reasons than that of reducing hours and increasing wages, and that they should formulate schemes for proper systems of apprenticeship, which are the best means of training men to carry out the class of work which we as architects would like to see.

The great possibility of work in connection with the formation of a federal capital will possibly be looked forward to as being in the immediate future. I sincerely trust this may be so, but it must be remembered that even supposing that the site was decided on at once, it will take many years before the preliminary work of water supply, roads, &c., could be completed, and it may be that the younger members of the profession can anticipate the fees they are likely to earn with more enthusiasm than I personally am able to. In connection with the erection of the various State and departmental buildings which will form a great part of any federal city, it is to be hoped that their character will not be cramped by the possibly natural desire of those in permanent Government positions to keep the ordinary struggling architect out of it. I hope that the erection of these works will be open to members of the profession who are outside this charmed circle. In England, during the last few years, a wonderful improvement and development has taken place in the character and magnitude of Government buildings, and in nearly all cases the Government has availed itself of the experience and ability which has been shown by architects in private practice, and I am, I think, safely within the mark when I maintain that if architects were given the same facilities here, they would prove themselves as capable as those of other countries

in carrying out similar works, and I am confident that under private management an equal class of work could be carried out for far less than it costs under departmental administration.

I do not think there is any profession which depends more on the general advancement of a country than that of an architect, and his success and that of the builders and workmen go hand in hand. Unfortunately, no amount of energy on the part of an architect will induce clients to build unless they want to, and our greatest hope for the future is that under federation the progress of Australia will advance by leaps and bounds, and that this will be on a sound basis, where people will accumulate wealth and spend it in building.

### A COPTIC MONASTERY.

PROGRESS in a dahabeah on the Nile is determined now, says a correspondent of the *Scotsman*, as it was in the days of Menes (5,000 B.C.), by the wind. You are lucky if a contrary wind stops you at a place where there is some object of interest, some little known group of rock-hewn tombs, some graveyard of the men who lived long before Agamemnon, or some place of worship of an early faith. At present we are wind-bound at a reach of the Nile where progress up-stream is impossible without a north-east wind, and to-day a small gale has been blowing from the south-west. It is Christmas Day, and the temperature at mid-day was 81 degrees. In the neighbourhood there are no very early monuments, but within half a mile rises a wall of limestone rock some hundreds of feet high above the river bed. Scarred and serrated, with deep fissures, it marks the old course of the Nile in ages before the First Dynasty. On its highest point stands one of the earliest Christian churches, which still remains almost exactly as it was in the days of Constantine. The plateau itself is not without interest. The limestone has been quarried here and there from the days of Rameses III., and probably earlier, and the work still goes on. There are two curious legends about the place; one of prehistoric antiquity, the other Christian. The former is that all the birds of Egypt were wont to assemble here once a year. They then selected one of their number who should remain here till the following year, and the others flew away into all parts of Africa till the anniversary, when they returned and appointed another guardian. The Arabic writer Al. Makrizi gives another version. According to him:—"At one point of the hill is a narrow fissure, and on the saint's day of the convent all the bukir birds in the neighbourhood come flying to this fissure, flocking together in a huge crowd and making a tremendous din. One after the other in constant succession thrusts its head into the cleft and utters a scream, until one comes whose head sticks fast and cannot be withdrawn. The victim then beats its wings against the rocks until it dies, after which all the other birds depart and leave the rock in solitude and silence." The "bukir" bird is described by another Arabic author as "black and white, with a black neck, ringed near the head, black wing-feathers, and the ability to swim." Maspéro identifies the bird with the heron (*Ardea bubulcus* of Cuvier). He notes that the same tale is told by many other Arab writers, and that "it faintly recalls that ancient tradition of the cleft at Abydos, whereby souls must pass as human-headed birds in order to reach the other world. The Christian tradition is that the mountain bowed down in worship before our Lord, that He grasped it with His hand as it worshipped and set it back in its place, and that the mark of His hand remains on it to this day. The name of the hill is Gebel el Ter, while the monastery recalls the tradition of the birds by its name, Der el Bukêr.

Whether it was regarded as a holy place before the fourth century is unknown, but there seems to be no reason to doubt that the Empress Helena founded the church and monastery which remain to this day. In Egypt you are so much in the habit of seeing antiquities of all sorts, from Pyramids to necklaces, which date from 5,000 or 6,000 years ago, that a building which can boast of an antiquity of no more than some 1,500 or 1,600 years comes to be regarded as a modern structure. Visitors to the Empress Helena's foundation are now few. Those who travel by the tourist steamboats are hurried past this as well as many other interesting places, while those on dahabeahs are loth to lose a good wind on the upward journey, and have probably got too many areas of sight-seeing on their way down-stream to spend the necessary day on anything later than the work of the Ptolemies.

Until quite recent years the Nile flowed close by the cliff on which the monastery is perched. A shaft with a rope and windlass went down inside the rock some hundred feet or so, and it was the custom of the lay brethren to descend this shaft and swim out to passing dahabeahs to demand "backsheesh." The Coptic patriarch has forbidden this practice; but an alteration in the course of the Nile, which for nine months of the year now leaves a broad stretch of rich land at the foot of

\* A paper read by Mr. Chas. A. D'Ebrow, F.R.V.I.A., at a meeting of the Royal Victorian Institute of Architects.



the rock, has probably been more effectual in stopping the undignified proceeding than the commands of the ecclesiastical superior. The shaft, too, is now replaced by an easy staircase of about 100 steps, and up and down these there passes all day long a string of labourers, women carrying water-jars on their heads, as well as cattle and donkeys, who seem to find the staircase as convenient as do bipeds.

At the top of the staircase a short incline leads you to the wall which surrounds the church and dwelling-places of the community. There are at present fourteen monks, but a good-sized village, peopled by lay brethren with their wives and families, has from time immemorial been gathered round the little sanctuary. In the days of Moslem intolerance these walls were very necessary for the Coptic communities in Egypt, and here the general appearance of the whole place reminds you more of one of the old Provençal fortress towns than the seat of a religious community.

The houses are but huts, the streets narrow alleys—none of them straight—and the buildings, except the church, are without architectural interest. A crowd of the inhabitants appears at once, curious, but, for the present, silent. Two or three are monks clothed in flowing black robes and wearing black turbans; the rest are women with their veils drawn across their faces, young men glad of an excuse for a holiday, and some dozens of children. The monks are striking-looking men, tall, lean ascetics, with straight, high features and those long almond-shaped eyes which have come down to them from the days of the first Pyramid builders. A living proof, it seemed to us, of the fact that the Copts are of the oldest race which has inhabited Lower Egypt. Here there seems to have been no mixture with a darker people. The skins of all are brown, of course. What else could they be after centuries of exposure to an Egyptian sun? But it is essentially a race of white men. A race, alas! that has been persecuted and oppressed for centuries, but which still preserves, along with much superstition and many irrational observances, the Christian faith which St. Mark is said first to have preached at Alexandria.

We are conducted to a small square on one side of which is the ancient church. The present entrance is on the south side, near the east end. At the west end was the old doorway, now built up, but still showing the carved lintel and posts. The carving of these appears to be of later date than the rest of the church, and the door might be the work of the seventh century. None of the guide-books give any detailed description of the church, and Curzon, in his "Monasteries of the Levant," does not mention this disused door. Whatever the date, the carving is Byzantine in character, and the interlaced patterns have a certain likeness to Celtic work. The church itself is partly rock-hewn. It is said to be "built in the recesses of an ancient quarry." The north and south walls are solid rock. There are no transepts, but an apse with rock-hewn pilasters with rough Græco-Roman capitals. The church is in the form of a basilica, as is usual with those of the pious Empress Helena's foundation. On entering you descend a few steps and reach an aisle about 10 feet wide. This aisle runs round the south-west and north of the nave, and thus an inner square is formed in front of the sanctuary. The dividing columns are octagonal and of great strength and thickness. Above is a sort of clerestory, and the whole nave is surmounted by a dome, of later date than the rest of the church, with some rude decoration on its sides. The only light in the church comes from this dome—there are three small cupolas over the sanctuary, but they are of brick or stone plastered inside and out. The screen in front of the altar is of poor workmanship, very different from the marvellous inlaid screens which still glorify some of the Coptic churches in old Cairo. Above it are some poor pictures in pseudo-Byzantine style. A Madonna and Child in the centre might almost be a bad copy of a Cimabue. St. George and the Dragon are there, of course, as in nearly every Coptic church. Formerly the monastery possessed some valuable Arabic MSS. and some old Coptic books. These have been sold years ago when poverty was most pressing. Latterly times have somewhat improved with the monks, and though they show no signs of affluence or even of comfort they possess lands and flocks and herds. After the church had been thoroughly examined we suggested to our dragoman the desirability of taking a photograph of the interior. He had no hesitation in ordering the monks out of the way of the camera or in driving the lay crowd out of the building altogether. This was necessary, as the dim light required a long exposure. In the bright sunshine outside there was no difficulty in getting photographs of monks and laity alike—all of them were delighted, and posed at once in picturesque groups and in dignified attitudes. A donation to the monk who had done the honours of the shrine raised a cry for "backsheesh," which never ceased while we visited the neighbouring graveyard on the desert plateau. The children regarded the whole thing as a great joke, and fled from the wrath of the dragoman, only to reappear over the edge of rocks like a lot of rabbits. To geologists the whole plateau is interesting. The limestone is full of shell-fragments—num-

mulites are so abundant that it is almost impossible to pick up a piece of stone which is not full of this large foraminifera. Remains of various bivalves are also to be found in quantities, and the theory that the sea once flowed up to the first cataract receives ample proof.

After taking some more photographs of the outside of the church and village, and another of a group of the younger inhabitants, and after satisfying to a small extent some of the many claimants for backsheesh, we went down the staircase again to the Nile valley, followed by a string of cows, who tripped down the steps with the delicacy of Agag.

## THE FEDERAL CITY.\*

IN placing this paper before you I wish, at the outset, to preface it by a few explanatory remarks. In the first place, this meeting of architects and surveyors has been called for the purpose of arousing if possible some genuine public interest in the subject we are about to discuss. Mr. Knibbs in his exhaustive and scholarly paper read before the Royal Society a few weeks ago, treated the subject admirably from a high academic standpoint. I have only ventured to approach it from the standpoint of the man in the street.

The necessity for a Federal capital offers us an occasion to achieve distinction by founding a city that may be made almost perfect with regard to its planning. Almost perfect, for though ever since the earth was first peopled men have been building cities for themselves, we have not yet arrived at anything like an absolutely perfect plan. And we probably never will, for the best scheme we could devise to-day must necessarily be imperfectly adapted to the increased requirements of those who come after us, unless all human progress is to cease. As it is now so it always has been, though perhaps in a lesser degree, for the onward march of civilisation is hourly becoming more rapid and more insistent. Every other city, with the exception perhaps of Washington, has grown naturally and gradually about the primeval settlement formed at first by a few pioneers attracted thither generally by some commercial or industrial motive. They were not always careful to select the best site for their embryo town—in fact it seldom or never occurred to them that they were forming a town—they were quite satisfied that they had chosen the spot best suited to their purpose. They only made such necessary arrangements for general convenience as their simple wants and limited knowledge could suggest; matters of hygiene and æsthetic questions troubled them not at all. Even where some slight consideration for posterity was shown, it was not always possible, for practical or other reasons, to carry out the original intention. Let one illustration suffice for all.

As perhaps many of you are aware, it was intended by the first Governor, Arthur Phillip, to make the principal streets of this city of ours 200 feet wide, and only one house was to be allowed on each allotment. These allotments were to have been of 60 feet frontage by 150 feet in depth, to preserve uniformity in the buildings and to provide against narrow streets. But even the autocratic Phillip was unable to realise his ideal. To carry out his scheme would have required more men and money and greater facilities than he could command, and there was other work to do. In the meantime his people required some better shelter than their tents afforded, and one by one temporary tenements were erected on any spot the builder chose to select; the little settlement climbed slowly up the hill-side; rough bush tracks in time became roads; by-and-by houses of a more substantial character arose, and vested interests grew with the growth of the town through the successive administrations of Hunter, King and Bligh, and it was not until Macquarie assumed the reins of government in 1810 that any strenuous effort was made towards laying out the streets. But Macquarie himself—that Botany Bay Augustus, who found Sydney a village and left it a city—was powerless to undo what had been done, and hence the narrow crooked streets of that early time exist to this day in a part of our metropolis lately resumed by the Government, that unsavoury region known as "The Rocks." If I may be permitted to be a little discursive I would like to say that, as an integral part of a great city, this area is, of course, hopelessly impossible; but it is, nevertheless, wonderfully picturesque in its squalor and astonishing disregard for anything approaching system in the arrangement of its streets; and it is, moreover, a place that should be of absorbing historical interest to all Australians, for it is the veritable cradle of the Commonwealth.

What is true of Sydney is true of every other town. As an American essayist has pointed out, this lamentable want of system on the part of our forefathers lends to many cities a

\* A paper recently read before a joint meeting of the Institutes of Architects and Surveyors of New South Wales by Mr. John Barlow, F.R.I.B.A., president of the Institute of Architects of New South Wales, and published in the *Building, Engineering and Mining Journal*.



charm without which they would be for the most part utterly uninteresting. This contrast between the old and the new has something more than a merely picturesque value, for it writes the history of a people in the streets of their town. And there should always be some traces of a history. The studied, foredoomed, regular irregularity of Washington never can appear to be anything but an artificial and formal appointment with which history and growth had as little to do as with a diagram of Euclid. Our new city cannot be of natural growth; it is being forced into existence for a special purpose, and if its arrangement boldly proclaims that purpose we may rest satisfied that we have done all that can be expected of us as far as the future historians of cities are concerned. I think in our Federal city we should not go beyond this. Let us do the best we can to meet our present requirements, and let us attempt no more. We know the needs of our own day; we cannot hope to forecast those of fifty years hence. The most we could have wished Phillip and Macquarie to have done for us was to have provided us with wide streets at convenient distances apart and of a comparatively easy gradient. And posterity will demand no more of us. I very much doubt whether they will thank us for the wide streets. For it hardly needs the gift of prophecy to foresee that all horse traffic will be banished from our cities before this century closes. We know more of aerial navigation now than we did of steam locomotion one hundred years ago, and yet who could have dreamed in the dawn of the nineteenth century that electricity—then but the plaything of science—would before that century ended be slowly but surely superseding steam as a motive power, that it would revolutionise the commerce of the world and add so materially to the things which make life worth living? Who will be so bold as to say that electricity itself will not be superseded, or at any rate applied to the requirements of mankind in a radically different manner before the next hundred years have passed over our heads?

Our business is to create a Federal city, the seat of the Government of the Commonwealth. The population must at first be small and migratory. We will have primarily to provide the necessary buildings for the use of the Federal Parliament, the Houses of Parliament, post office, custom house, law courts and Governor-General's residence, probably some twenty buildings altogether; and in addition to these, space would be needed for libraries and art gallery, theatres, churches, hospital, markets, baths, abattoirs, public gardens, recreation grounds and cemeteries, &c. Then we would have to provide for the accommodation of, say, 20,000 people, and the shops, &c., required for their use. We must give them room enough, and every luxury must be at hand; for it will be, if I mistake not, a summer city—a city, not of commerce and manufacture, but of pleasure. But all this, even when ample allowance is made for the circumstances under which we will assume the inhabitants of this antipodean Paris to exist, will not of itself occupy a very great portion of that 100 square miles that our State is to cede to the Commonwealth. Let us take an instance. The area of Washington is said to be 10 square miles, and the population in 1890 was roughly 203,000, say 20,000 to the square mile. If, then, we take two square miles and lay that out as our Federal city we must be considered to have allowed ample room for the assumed 20,000 inhabitants. Of course it may be said that I am underestimating the possible population, but Washington, brought in existence under similar circumstances, had only a population of little over 8,000 seventeen years after the foundation of its capital was laid. I have merely taken this number as a unit, but you may make it anything you please, and by allowing 20,000 to the square mile you will arrive at the size of the proposed Federal capital on the Washington basis. For the first few years, at any rate, I think that to put the total population at 20,000 is a sufficiently liberal estimate. This being granted then, our city would not cover more than an area of 2 square miles, and when the site is selected I would invite competitive drawings from all the world for the laying out of this portion, and this portion only. Let us make a study of our actual requirements, and if we can meet them in a satisfactory way we can afford to be careless of the future.

My city, in other words, would be as complete and self-contained as the town of Mediaeval days encircled by its wall. Some system, of course, would have to be adopted by which its future growth would be regulated; and for my own part I should favour the radial system, intersected by streets in a bold series of concentric circles, with a system of rectangular streets between. By this means it would be possible to extend zone beyond zone as the increasing population demanded it. It would not be allowed to stretch away in any direction, but that would be the only restriction. We should leave nothing else predestined or prearranged. Each zone, or part of a zone, could be laid out as it was required; all previous mistakes rectified and all increased necessities provided for. Washington earned its sobriquet of the "City of magnificent distances" from the fact that its huge framework of streets in years stretched out miles beyond the city itself, and precluded any alteration of the original design. It also, by extending in

the wrong direction, made the Capitol apparently turn its back upon the greater part of the town. By the system here proposed the Houses of Parliament and the Government buildings should be the centre round which would cluster all the other buildings, and no matter how vast in after years the city might become that centre would remain fixed and unaltered. As to the laying out of the town itself, what with Herr Stubben's paper on "The Construction of Towns" and Mr. Knibbs's valuable contribution, "The Theory of City Design," there seems to be very little left to say. So little at present would this capital of ours be a city of utility that I think it ought to be designed by artists working in conjunction with architects and surveyors—if only we could find some modern Poussin or later Turner. There are one or two things, however, I might suggest. The main thoroughfares should be triple avenues about 150 feet in width, and the other streets need not be more than a chain in width. There should be trees everywhere—deciduous trees for the most part, and not the ubiquitous pepper tree and the eternal fig. Flowering trees should also be placed at intervals, such as the Japanese plum and cherry, in order that we might have a blaze of blossom interspersed among the tender green. There should be lawns or rather ribands of smooth-shaven turf, separating the houses in the residential part from the footpaths; circuses should be formed at the intersections of the main streets, and the centre in each case marked by a great fountain or a monument. As for the houses themselves, each block should be more or less uniform as regards height and material, but a good deal of latitude might be allowed with regard to treatment, imposing only sufficient restraint to prevent incongruity. There should be no overhead electric wires; and it is to be devoutly hoped before the city is an accomplished fact that engineering science will have advanced sufficiently to enable the Federal water and sewerage board to devise some system of sewerage, which will not necessitate a forest of hideous ventilating pipes to insure its efficiency.

## TESSERÆ.

### The Use of Choirs in Churches.

IT may be doubted whether the exclusion of the laity from the outer chancel or choir was ever in ordinary cases very strict in practice, however it might have been in theory. It is, perhaps, no great proof of this that no such strictness is usual in continental churches at the present day, and that their choirs are often absolutely crowded with people of all orders. But it would appear hardly inconsistent with reason that there should be one part (the sanctuary) from which they were absolutely excluded, and one from which they were only debarred for the sake of convenience and good order. Sparrow says:—"In it (*i.e.* the chancel) were, at least in some principal churches, these divisions—chorus cantorum, the quire, where was a high seat for the bishop, and other stalls or seats for the rest of the quire, and the chancel properly, that which of old was called *agion bema*—'the sanctuary,' which was separated from the rest of the church with rails, and whither, indeed, none but sacred persons entered, whereas the laity entered into the other." Hooker, in speaking of the division in churches "between the clergy and the rest," adds in a parenthesis, "which yet we do not with any great strictness or curiosity observe neither."

### Discovery of Pompeii.

The light volcanic mould abundantly spread over the buried Pompeii in time became capable of cultivation, and the unconscious husbandman reaped from the fertile soil which covered the roofs of the buildings rich crops of wine and grain. Not a trace of even a ruin was to be seen for many centuries except a fragment of an old wall, which had constantly been supposed to have been reared on the surface on which it was thought to stand, but which, in fact, proved afterwards the most elevated part of the great theatre of Pompeii. Its superior height over all the other buildings had caused it to project above the volcanic stratum. In this state of things and subsequent to the discovery of Herculaneum, the hoe of a labourer was arrested by a hard substance. On removing the surrounding earth he perceived that he had nearly decapitated a small statue of, as he thought, massive gold. His eager efforts to pull up the fancied treasure were fruitless; the idol was firmly rivetted into a stone pedestal and the latter still more strongly cemented into some hard substance underneath. The peasant, however, had his wits about him. After possessing himself of a small fragment of the doubtful metal he restored matters in *statu quo* and left the field in the evening. The verdict of a silversmith was obtained in course, and being satisfied of the impossibility of turning the brass, even in his possession, to any great account, the peasant at once became loyal and honest, and imparted his secret to the proper officer of government, who immediately ordered the ground to be excavated on the spot pointed out. The image was soon found again, and,



moreover, it was ascertained that it constituted the ornament of the roof of a small temple, which, being likewise laid open, was the signal for all future Pompeian discoveries. The statue proved to be a Minerva, perfect in all parts except the head, which was nearly cleft in two by the sacrilegious hoe.

#### Sir Jeffry Wyattville.

In his youth Jeffry Wyatt, the son of a surveyor at Burton-on-Trent, was so far from displaying any predilection for studies connected with his future profession, that he was bent upon going to sea, and made two attempts to do so. At the age of seventeen he was to have gone out with Admiral Kempenfeldt in the *Royal George*, but being prevented from joining the vessel in time, he escaped the fate which awaited it at Spithead. Thus thwarted, he betook himself to the Metropolis in the hope of finding some opportunity of entering into the naval service, but as the American war had terminated no such opportunity offered. These disappointments, however, were all so many turns of good fortune. His uncle Samuel, an architect and builder of some note and considerable practice (who erected the Trinity House, London; Heaton House, Lancashire; Tatton Hall, &c.), although almost obscure in the profession, in comparison with James, took him into his office for seven years. At the end of that period, in the course of which he had become fully acquainted with the routine and business of his profession, he served a sort of second apprenticeship with his other uncle James Wyatt, R.A., and it was no doubt from him that he imbibed a preference for the Gothic and Old English styles. While with James he was brought into contact with several persons of high rank and influence, and among others his future royal patron, then Prince of Wales. No great encouragement, however, at least no opportunities, seem to have been held out to him at that time from that quarter, for in 1799 he accepted the proposal made him by John Armstrong, a builder, who had extensive Government contracts, to join with him. The business he now engaged in was highly respectable, nor the less so because eminently lucrative. Still it proved for about twenty years a bar to his admission into the Royal Academy as a member. It did not, however, prevent his being employed very extensively as an architect by many noblemen and gentlemen in various parts of the country, either in improving and making additions to their mansions or erecting new ones. Nearly all his works are of this class, however varied in themselves, with the exception of the new front of Sidney-Sussex College, Cambridge. He was not, therefore, so much known by repute to the public generally as he might have been had he been employed on buildings more open to notice. It seems to have been unexpected by himself when he was summoned to Windsor by George IV. in 1824; and perhaps it occasioned some surprise in others when it was first announced that Mr. Jeffry Wyatt, who changed his name to Wyattville, was to be the architect employed in remodelling the castle—such an opportunity for the display of talent as had not till then been offered to anyone in the profession for full a century. That work nearly occupied him exclusively for the remainder of his life, during which he resided chiefly at Windsor, within the precincts of the castle, in what is called the Wykeham Tower, at the western extremity of the north terrace, and where, after suffering for five years under an asthmatic complaint, he died February 18, 1840, in his seventy-fourth year, and was buried in St. George's Chapel.

#### Public Opinion and the Artist.

A man of fine talent is always to a certain extent the creation of the age in which he appears. The point from which he sets out is that condition of knowledge and illumination which prevails at the moment his career begins. The same opinions, the same feelings which influence the public opinion, have also their influence upon him. They have also enlightened his nascent intellect, have fanned his earliest fires. And in this point of view the condition of the taste of an age and a country may be reckoned among the constituent elements of genius. But while we admit that his achievements are the result of this double cause—on the one side the powerful impulse of his internal inspiration, on the other that which arises from the ideas, the prejudices and the opinions which prevail over all that surrounds him—it remains still to examine in what proportion these two principles are united, and how it happens that sometimes one and sometimes another exercises so powerful an influence. In this respect circumstances do everything. With a people who are more under the influence of reason than of sensibility, whose opinions are firmly formed and whose prejudices are tenacious, who mingle with the enjoyments of intellect more of pedantry than of enthusiasm, genius is compelled to restrain its flight within the narrow boundaries which are prescribed. It must tread that path which is marked out for it. It submits to laws instead of imposing them. It does not direct opinion, but is directed by it. Its features are with difficulty seen through the mask which encumbers them. There taste is the tyrant and genius the slave. On the contrary, in a nation where the taste

is not entirely formed, where the idol of opinion requires less sacrifices, genius launches freely and fearlessly on its career, and pursues it without trammels. It bends under no pre-existent rules. It creates the rules by its own example. It obeys no laws, but it becomes a legislator, and it stamps the glorious impress of its own character upon its works, upon the age in which it flourishes. In a word, genius is then a sovereign to whom taste is the subject.

#### Arabic Pendentives.

The stone and plasterwork of Cairo is chiefly surface decoration, of an even or flat tone, which has little or no constructive meaning, and seems to be more or less derived from the patterns which were used for the decoration of textile fabrics. The stalactite or pendentive bracketing, however, is strictly constructive, and forms a strongly marked characteristic of Saracenic art. Its first and principal use is for masking the transition from the square, as in a mausoleum, to the circle of the dome. In their domes the Arabs adopted and improved on the constructional expedient for vaulting over the space beneath, and passing from a square apartment to the circle of the dome, used by both Byzantines and Persians. The church of Sta Sophia, at Constantinople, presents fine examples of its Byzantine form; but in later edifices of that style constructional difficulties seem to have confined the architects to small domes. The buildings of the Sassanian dynasty also contain pendentives. The Arabs, with their peculiar faculty for cutting away all superfluous material, naturally arched the overlapping stones that filled up the angles of the building, and by using pointed arches overcame the difficulty of the Byzantine architects. The pendentive was speedily adopted by the Arabs in Egypt in a great variety of shapes, and for almost every conceivable architectural and ornamental purpose, to effect the transition from the recessed windows to the outer plane of a building, and to vault in a similar manner the great porches of mosques, which form so grand a feature characteristic of the style. All the more simple woodwork of dwelling-houses was fashioned in a variety of curious patterns of the same character; the pendentive, in fact, strongly marks the Arab fashion of cutting off angles and useless material, always in a pleasing and constructively advantageous manner.



[The Editor does not hold himself responsible for opinions expressed by the writers.]

#### Architecture in 1901.

SIR,—Permit me to point out that the writer of the article entitled "Architecture in 1901," which appears in your issue of 3rd inst. (page 4), has adversely commented upon the action of the Birmingham Architectural Association in connection with the Birmingham University without a full knowledge of the facts.

In the first place, the B.A.A. fully appreciate the architectural abilities of Messrs. Webb & Bell; as evidence thereof, when the Corporation determined to erect police offices adjoining the Victoria Law Courts, and proposed to have an architectural competition, I wrote to the Mayor protesting against such a course, and called a meeting of the B.A.A., at which it was unanimously resolved to petition the Council to employ Messrs. Webb & Bell to make the additions to their building. Fortunately our views were favourably considered, and I hold a very cordial letter of appreciation from Messrs. Webb & Bell of the action taken by the B.A.A.

With regard to the University, the difficulty was to obtain any reliable information on the subject. At first we were informed that Messrs. Webb & Bell had only been provisionally consulted. Then it was urged there should be a competition—not confined to Birmingham architects, as stated in your article, but either entirely open or among a selected few.

Some time afterwards the Vice-Chancellor made the astounding statement that, because Lord Calthorpe had imposed restrictions in connection with the gift of a site, the principle of competition could not be advantageously adopted; but Lord Calthorpe's agent wrote to the papers and absolutely denied that any restrictions imposed necessarily affected the question.

Up to that time no public announcement of the appointment of Messrs. Webb & Bell as architects had been made, and I have it on the authority of two members of the Council that they knew of no such appointment. I am sure if the writer of the article, whoever he may be, knew the members of the B.A.A. as well as I do and was accurately acquainted with the facts, he would not have even suggested selfish motives on the part of any one of them.



I should scarcely have ventured personally to show up the fallacious insinuations of the article referred to had no mention been made of the Royal Victoria Hospital, Belfast; but in addition to the architects of Birmingham being gratified that one of their number was selected for that work, I have the satisfaction of knowing that the architects of Belfast realise that the committee of the hospital went about the selection of an architect in an open and business-like way, and that after inspecting all the large recently erected hospitals, they appointed a perfect stranger to every one of them, simply from the evidence of the actual work of—Yours truly,

WILLIAM HENMAN, F.R.I.B.A.

P.S.—I trust that in fairness to the architects of Birmingham you will permit the above to appear in your next issue.  
19 Temple Street, Birmingham : January 6, 1902.

#### Fire Insurance.

SIR,—May I bring to the notice of your readers the fact that in most fire insurance policies there is what is known as an "average clause," the wording of which is very complicated, but the exact legal meaning is that if a man insures half the value of his stock or premises and a fire occurs, the company will only pay half the value of the ascertained loss; thus, if a man had stock to the value of 4,000*l.* and he had only insured for 2,000*l.*, and he had 1,000*l.* worth of damage through fire, the insurance companies would only pay him 500*l.*

Believing that this is a most iniquitous clause and not generally understood, I take the liberty of sending you the above letter.

It is also a fact that in London the fire insurance premiums have been increased from 400 to 500 per cent. more than they were six or seven years ago.

Seeing that the companies are, many of them, if not all of them, still paying 20 per cent. and more on their paid-up capital, it seems that the only way to bring them to reason, both in their charges and conditions, is for the general body of ratepayers to insist on municipal insurance. This plan has been adopted in several places with very great success and immense saving to the pockets of insurers.

I enclose my card as a proof of good faith, but not for publication.—Believe me, yours truly,

A SUFFERER FROM FIRE INSURANCE RAPACITY.

January 6, 1902.

#### Bailey v. Longton at Leeds Assizes.

SIR,—In your last issue you remark, "It would be interesting to know the private opinion of Mr. Justice Ridley on the evidence that was given."

The learned judge commented on "the evidence of defendant's witnesses," whether in a flattering manner or otherwise you may gather from the judgment for the full amount claimed, nearly double that which the said witnesses swore was "reasonable" payment, and, of course, the judgment carried costs—about 300*l.* The witnesses referred to were F. W. Bedford, A.R.I.B.A., Leeds; J. W. Connon, F.R.I.B.A., Leeds, and C. France, F.R.I.B.A., Bradford. You also refer to an alleged estimate of cost. It may interest any of your readers who may be troubled with ill-advised clients to learn that the first appearance of this bogus estimate was when defendant entered his defence to the action, and on which he denied liability. At the very opening of the case in Court defendant's counsel admitted liability, dropping the estimate defence, and it was subsequent to this that the three members of the R.I.B.A. gave their evidence.—Yours, &c.,

Bradford : January 7, 1902. W. BAILEY.

#### GENERAL.

**The Italian Government** has purchased the Ludovisi Boncompagni Museum, and it is now open to the public in the Baths of Diocletian. It is intended to unite all the Roman museums in the Villa Borghese, forming a national museum of Italy.

**The King** has given permission to Mr. John Morris-Moore to accept and wear the insignia of a Commandership of the Order of the Crown of Italy, conferred upon him by His Majesty the King of Italy in recognition of services rendered by him in Italy to Italian literature and art.

**M. Leclerc**, the architect of the château of Rambouillet, has commenced the restoration of several of the fountains of St. Cloud. The plan of the palace has also been carefully traced out with flower borders and turf.

**Dr. Baurath von Schich**, the Palestine explorer and one of the best authorities on the topography of ancient Jerusalem, has died in Jerusalem at the advanced age of eighty years. He settled in Jerusalem fifty-five years ago, where he worked as an architect. His miniature model of Jerusalem, with the

Ark of the Covenant and the Temple, is a permanent memorial to his patient and untiring labours.

**The Hungarian Sculptors** who are participating in the prize competition for a monument to the late Empress Elizabeth have mooted the idea of inviting the German Emperor to act as judge. The sculptors think that the Kaiser may permit himself to be represented by a prominent artist.

**Westminster Abbey** will be closed from March 31 for the preparations necessary for the Coronation. In accordance with precedents, the Dean will first instruct an architect to report upon the best method of carrying out the alterations without interfering with the permanent character of the building, and then the work will be placed in the hands of the Office of Works.

**The Fine Art Society** will open on Monday an exhibition of the water-colour drawings, &c., left by the late Miss Kate Greenaway.

**Mr. St. John Hope**, assistant secretary of the Society of Antiquaries, has discovered the foundations of the great hall of the infirmary of the Lewes Priory. The infirmary lies to the east of the monastery and south of the Priory chapel, which was uncovered last year. The excavations are being carried out under the personal direction of Mr. H. Michell Whitley, of the Sussex Archaeological Society.

**Reports** have appeared during the last few days, says a correspondent of the *Times*, to the effect that one of the largest private collections of works of art in Italy is to be removed to America. What the collection is and how the Italian law prohibiting the export of the masterpieces is to be evaded is not stated. A representative of the Syracuse Museum of Fine Arts said that he expected that the negotiations would be completed in a few days, adding that the collection included works by Raphael, Michel Angelo and Titian.

**Lord Strathcona**, the Lord Rector of the University, has sent a cheque for 25,000*l.* towards the Aberdeen University building scheme. This sum was promised in December 1900, under certain conditions which have been fulfilled.

**M. Georges Bateau** has completed the model of a large relief illustrative of Victor Hugo's "Légende des Siècles" and containing a multitude of figures. It will be placed, when executed in marble, either in the Panthéon or the Musée Victor Hugo.

**Dr. A. S. Murray** will deliver on Thursday next before the Royal Institution the first of a course of three lectures on "Recent Excavations at Delphi and in the Greek Islands."

**The General Purposes Committee** of the King's Norton Urban District Council recommend the purchase of a piece of land situate at King's Norton and containing 7,567 square yards, for the sum of 1,135*l.* 1*s.*, for the purpose of the erection thereon of public offices.

**Mr. F. B. Behr**, the well-known advocate of the mono-rail system of electric traction, last week gave a lecture at the invitation of the Belgian Society of Engineers in the Brussels Bourse on the subject of the Manchester and Liverpool Railway, in which he dealt generally with the question of high-speed railways.

**The Queen's Memorial Hall**, erected in connection with St. Augustine's Church, Brighton, was opened on Monday. The tender of the contractor, Mr. H. J. Penfold, for the building was 2,550*l.* Seating accommodation is provided for over 500. The architect was Mr. G. E. S. Streatfield.

**The German Emperor**, after making several alterations in the plans of a police-station to be erected at Wiesbaden, has returned them to the local authorities.

**The Commissioners of Works** in Ireland accepted by deed during the past year the guardianship as ancient monuments of Cashelmore, county Sligo; Round Tower, Kells, county Meath; Tullaherin Round Tower, county Kilkenny; and Lusk Round Tower, county Dublin.

**The late M. Thomy Thierry**, a native of Mauritius, long resident in Paris, who has just died, bequeathed to the Louvre important works by Corot, Delacroix, Troyon, Millet, Rousseau, Daubigny, Isabey, Decamps, Jules Dupré, Diaz, and a number of bronzes by Barye.

**The Dean and Chapter** of Peterborough hope to be able to grant permission for the cathedral bells to be rung in honour of the King's coronation. The bells have been silent for fifty years, fears being felt that the vibration would endanger the safety of the west front. The structure has now been made thoroughly secure, and the bells were rehung some years ago. An expert is to be called in before any risk is run.

**The Institution of Civil Engineers** will hold an ordinary meeting on Tuesday next, the 14th inst., at 8 P.M., when a paper on "American Workshop Methods in Steel Construction," by Henry Bridges Molesworth, M.Inst.C.E., will be submitted for discussion.









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SAVINGS BANK, GLASGOW.

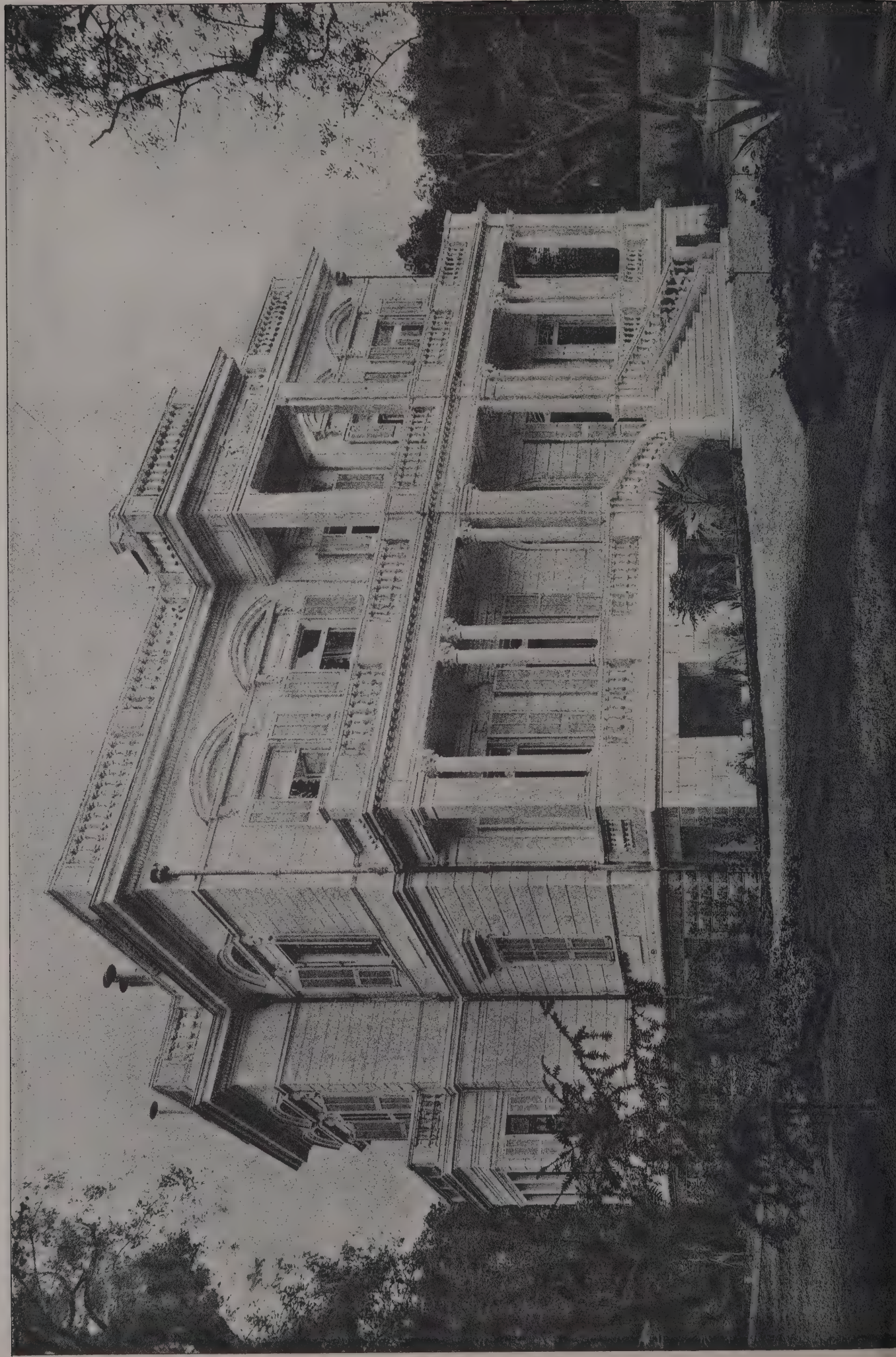
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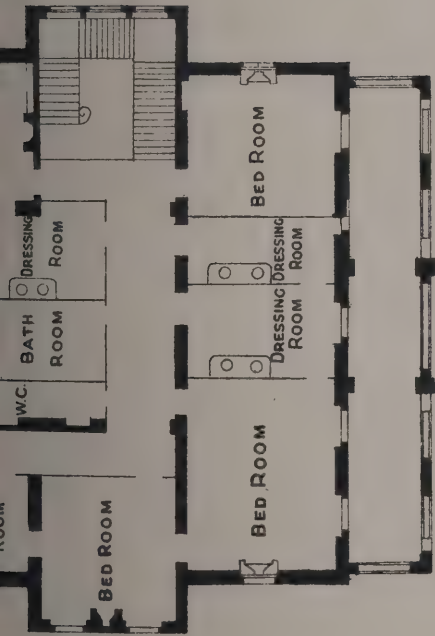




The Architect. Jan 10<sup>th</sup> 1902.



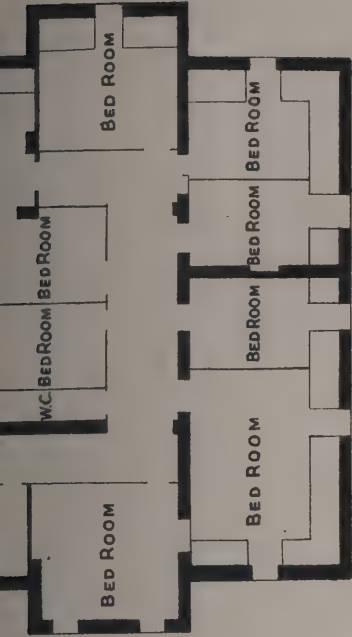




FIRST FLOOR



BASEMENT



ATTIC



GROUND FLOOR

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VILLA TIJUGA, VILLEFRANCHE. The Property of M. BORDES.

A. MESSIAH, Architect, Nice.







The Architect, Jan 10<sup>th</sup> 1902.



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SAVINGS BANK, GLASGOW: THE BOARD-ROOM.

Messrs. JOHN BURNET & SON, Architects.



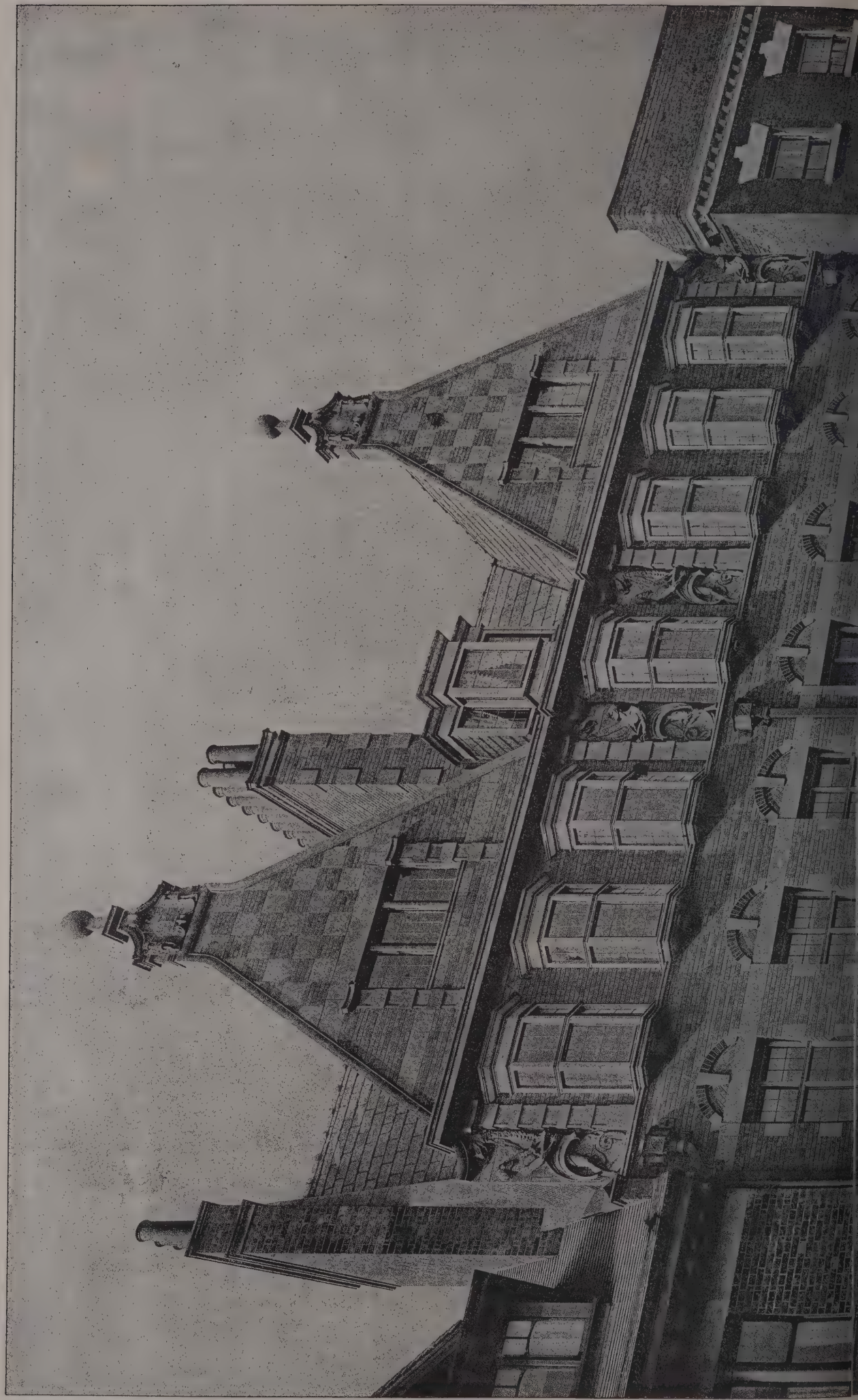








The Architect, Jan 10<sup>th</sup> 1902.







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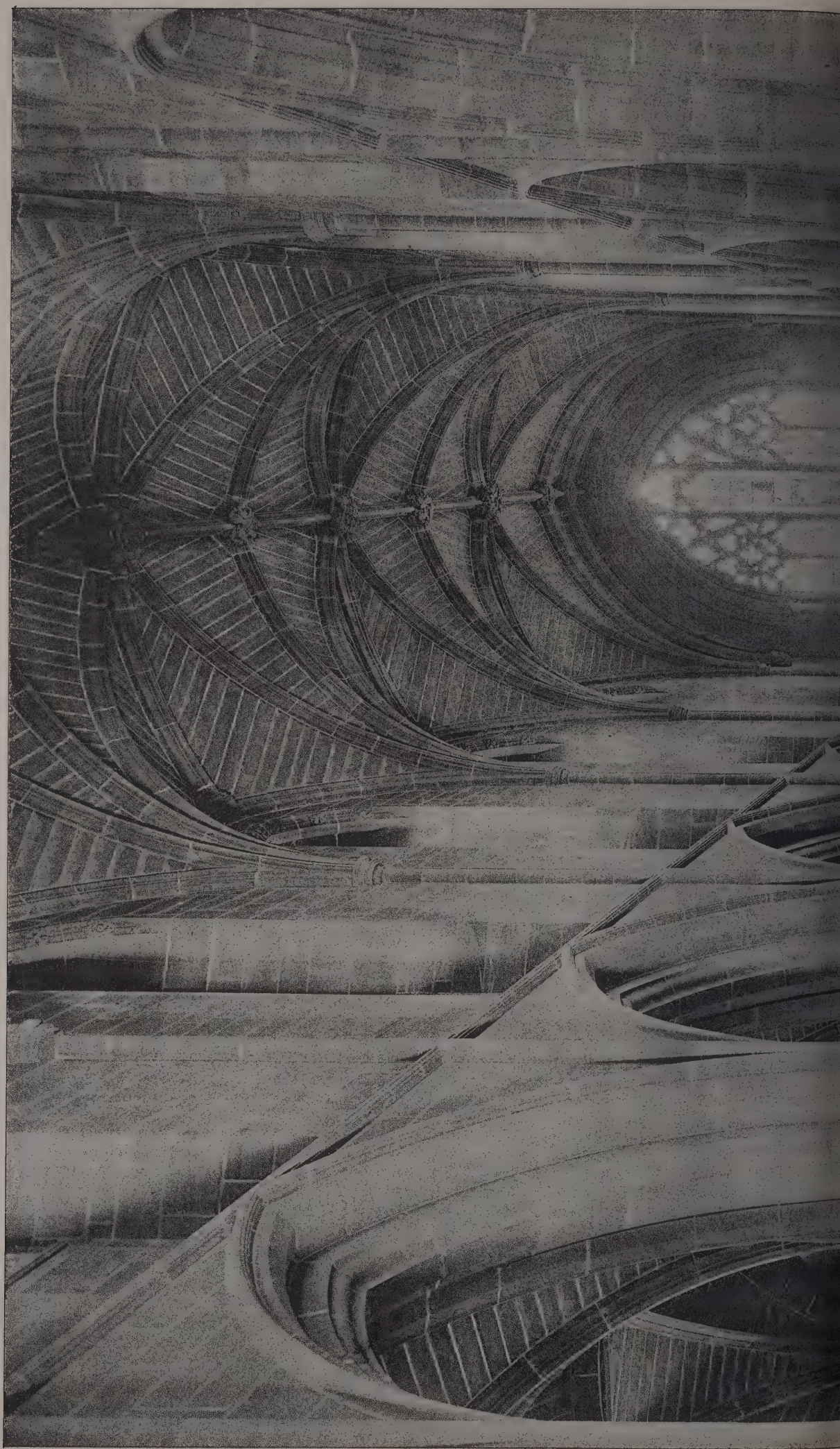








The Architect, Jan 10<sup>th</sup> 1902.







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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## ANSWERS TO CORRESPONDENTS.

**ARCHITECT'S LIABILITIES (W. W. L.).**—If the building owner can establish negligence on your part in supervising the erection of the building then he can undoubtedly recover from you the loss he has sustained by your not seeing that the house was built according to your plans and specifications. It would be worth your while, however, to point out to the building owner that you have done all that could reasonably be required of you in visiting the place fortnightly, and that his right of action is against the builder for defective work.

**DISTRESS (F. G.).**—While the rent remains in arrear the landlord may distrain for it, unless after the rent became due he accepted a *bonâ-fide* security.

**DAMAGES (Pauper).**—To sue *in formâ pauperis* it is necessary first of all to obtain the certificate of a barrister that you have a good cause of action. You cannot so sue if you have goods worth 25*l.* or upwards.

## COMPETITIONS OPEN.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. All information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, Westminster.

**BATTERSEA.**—Jan. 31.—Premiums of 50*l.*, 25*l.* and 10*l.* respectively are offered for the three best sets of designs, &c., of dwellings, as follows:—(a) A house of two storeys; (b) a house consisting of two self-contained tenements; and (c) a house consisting of three self-contained tenements. Mr. W. Marcus Wilkins, town clerk, Municipal Buildings, Lavender Hill, S.W.

**GLASGOW.**—Feb. 1.—Schemes, plans and estimates of cost are invited for erection of dwellings for the poorest classes upon ground at Alexandra Park. Premiums of 100*l.*, 50*l.* and 25*l.* respectively will be awarded to the authors placed first, second and third in order of merit. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

**HULL.**—Jan. 31.—Designs are invited in competition for the new art school. Premiums will be awarded to the designs placed first, second and third in order of merit (100*l.*, 60*l.* and 40*l.*). The architect whose plans are carried out will be paid the usual 5 per cent. commission, the premium to merge in such commission. Mr. Sidney R. J. Smith, 14 York Buildings, London, W.C.

**IRELAND.**—Jan. 20.—Plans, &c., are invited for drainage of Howth and Sutton, Dublin (and an alternative system for the latter). A premium of 50*l.* is offered. Mr. John O'Neill, clerk, board-room, North Brunswick Street, Dublin.

**ISLE OF WIGHT.**—Jan. 31.—Designs are invited for a suitable monument as a memorial to Her late Majesty, to be erected in St. James's Square, Newport, Isle of Wight. A premium of 25*l.* is offered for the accepted design. The Secretary, Isle of Wight Queen Victoria Memorial Committee, 20 Holyrood Street, Newport, Isle of Wight.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Jan. 31.—Applications are invited from architects willing to submit designs in a limited competition for rebuilding the Liverpool Infirmary for Children. Colonel C. Forbes Bell, Eagle Chambers, 17 Fenwick Street, Liverpool.

**SCOTLAND.**—Jan. 15.—The Kirkcaldy Burgh School Board invite competitive plans for a technical and science and art school to accommodate from 400 to 500 pupils, and an elementary school to accommodate about 400 pupils. Mr. Alexander Beveridge, clerk to the Board.

**WALES.**—Feb. 4.—Competitive designs are invited for municipal offices proposed to be erected by adapting, adding to and rearranging the town hall buildings at Mountain Ash. A premium of 75*l.* will be paid to the author of the design placed first in order of merit. Mr. H. P. Linton, clerk, Town Hall, Mountain Ash.

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## CONTRACTS OPEN.

**BARKING.**—Jan. 24.—For supply and erection of additional electricity generating plant. Mr. E. H. Lister, clerk, Public Offices, Barking, Essex.

**BARNSTAPLE.**—Jan. 16.—For erection of buildings in connection with the proposed electricity works in Castle Street. Mr. James Bosson, town clerk, Barnstaple.

**BARNSTAPLE.**—Jan. 16.—For supply and erection of the electric-lighting plant. Mr. W. H. Trentham, 39 Victoria Street, Westminster, S.W.

**BATH.**—Jan. 14.—For erection of a school for 360 boys in Oak Street. Mr. W. J. Willcox, architect, 1 Belmont, Bath.

**BERMONDSEY.**—Jan. 20.—For construction of three underground conveniences. Mr. Fredk. Ryall, town clerk, Town Hall, Spa Road, S.E.

**BIRDWELL.**—Jan. 15.—For erection of several houses, Birdwell, Yorks. Mr. Arthur Whitaker, architect, Worsborough Bridge, Barnsley.

**BIRKENHEAD.**—Jan. 13.—For erection of battery-room, store-room and workshops at the electric-lighting generating station, Bentinck Street, Birkenhead. Mr. Charles Brownridge, borough surveyor, Town Hall, Birkenhead.

**BLACKPOOL.**—Jan. 29.—For erection of a station at South Shore, Blackpool, for the Lancashire and Yorkshire and London and North-Western Joint Railways. Mr. R. C. Irwin, Secretary, Hunt's Bank, Manchester.

**BRENTWOOD.**—Jan. 15.—For taking-up and relaying floors at the Brentwood schools. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

**BREWOOD.**—Jan. 20.—For reseating in oak the nave of the parish church. Mr. Ashton Veall, architect, 84 Darlington Street, Wolverhampton.

**BRISTOL.**—Jan. 30.—For enlargement of the petty sessional courts and offices, Bridewell Street, Bristol. Mr. Henry Williams, architect, Imperial Chambers, Corn Street, Bristol.

**BUCKHURST HILL.**—Jan. 15.—For construction of bacteria beds, sewage filters, storm overflow sewers, &c., at the Buckhurst Hill sewage works, Buckhurst Hill. Mr. H. Tooley, architect, Buckhurst Hill.

**BURY.**—For additions to Fernhill Chemical Works, Bury, Lancs. Messrs. James Sellers & Sons, architects, Union Chambers, Bury.

**BURY.**—Jan. 20.—For construction of a central tramway dépôt in Rochdale Road, Bury. Mr. Arthur W. Bradley, borough engineer, Bury.

**CANTERBURY.**—Jan. 22.—For erection of sanitary conveniences in Burgate Street. Mr. Arthur C. Turley, city surveyor, Tudor Chambers, Canterbury.

**CHELMSFORD.**—Jan. 17.—For making, erecting and setting to work a borehole pump at the waterworks pumping station at Ingatestone, Essex. Mr. James Dewhurst, engineer, Engineer's Office, Avenue Chambers, Chelmsford.

**CHEPSTOW.**—For rebuilding 10 and 11 High Street. Messrs. Swash & Bain, architects, Midland Bank Chambers, Newport.

**CLECKHEATON.**—Jan. 18.—For erection of a warehouse at Clarence Mills, Cleckheaton, Yorks. Messrs. Thomas Barker & Son, architects, 5 Bank Street, Bradford.

**COCKERMOUTH.**—Jan. 15.—For repairs to house at Double Mills, Cockermouth. Mr. John Fearon, clerk to Urban District Council.

**COLWALL.**—Jan. 21.—For erection of footbridges over the railway at Colwall, Twerton and Hirwain, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, London.

**CONGLETON.**—Jan. 16.—For constructing septic-tank and filter-bed, and laying main drain for sewerage of the union workhouse at Arclid. Mr. C. R. Hall, engineer, Congleton.

**CROMER.**—Jan. 22.—For improvements at the West Cliff, Cromer, Norfolk. Messrs. Douglass & Arnott, engineers, 15 Victoria Street, Westminster, S.W.

**DERBY.**—Jan. 14.—For erection of two steam-roller sheds and men's messroom, Bateman Street Yard. Mr. H. F. Gadsby, town clerk, Tenant Street, Derby.

**DOVER.**—Jan. 13.—For pulling-down and rebuilding the Dewdrop inn, Tower Hamlets Street, Dover. Mr. A. H. Steele, architect, 1 Effingham Lawn, Folkestone Road, Dover.

**EDMONTON.**—Jan. 14.—For supply of two high-class steel Galloway type boilers and fittings, 30 feet long, 7 feet 6 inches diameter, 100 lbs. working pressure. Mr. F. Shelton, clerk, White Hart Lane, Tottenham.

**FARNHAM.**—Jan. 15.—For underpinning a portion of the walls of the female receiving ward at the workhouse, Farnham. Messrs. Friend & Lloyd, architects, Aldershot.

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GRIMSBY.—Jan. 13.—For erection of a new store on the Dock Side. Mr. Ernest E. Bentley, architect, 1 Pelham Chambers, Old Market Place, Grimsby.

GRIMSBY.—Jan. 20.—For extension of the plant at the electricity works. Town Clerk, St. Mary's Gate, Grimsby.

GUILDFORD.—Jan. 13.—For erection of a corn exchange in the cattle market in Woodbridge Road. Mr. C. G. Mason, borough surveyor, Tuns Gate, Guildford.

HARTLEPOOL.—Jan. 25.—For erection of a generating station, and the supply and erection of plant, viz (section 1) erection of buildings; (2) boilers, two of marine type; (3) engines and dynamos, steam, feed and exhaust pipes, valves and other apparatus; (4) storage battery; (5) switch-board; (6) arc lamps; (7) feeder mains, arc-light leads, &c.; (8) arc-lamp columns and brackets; (9) overhead travelling crane. Mr. C. Robson, borough accountant, Hartlepool.

HASTINGS.—Jan. 16.—For erection of a gas-testing station in the Queen's Road dépôt, Queen's Road, Hastings. Mr. Ben F. Meadows, town clerk, Town Hall, Hastings.

HORLEY.—Jan. 14.—For wiring and fittings for the electric lighting of the new buildings now being erected at the Farm-field reformatory for female inebriates, near Horley, Surrey. Particulars may be obtained at the Chief Engineer's Department, County Hall, Spring Gardens, S.W.

HORNSEY.—Jan. 15.—For supply and erection of electric-lighting plant at the municipality electricity works. Mr. F. D. Askey, clerk, Council Offices, Southwood Lane, Highgate, N.

HULL.—For alterations and additions to St. Vincent's Home for Boys, Stepney Lane, Hull. Messrs. Brodrick Lowther & Walker, architects, 77 Lowgate, Hull.

IRELAND.—Jan. 13.—For raising the tiled floors and relaying same with boards in twenty-five houses of the Charles Shiels's Institution, Killough. Mr. George M. Swail, superintendent.

IRELAND.—Jan. 14.—For erection of a labourer's cottage and fencing a plot allotted to it in the townland of Clontail (electoral division of Killary), Ardee. Mr. Louis Turley, engineer, 17 Laurence Street, Drogheda.

IRELAND.—Jan. 14.—For boring and sinking a well at Darkley, and boring and sinking a well at Allistragh. Mr. W. Calvert, clerk, Clerk's Office, Workhouse, Armagh.

IRELAND.—Jan. 17.—For supply and laying of cables, woodwork and supply of earthenware conduits, for the Belfast

gas and electricity committee. Sir Samuel Black, town clerk, Belfast.

IRELAND.—Jan. 18.—For improvement of Annalong harbour, co. Down. Mr. Robert MacIlwaine, secretary to the County Council, Court House, Downpatrick, Down.

IRELAND.—Jan. 20.—For additions and alterations at the Munster Institute, Cork. Inquiries should be addressed to the Office of Public Works, Dublin.

IRELAND.—Jan. 21.—For erection of a central laundry at the workhouse, Belfast. Messrs. Young & Mackenzie, architects, 7 Donegall Square East, Belfast.

IRELAND.—Jan. 24.—For drainage works, water supply and fire mains, plumbingwork and building works, at the Clonmel workhouse. Mr. Timothy Beary, clerk, Board Room, Clonmel Union.

IRELAND.—Jan. 27.—For supplying and fitting-up with machinery, &c., new central laundry at the Belfast workhouse. Messrs. Young & Mackenzie, civil engineers, Belfast.

KENDAL.—For erection of dwelling-house adjoining Romney House, Kirkland, Kendal. Mr. John Hutton, architect, Kendal.

KING'S LYNN.—Jan. 21.—For supplying and fixing a screw mooring in King's Lynn Harbour. Mr. D. W. Ward, clerk, King's Lynn.

LEEDS.—Jan. 21.—For electrical equipment of the new workhouse and infirmary at Rothwell Haigh, near Leeds. Mr. F. W. Mee, clerk to the Guardians, Union Offices, Hunslet.

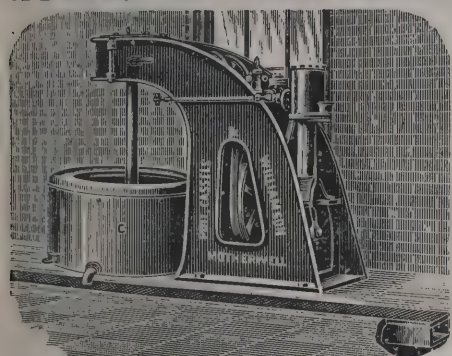
LEEDS.—Jan. 16.—For a complete 2,000 b.h.p. set of surface-condensing plant, comprising condenser, air-pumping engine and circulating engine. Mr. W. J. Jeeves, town clerk, Town Hall, Leeds.

LEICESTER.—For additions to the Primitive Methodist chapel. Mr. Hy. Harper, architect, 54 Long Row, Nottingham.

LITTLE ILFORD.—Jan. 28.—For extension of water mains and the supply of new hydrants, &c., at the City of London cemetery. Mr. H. Montague Bates, clerk to the Burial Board, Guildhall, E.C.

LIVERPOOL.—Jan. 20.—For erection of a caretaker's house and extensions to the county laboratory, Brownlow Street. Mr. Henry Littler, architect, County Offices, Preston.

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LIVERPOOL.—Jan. 27.—For construction of public baths at Lister Drive, West Derby. Mr. W. R. Court, engineer and chief superintendent, Municipal Offices, Liverpool.

LONDON BRIDGE.—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

LONDON.—For plastering about 6000 job (labour only). Mr. Hope, 54 Cambridge Mansions, Battersea, S.W.

LONDON.—Jan. 16.—For supply and fixing of steam-jacketed boiling copper at the Eastern Hospital, The Grove, Homerton, N.E. Mr. T. Duncombe Mann, clerk to Metropolitan Asylums Board, Embankment, E.C.

LUXULYAN.—Jan. 22.—For restoration of Lockingate district church, Luxulyan, Cornwall. Specifications can be seen on application to the Vicar.

MACCLESFIELD.—Jan. 18.—For extension and alteration of the bakehouse at the Parkside asylum. Mr. H. Beswick, county architect, Newgate Street, Chester.

MANCHESTER.—Jan. 13.—For supply and delivery of twenty-five penstock valves to the sewage works, Davyhulme, Urmston. Particulars on application to the Secretary of the Rivers Department, Town Hall, Manchester.

MANCHESTER.—Jan. 21.—For supply, delivery and erection at the Stuart Street generating station of the following switchboards—(a) main high-tension three-phase switchboards at generating station, (b) exciter and auxiliary switchboards at generating station, (c) high-tension three-phase switchboards at ten sub-stations, (d) low-tension switchboards at ten sub-stations. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MIDDLESBROUGH.—Jan. 21.—For supply and erection of plant for the extension of the electricity work. Mr. George Bainbridge, clerk, Town Hall, Middlesbrough.

MIDDLETON.—Jan. 16.—For electric wiring, &c., of the town hall. Mr. Frederick Entwistle, town clerk, Town Hall, Middleton, Lancs.

NEWCASTLE-ON-TYNE.—Feb. 12.—For construction of railway bridge and approaches thereto over the river Tyne at Newcastle, for the North-Eastern Railway Company. Mr. Charles A. Harrison, Central Station, Newcastle-on-Tyne.

NEYLAND.—Jan. 14.—For repairs and alterations to the Salvation Army barracks. Mr. T. W. Evans, architect, Front Street, Neyland.

NORWICH.—Jan. 24.—For enlargement of the head post office at Norwich. Particulars may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

PAIGNTON.—Jan. 31.—For supply, delivery and laying of about nineteen miles of 15-inch, 9-inch and 6-inch cast-iron water-mains, with sluice valves, air valves, meters, washouts, &c., the erection of a road bridge over the river Dart, and the construction of a covered service reservoir, boundary walls, &c., in connection with the Moorland water-supply contract. Mr. Frederick William Vanstone, engineer, Palace Chambers, Paignton, Devon.

PLYMOUTH.—Jan. 15.—For enlargement of head office at Plymouth, for the Commissioners of H.M. Works and Public Buildings. The Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.

ROTHERHAM.—Jan. 14.—For pulling-down and rebuilding the Wellington inn, Westgate. Mr. G. A. Wilson, architect, Hartshead Chambers, Sheffield.

SALFORD.—Jan. 31.—For erection of new central fire station in The Crescent. Mr. Henry Kirkley, architect, 134 Deansgate, Manchester.

SALISBURY.—For erection of pair of cottages at Bemerton. Messrs. John Harding & Sons, architects, 58 High Street, Salisbury.

SCOTLAND.—Jan. 13.—For supply, delivery and erection of steam-engines, dynamos, switchboards and condensers, for the Paisley Corporation. Mr. C. F. Parkinson, burgh electrical engineer, Electricity Works, Blackhall, Paisley.

SCOTLAND.—Jan. 13.—For supply of boiler plant, preferably of the tubular type, of a capacity equal to a maximum evaporating effect of 44,000 lbs. of water per hour with ordinary first-class steam coal (Welsh coal excluded), for the Edinburgh and Leith Corporation's Gas Commissioners. Mr. W. R. Herring, engineer, Gasworks, New Street, Edinburgh.

SCOTLAND.—Jan. 15.—For erection of the Carnegie baths and gymnasium, Dunfermline. Mr. Hippolyte J. Blanc, architect, 25 Rutland Square, Edinburgh.

SCOTLAND.—Jan. 27.—For erection of a new hospital for infectious diseases at Eskdale. Mr. R. M'George, solicitor, Langholm.

SCOTLAND.—Jan. 27.—For cutting tracks and laying a supplementary main water-supply pipe from Lochornie reservoir to the burgh of Lochgelly, and other works. Messrs. Buchanan & Bennett, C.E., 12 Hill Street, Edinburgh.

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**SHEFFIELD.**—Jan. 14.—For erection of a police-station at Woodhouse, near Sheffield. Mr. J. Vickers Edwards, county surveyor, Wakefield.

**SHEFFIELD.**—Jan. 20.—For pulling-down and re-erection of buildings at the corner of Change Alley and Norfolk Street. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

**SIDCUP.**—Jan. 16.—For additions, drainage, repairs, to The Hollies House, Halfway Street, Sidcup, Kent, to adapt same as the administrators' block of the new children's homes. Mr. Thomas Dinwiddy, architect, 12 Croom's Hill, Greenwich, S.E.

**SOUTHWOLD.**—For erection of a cottage hospital. Mr. E. N. Cubitt, architect, Brentwood, Essex.

**STYAL.**—Jan. 30.—For erection of cottage homes for 120 children at Styal, Cheshire. Mr. James B. Broadbent, architect, 15 Cooper Street, Manchester.

**TULSE HILL.**—For finishing two partly-erected houses near Tulse Hill station. Mr. Sadgrove, 22 Surrey Street, Strand, W.C.

**TURWESTON.**—Jan. 17.—For construction of two culverts, the diversion of a road and other works in connection therewith, at Turweston, Bucks. Mr. Thomas R. Hearne, 26 West Street, Birmingham.

**WALES.**—Jan. 13.—For erection of an infants' school, to accommodate 200 children, at Cwmcelyn, near Blaina, Mon, with out-offices, boundaries, playground, &c. Mr. R. L. Roberts, architect, Abercarn.

**WALES.**—Jan. 13.—For erection of new departments for girls and infants and additions to the boys' department, Pentre, Ystradfodwg. Mr. Jacob Rees, architect, Hillside, Pentre.

**WALES.**—Jan. 13.—For erection of organ chamber at Hebron chapel, Ton Pentre. Mr. Jacob Rees, architect, Pentre.

**WALES.**—Jan. 15.—For erection of a school at Alltwn. Mr. W. Watkin Williams, architect, 63 Wind Street, Swansea.

**WALES.**—Jan. 20.—For completion of tower of Bettws-y-Coed Church. Messrs. Austin & Paley, architects, Castle Park, Lancaster.

**WALES.**—Jan. 20.—For erection of the infectious diseases hospital at Llandough, Penarth. Mr. Edgar I. Evans, surveyor, Arcade Buildings, Penarth.

**WALES.**—Jan. 21.—For erection of a villa residence at Llangollen. Mr. Denny, architect, Llangollen.

**WALES.**—Jan. 29.—For erection of a large mixed school with offices, boundary walls, &c, at Aberfan, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect, 50 High Street, Merthyr.

**WALES.**—Jan. 31.—For erection of school at Penygraig, near Pontneathvaughan, Glynneath. Mr. Thomas Roderick, architect, Ashbrook Honse, Clifton Street, Aberdare.

**WALES.**—Feb. 3.—For erection of 100 houses at Penydarren, Merthyr Tydfil. Mr. T. Aneuryn Rees, clerk, Town Hall, Merthyr.

**WALSALL.**—Jan. 18.—For construction of a sewage tank 85 feet long by 21 feet 6 inches wide by 9 feet deep. Mr. John R. Cooper, town clerk, Borough Offices, Walsall.

**WEST HAM.**—Jan. 14.—For supply of four sets of surface-condensing plant, each to deal with 40,000 lbs. of steam per hour, complete with electrically-driven air and circulating pumps, and one travelling crane to carry 30 tons, span 67 feet. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

**WREXHAM.**—Feb. 1.—For erection of dwelling accommodation for the horsekeeper, &c. Mr. Thomas Bury, town clerk, Guildhall.

**WREXHAM.**—Feb. 18.—For reconstruction of the main lantern lights along the roof of the butchers' market, &c, and reconstruction of market sanitary arrangements and conveniences. Mr. Thomas Bury, town clerk, Guildhall.

THE Bishop of Reading opened the new National schools at Winslow, Bucks, on Tuesday afternoon, in the presence of a large company. The cost of the schools was 2,700*l.*, of which 400*l.* remains to be subscribed. In the course of his address his lordship dwelt on the necessity of seeing that religious teaching was continued in public elementary schools.

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For additions to Marine House, Promenade. Mr. S. DYER, architect, Bridlington.

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For construction of sewage-disposal works. Mr. ARTHUR W. BRADLEY, borough surveyor.

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For erection of a terrace of three dwelling-houses at Galmpton, Churston Ferrers, Devon. Mr. W. F. TOLLIT, architect, Totnes.

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For erection of a new boys' department (to accommodate 600) at the Watford Victoria Board school. Mr. JOHN HUNT, architect, 40 Upper Baker Street, London, N.W.

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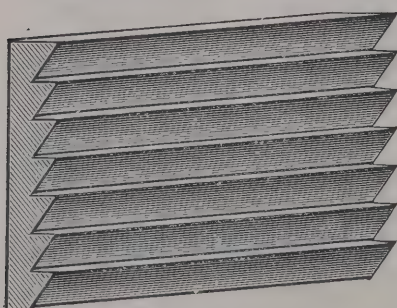
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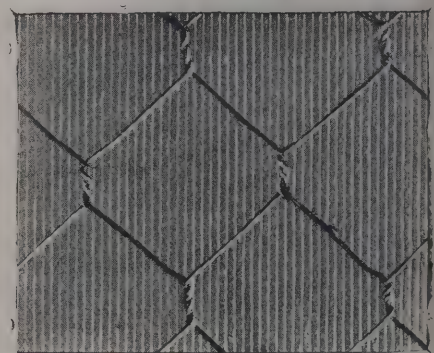
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NEW CATALOGUE.

THE diary issued by Messrs. Dorman, Long & Co., Ltd., shows consideration for the limited capacity of modern pockets. Under no circumstances could it be called an encumbrance. In addition to the ruled pages for entries, tables are given relating to iron and steel in many forms, which contain the class of information which it is important but difficult to remember.

A NEW elementary school, erected by the School Board at Ardeer on the south side of the Glasgow and South-Western Railway, and designed to meet the educational requirements of a growing district, was formally opened on Monday. The school is built on the most approved style, and consists of six large classrooms, with the usual cloakrooms, lavatories, &c., and will accommodate 380 pupils.

THE opening took place on Tuesday of a new hospital which has been erected at Sutton, Surrey. The new building is a modest structure of pleasing appearance, which now succeeds the two cottages in Bushey Road that for the last three years have been lent by the Urban District Council at a peppercorn rent for hospital purposes.

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**ELECTRIC NOTES.**

THE estimated cost of Manchester's proposed tube railway is 1,112,763/.

AT Monday's meeting of the electricity committee of the Manchester Corporation it was reported that during the past fortnight the output of electrical energy had been 716,165 units, as compared with 491,060 units in the corresponding period of last year. This result, it was stated, had been achieved although the number of men now employed was 457, against 571 twelve months ago, and the amount of wages paid 1,300/ against 1,370/. The committee, over whom Dr. Bishop presided, considered the report highly satisfactory.

THE elaborate electrical effects of the great fan scene in the Drury Lane pantomime are installed on the E.L.B. system. Several thousand lamps are used nightly. The same system of the Electric Lighting Boards Company has also been applied for Mr. Moss's large "Cinderella" pantomime at Liverpool. The application of the system to theatrical work has mainly found favour on account of the rapidity of installation, a point of the utmost importance in the production of plays, and in which the company is constantly beating time records.

THE North-Eastern Railway Company are at the present time engaged upon a comprehensive scheme of alterations and extensions to the existing dock accommodation at Middlesbrough, which upon completion will afford ample facilities for the docking at the Tees port of the largest vessels afloat. Electricity will be largely utilised for both motive and illuminating power, and the generating-house recently erected close to the docks is one of the largest in the North of England. The steam cranes formerly used on the quays are now being replaced by powerful electric cranes, of which no less than seventeen are to be installed. The new cranes are of great height, the distance from the quay to the centre of the pulley at the end of the jib being 60 feet, while the radius is 44 feet 9 inches. Each crane is carried on a pedestal which will run on the railway lines alongside the quay. It is operated by an electric motor placed on the lower part of the pedestal. Separate motors are provided for hoisting and revolving, the current being supplied by underground cables through coupling-boxes placed at convenient distances along the quay. The load is lifted at 150 feet per minute, half-loads being lifted at

225 feet a minute. The revolving speed at the hook is 400 feet per minute, and the travelling speed 40 feet. These speeds, however, can be reduced as required, whilst, in addition, an automatic break is provided in case of failure of the current.

**VARIETIES.**

MR. STUART GRACE, town clerk of St. Andrews, N.B., died at his residence there on the 2nd inst., after a prolonged illness.

THE Independent chapel at Mortlake, which is one of the oldest buildings in connection with London Congregationalism, having been erected in 1716, has been closed, and the congregation will shortly enter into possession of a new church, which is in course of erection.

FORTY cottages have been erected by the Manchester Corporation at Miles Platting for the accommodation of families who have been displaced by city improvements, and the estates sub-committee, after a full investigation, have recommended that a clerk of works and a district building inspector should be dismissed for having passed very bad work.

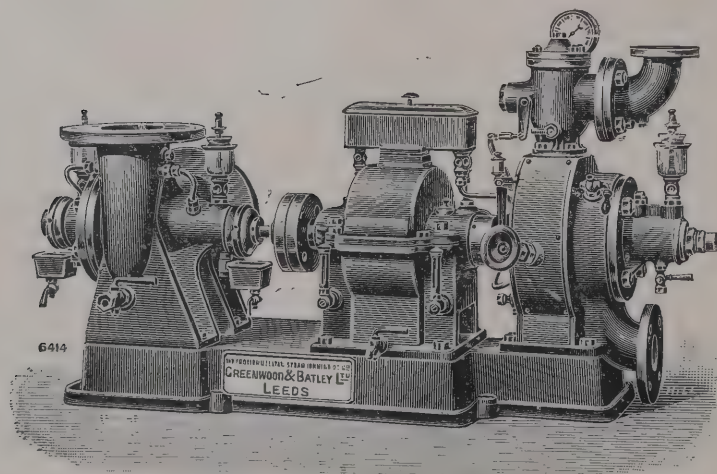
ON January 1 Mr. Sacheverell, who entered the service of the firm seventy-four years ago, called to wish the directors of G. B. Kent & Sons, Ltd., "a happy new year" on their entering the 125th year of the firm's existence. He was accompanied by Mr. W. Benwell (late foreman of the painting brush department), who came to work for Kents on March 25, 1846, and who is now retired on a pension, so that the combined years of service of the two old employes amounted to 130 years, which must be a record hard to beat.

THE new chancel added to St. John the Baptist Church, Sevenoaks, was consecrated on Saturday last by the Archbishop of Canterbury. The new building was designed by Mr. Hoole Thomas, of London, and the work has been successfully carried out by Mr. Wiltshire, builder, of Sevenoaks. It is red brick, with a roof of corrugated iron, and is built in the Gothic style. The extension provides additional seats equal to those of the old existing part. Under the large east window the altar-table is approached by steps raising it well above the ground level. On the left has been provided an organ-chamber and additional vestry accommodation.

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THE new United Free church at Finstown, Orkney, which is seated for 400 persons, has been opened for public worship.

A NEW boys' school which has been erected at Ellesmere Port was formally opened on Monday afternoon by Dr. Jayne, Bishop of Chester. The school, which is a handsome building, stands in Church Street, near Christ Church, and opposite to the mixed school. It is 96 feet long and 21 feet 6 inches wide, the room being practically divided into two by a glass partition. The building is constructed in Ruabon red brick, while internally the appearance is artistic, bright and cheerful, the comfort of the room having been assured by the institution of a hot-water system, by which the temperature can be regulated. The total cost of the building is 1,700*l*. There is accommodation for 200 boys. Messrs. E. Griffiths & Co., Ellesmere Port, carried out the building contract to the design of Mr. J. R. Gebb, architect, Birmingham.

MUCH has of late been written as to British manufacturing firms not being able to compete with America, with the result that large orders, especially for engineering work, have left the country because America was able to give quicker delivery and cheaper price. We are glad, however, to know that many British firms are successfully competing with America and Germany, and are making special arrangements in order to give greater facility for reducing the cost of production and expediting delivery. When the Central London Railway was constructed, all the rolling-stock, rails, lifts, in fact nearly all the engineering plant, was imported from America, and when the company decided on some additional lifts they asked tenders not only from America but also from some British firms, and it is pleasant to note that a British firm in this instance has been successful. Messrs. R. Waygood & Co., Ltd., of Falmouth Road, London, S.E., have been entrusted with this contract, being able to comply with the special requirements of the railway company. We also note with satisfaction that the lifts for

the City and South London and the Great Northern and City Railways have been secured by a British firm in face of keen American competition.

THE new pavilion on Southport Pier was opened on New Year's Day. This forms part of a large scheme of improvements on the pier, which also includes setting back the entrance about 60 feet, new entrance buildings, toll offices, &c., and widening the pier. The new pavilion, which is calculated to seat about 1,500, has been built to take the place of that which was destroyed by fire. The shell is formed of steel and cast-iron, filled in with panelled and moulded framing in the lower parts and glass in the upper, with ornamental heads. The roofs are boarded and covered with zinc. All floors are finished with pitch-pine boards in narrow widths. The general plan consists of a large hall, 90 feet by 53 feet, with recessed alcoves on each side, and galleries on three sides. The principal entrance is placed at the promenade end of the building, where are also the office and main staircases to gallery. On each side of this entrance are provided ladies' and gentlemen's retiring-rooms. Access is obtained to main hall on each side of the ticket-office by means of swing doors so arranged as to check draughts as far as possible. Entrances are also provided in each side of the building. The one near the Marine Bridge will ultimately be provided with an ornamental covered way, so that it will be possible to drive up to and enter the building without exposure to the weather. The gallery front, proscenium and a portion of the ceiling have been specially designed and modelled for this work, and are finished in enriched fibrous plaster. The building is lighted throughout with electric light, and is heated by means of chancel gas-stoves, six of which are let into the floor. A small system of gas lighting is provided in case of emergency. One of the principal features of the building are the outside balconies, which in summer will no doubt prove a great attraction. An octagonal turret is placed at each corner of the building, finished with a cupola and ornamental iron finial. The pavilion is divided from the pier by means of ornamental iron railing with electric-light standards in same. The whole of the work has been carried out from the designs and under the supervision of Mr. R. Knill-Freeman, F.R.I.B.A., of Bolton and Manchester. Engineer for superstructure, Mr. Walter Tester, C.E., Manchester; engineers for substructure, Messrs. C. S. Allott & Son, Manchester; local superintendent of the work, Mr. Orlando E. T. Prescott, Southport; contractors, Messrs. W. A. Peters, Rochdale.



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**BUILDING AND BUILDERS.**

THE West Ham School Board are building two large blocks of premises in Carter Road, Plaistow. Mr. William Jacques, of 2 Fen Court, E.C., is the architect.

THE new schools erected by the Smethwick School Board in Durban Road, Cape Hill, have been opened by Alderman W. H. Goodyear.

MESSRS. FOULSHAM & RICHES, architects, of 3 Crooked Lane, King William Street, London, are carrying out extensive alterations at the Shaftesbury Arms, Hoxton.

THE architects for the new offices and coal stores at the Hackney Electricity Works are Messrs. Gorton & Gunton, of Finsbury House, Blomfield Street, E.C.

MESSRS. WRIGHT & DAVIE, builders, of Edinburgh, have secured the contract for the enlargement, at a cost of 4,000*l.*, of the post office at Dunfermline.

THE Enfield and District Land Company are building a block of cottages at Ponder's End, Middlesex, of which Messrs. Michael Faraday & Rogers, of 77 Chancery Lane, E.C., are the architects.

THE foundation-stone was laid on the 27th ult. of the new Congregational church, Primrose Hill, Northampton, which is being erected at a total cost of 3,000*l.* Mr. Alexander Anderson, of Northampton, is the architect, and Mr. G. W. Souster, of Northampton, the builder.

THE premiated designs for the new baths and library to be erected in York Road, Leeds, have been on view this week in the Leeds City Art Gallery. Premiums were gained as follows:—(1) Mr. H. A. Chapman, (2) Mr. W. Bakewell, and (3) Mr. Percy Robinson. All are Leeds architects.

FOR some time past the Jewish community at Hull have been very much exercised over the question of a new synagogue, the old one having become obsolete. A site has been purchased in Osborne Street, very near to the Jewish quarter, for the sum of 1,900*l.*, on which a school and a synagogue will be erected, and the work will be taken in hand as speedily as possible.

SEVERAL Maidstone firms belonging to the Master Builders' Society have locked out the carpenters, joiners and bricklayers in their employment because they arrived at work at 8.30 instead of eight o'clock on Monday and Tuesday mornings. It is believed that the remaining firms will adopt the same course. The men's society does not seem inclined to give way.

IT will be remembered that some time ago the master plasterers of Perth gave notice to the men of a reduction of a halfpenny on wages. The men, however, came out on strike. At a meeting of the masters and men on the 6th inst. the masters made a compromise that wages would be reduced on and after March 10. The men have accepted these terms.

THE Prince of Wales has consented to visit Bristol on March 5 to cut the first sod of the new dock at Avonmouth, which is to be constructed by the city at a cost of 2,000,000*l.* The Lord Mayor of Bristol, Alderman Howell Davies, and chairman of the dock committee, had an interview with Sir Arthur Bigge at York House last week, when preliminaries were arranged.

THE Liverpool City Council have under consideration an important proposal in connection with an increased water supply. The scheme consists in laying a second line of pipes from Lake Vyrnwy, the city's present source of supply in Wales. The estimated cost is 785,000*l.* The first section of the work to be undertaken is that between Norton and Prescot, and this in itself will involve an outlay of 116,000*l.*

THE designs of Messrs. Cossins, Peacock & Bewlay have been accepted for the erection of a church at the Cotteridge, King's Norton, Worcester. They are now ready for submission to the Christ Church trustees, who made a grant towards the building fund of 2,500*l.*, and on their approval the building will be carried on expeditiously. This church is estimated to cost 9,000*l.*

THE new infants' school at Boldmere, Sutton Coldfield, which has been in course of erection for some months past, was formally opened on the 6th inst. It has been built by Mr. John W. Smith, of Small Heath, at a cost of 1,200*l.*, from plans furnished by Mr. E. F. Titley, architect, Birmingham, and consists of a large schoolroom, classroom, cloak-room and store-room, with outbuildings and playshed to accommodate 116 children.

THE hospitals committee of the Metropolitan Asylums Board have decided to proceed immediately with the building of a hospital at Longridge, in the neighbourhood of that already existing, at a cost of considerably over 100,000*l.* It is expected that the hospital will be ready to receive patients in two months' time. This addition, to decide on which a meeting was held on the 6th inst., is not to be confounded with the new ambulance station at West Wharf, Fulham, to be

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built at a cost of 26,500*l.*, which was decided upon on Saturday at the weekly meeting of the Asylums Board.

At a recent meeting the Barnsley Guardians discussed which of two plans should be accepted for the conversion of a house in Pitt Street into offices. The matter was adjourned a fortnight ago, when the committee recommended, by four votes to two, plan No. 3. One of the majority on the committee, a lady, now said that she had changed her mind, and as the committee appeared to be evenly divided a suggestion was made that the matter should be referred back. The chairman, however, said he had nothing to do with the shuffling of the cards, and declined to accede to this, with the result that the committee's plan—costing 1,350*l.*—was accepted. The rival plan provided for alterations to cost 1,000*l.*

THE brick trade in various parts of the Black Country is just now in a very depressed condition. The high prices of bricks and materials which have prevailed for some time past have checked building operations to a serious extent, and the recent severe weather also made the depression more acute. The result of the slackness in the demand during the last two or three months is that stocks have unduly accumulated, and the advisability of closing some of the large works, at least temporarily, is being considered. The announcement of a fall in the price of coal comes at a very opportune time, so far as this important industry is concerned, and with better weather and the coming of spring, the trade generally, it is hoped, will shortly show signs of improvement.

THE work of altering and making additions to the Wolverhampton town hall, which is expected will cost nearly 15,000*l.*, has been commenced. The first portion of the alterations which has been started upon relates to the fire brigade station in Red Lion Street. The old buildings have been taken down and the new ones will shortly be built. They will consist of engineer's shop and engine-house, which will occupy a space of 59 feet by 31½ feet, and the building will run across the old double gateway, a new one being placed in the wall near to the present detective office. Hitherto the horses for the fire-engines have been stabled some distance away, but new stables will be erected behind the engine-house. The next stage in the alterations will be to add an additional storey to the police barracks.

At a meeting of the Mersey Docks and Harbour Board on the 2nd inst. the works committee brought forward a recommendation which involves the construction of a new graving

dock at the south end of the Board's estate. It was stated that the new dock is to be constructed on land immediately adjoining the present Herculeaneum graving docks, and that it will be worked by the pumping system already in operation there. It is proposed to make the sill of the dock 3½ feet deeper than that of the older docks. It was pointed out that the new dock, while under construction, would not interfere with the working of any of the other docks in the neighbourhood, and that several very desirable improvements might be carried out in connection with it. The new dock is to be constructed by contract. The recommendation of the committee has the approval of the Board.

A SITE has been secured for new post offices at the junction of Little Park and Church Streets, Enfield. A more convenient and central spot could not have been selected. The present offices are a part of the fine old Tudor building known as the Royal Palace. The south wing, with its tall brick chimneys, still remains, and within there are richly ornamented ceilings, oak panelled walls and a massive chimneypiece on Ionic and Corinthian columns, and here are seen the letters "E. R." (Edward VI.), with the arms of England and France quartered, the rose and the portcullis, and the lion and the gryphon. At the rear of the old building stands the largest cedar tree in this country, and the seed of it, from Mount Lebanon, was the first brought and reared in England.

AN inquiry was held at the Council Chamber, Camberley, on the 31st ult., by Colonel C. H. Luard, R.E., Local Government Board inspector, respecting an application of the Frimley Urban District Council for sanction to borrow 6,000*l.* for purposes of sewerage and sewage disposal. The circumstances leading to the necessity for the application were explained by Mr. A. M. Kennett, clerk to the Council, and the scheme was described by Mr. F. C. Wren, surveyor, and a representative from Messrs. Adams & Co., sanitary engineers, Westminster, described the sewage lift. The scheme provides for the diverting and relaying of a portion of the existing sewers, and the automatic raising of the sewage to the farm, where it will be treated in a series of bacteria beds, which are to be filled and discharged automatically. The inspector subsequently visited and examined the sites of the proposed works.

THE Coventry Master Builders' Association have served notices upon the men engaged in the various sections of the building trade of an intended reduction of wages and an alteration of working hours. This applies to bricklayers,



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carpenters and joiners, also to painters, stonemasons, plasterers and labourers. In some cases the proposed reduction amounts to three-farthings per hour, in others a halfpenny. Such notices have, according to the rules, to be sent in by December 31. Last year, it will be remembered, similar notices were issued, and the matter went to arbitration. The arbitrator held, however, that the notices were received a day too late, and they were consequently withdrawn. The change in the working hours relates more especially to the winter months. The masters are desirous that in certain months the working hours shall be from eight o'clock in the morning till four in the afternoon. They also propose that on Saturdays work shall cease at one o'clock all the year round, instead of at twelve, as at present. The reason for this is that where men are engaged in some outlying district they have to cease work very much earlier than usual in order to reach the city by noon, at which time wages are paid, thus making the hours of labour on Saturday very short. The bricklayers and carpenters and joiners have, on the other hand, it is stated, sent in a demand for an advance of wages. Both notices will be considered in due course.

At Selly Park, Birmingham, on the 2nd inst., the foundation-stone was laid of a new Roman Catholic church which is rising at the corner of Bournbrook and Elmdon Roads. The church, which is dedicated to St. Edward, will, when completed, afford seating accommodation for a congregation of about 500. The plans adopted are for a church in the early decorated style of English Gothic, comprising a nave 82 feet long, 30 feet wide and 50 feet high, two aisles equal in length to the nave and each 11 feet wide, and an apsidal-ended chancel 30 feet in length, of the full width of the nave, and separated from it by a lofty and richly-moulded chancel arch. At the east ends of the north and south aisles respectively will be the lady and Sacred Heart chapels, and at the west end of the nave there is to be a spacious vestibule, over which will be placed the choir gallery. The baptistery will be at the west end of the south aisle, and at the west end of the north aisle will be situated the tower, surmounted by an imposing spire, while the sacristy block, containing priests' sacristy, working sacristy, confessionals, &c., is to be placed against the wall of the south aisle. The nave will be separated from the aisles by lofty arcades of five bays, the arches being of stone and resting on octagonal stone piers. The nave roof, which will be open to about two-thirds of its height, is to be carried by hammer-beam roof trusses with arched ribs, and the aisle roofs will be supported by transverse stone arches springing from the aisle walls and the piers of the nave arcades. The sides of the apse will each contain a three-light traceried window and an elaborate window of a similar character is to be placed in the west gable. The aisle windows will consist of groups of three lights, with cusped heads, and those of the clerestory of two lights, with simple tracery in the leads. Built mainly of brick, the church will be faced externally with sand-stock facing bricks and internally with plaster. The woodwork will for the most part be of pitch-pine, and the roofs are to be covered with Preceley green slates, while the floors under the seats will be laid with wood blocks, and those of the nave and aisle passages with terrazzo marble mosaic. As the building fund does not permit of the whole scheme being carried out in its entirety at present, the nave, aisles and sacristy are to be erected first, and the contract for this work, which amounts to about 4,200*l.*, has been accepted by Mr. W. Bishop, of King's Heath.

### FLORENTINE QUARRIES.

ACCORDING to the British Consul-General, in the province of Florence there are 202 stone quarries in actual work, four of which are serpentine (*verde di Prato*), five calcareous stone (*alberese*), two grindstone (*enfolide* or *granitone*), five fireproof stone, three calcareous stuff, 170 "arenaria" (hard greystone for olive presses), eleven building stone (*pietra forte*) and two majolica earth.

The serpentine (*verde di Prato*) serves for architectural and ornamental purposes. These quarries, situated at Monferrato, near Prato, have been worked from a very early date. In 1365 they were taken on lease by the Opera del Duomo to employ the stone in ornamental works on the cathedral. At present they are in the hands of two private persons, and their output (valued at 1,000*l.* per annum) is almost entirely used in Florence partly for repairs to the cathedral and other churches of the city, and partly in making statuettes, bowls, vases and other ornamental objects.

With regard to the calcareous stone (*alberese*) some is cut into flags for street paving, and the remainder is employed in masonry in its original state, or else reduced into chippings and utilised in the metalling of roads. The average output of these quarries may be calculated at about 3,200*l.* per annum.

The tuff is utilised as a very common building stone, the greater part being reduced into gravel.

The arenaria stone, including the varieties of "macigno" and "pietra forte," enjoys an excellent reputation as a first-class architectural and building stone; the largest output is obtained at Fiesole, Carmignano, Lastra a Signa and Galluzzo. The Fiesole quarries alone give an approximate annual output of 10,400*l.* The total number of quarries is 1,300. This stone is frequently used outside Tuscany, and even exported abroad.

### BIRMINGHAM UNIVERSITY.

THE annual report which was submitted to a meeting of the Court of Governors of the University of Birmingham on Wednesday, stated that at the commencement of the year a University buildings committee was appointed, to which was referred the consideration of the report of the former advisory committee. Mr. G. H. Kenrick was appointed chairman. The Council having approved the plans prepared by Messrs. Aston Webb & Ingress Bell for utilising the land presented by Lord Calthorpe, considerable progress had been made in the formation of the road and preparation of the site. The tender of Messrs. Currall, Lewis & Martin, amounting to 4,556*l.* 2*s.* 10*d.*, for the construction of the new road, was accepted, as also their price of 1*s.* 7*d.* per cube yard for levelling the site. The generous grants made by the Corporation of Birmingham and the Staffordshire County Council had enabled the Council to proceed at once with a larger portion of the University buildings ultimately contemplated than would have been possible without such support. It had been decided to erect in the first instance a University hall of large dimensions (150 feet by 75 feet) and three departmental blocks, two on the west and one on the east side of the hall; the whole fronting to the arc of a semicircle, the diameter of which is University Road. In these buildings it was proposed to instal a complete engineering department, including mechanical engineering, civil engineering and electrical engineering, which would occupy two blocks, while a third block would accommodate the new departments of mining and metallurgy. In another part of the ground would be built a power station, and also a forge and foundry, all three being connected with the engineering department.

The Chancellor (the Right Hon. Joseph Chamberlain) in the course of his speech said:—

I have ventured to urge upon my colleagues great boldness in regard to expenditure, and above all, in regard to the plans for the new buildings which we are about to commence. I want that we shall build—and in this I am happy to say that we have received the unanimous support of my colleagues—I want that we shall build for the future and not only for the present, and above all, that we shall so build what we now undertake that we shall not compromise in any way the possibilities of the future. I have in my mind the action of the builders and founders of those magnificent cathedrals which have come down to us from the Middle Ages. Not one of them was built at once, but all were built with a view to the greatest possible extension. Our ancestors, if they had not the money to complete the work, were satisfied to build a transept or a nave or a portion of the church, but always on a scale that when complete it should be worthy of its object. Ladies and gentlemen, we propose to follow that example. We propose to build a portion such as our funds will enable us to lay down, but each portion will be on a scale which shall be equal to our highest anticipation of what the future may have in store for us. We have received from our architects the rough plans of our future University—of the University as it will be perhaps a generation hence, perhaps to-morrow if we can only find in this country some individuals who are ready to follow the munificent example which has been set by American millionaires in similar circumstances, and who may be proud to associate their name with the completion of so great and important a work. In dealing with such large sums any estimate must be very perfunctory, but I reckon that the buildings of this new University cannot be erected and equipped for a less sum than a million sterling. We have 300,000*l.* in hand, and accordingly out of ten working blocks of which the University buildings will ultimately consist we propose to begin with the erection of three. These three blocks will give us the schools of mining, of metallurgy and of civil, mechanical and electrical engineering. They will also give us the great hall of the University, which will be necessary for such meetings as this, for examinations, for refectory and possibly for other purposes. We have arranged to-day for an exhibition of the plans by means of the magic-lantern, and at the conclusion of this meeting they will be thrown so far as they are complete upon the screen, and the character of them



will be explained to you; but I must warn you beforehand that they are very incomplete, and that they may, as the work goes on, be subject to further alteration, but they will perhaps be sufficient to give you a general idea of what we intend.

## WEST MOLESEY HOSPITAL FOR INFECTIOUS DISEASES.

MR. ARNOLD ROYLE, C.B., an inspector of the Local Government Board, held an inquiry at the Molesey District Council offices recently into the application of the Council to borrow 900*l.* for the purchase of a site for an infectious hospital at West Molesey. Mr. D. Cann (clerk) said that the greatest proof of the necessity for the hospital was the fact that the Council were continually spending sums of money on nurses and the isolation of poor people suffering with infectious disease. Although this was done under the advice of the medical officer, the Local Government Board had surcharged him (the clerk), the money having been paid out of his petty cash. Up to the present time the Council had paid over 50*l.* for such treatment. Originally West Molesey was a partner in the Tolworth Isolation Hospital, but they sold their interest to Surbiton for 1,356*l.*, which sum had been invested and earmarked for the purpose of building a hospital. Under an agreement West Molesey had the right to send patients to the Tolworth Hospital for a period of five years. It was proposed to utilise that sum, and later on the Council would submit plans for the erection of a hospital at an estimated cost of 1,350*l.* Mr. H. J. Robinson said the piece of land they proposed to purchase was the only piece procurable. They had to pay 550*l.* for the freehold of the land. Part of it was under cultivation, but they had arranged for the whole of the orchard to be at once given up on the payment of 700*l.*, so that they would have to ask the Local Government Board's sanction to borrow 1,260*l.* instead of 900*l.* They were not applying for a loan for building. The West Molesey money would be utilised for that purpose, and the remainder would be raised from the rates. East Molesey would, of course, have to reimburse West Molesey. Dr. J. E. Knox gave it as his opinion that the site was a very good one. The inspector said the Local Government Board would require an undertaking that smallpox patients would not be admitted to the hospital, and the

chairman thought the Council would be willing to give this. The surveyor, having given evidence as to the suitability of the site, and as to the price being reasonable, the case for the Council was closed. The Rev. Peter Ward said he hoped the Local Government Board would see that the expenses were properly adjusted between the two parishes, and he trusted that they would take into account any injury that might be done to West Molesey by the establishment of an infectious hospital in their midst. Mr. W. B. Barclay said he was strongly opposed to the site. The inquiry then terminated, the inspector and officials proceeding to view the land.

## THE NEW ADMIRALTY BUILDINGS.

IF one may judge of our Navy by the increase of staff and the expansion of headquarter facilities at Whitehall, says the *Daily News*, that Navy certainly ought to be growing in strength and efficiency rapidly enough to satisfy the most ardent of Imperialists. When, after a good many years of deliberation, it was finally decided to supplement the old Admiralty by new buildings, it was resolved to do things handsomely. Two fine blocks of buildings were to be erected. The first, looking out westward along Birdcage Walk and St. James's Park, was to cost about 200,000*l.* This was completed and occupation commenced in July, 1895. Whether the second block was absolutely decided on at the outset we are not quite sure, but if not it was recognised as an addition that might have to be made, and long before the first pile was completed on the west of the quadrangle behind the old Admiralty, it was decided to erect another on the north of the quadrangle, leaving the south side open to the Horse Guards Parade except for a covered corridor running across to connect the south ends of the old Admiralty and the first of the new supplementary blocks.

That for a time, it seems to have been supposed, would meet all requirements of the expanding service. So confident were the Government and Admiralty chiefs that this second addition would complete the establishment, and permit of all necessary readjustment and reforms, that it was resolved that the great north block and the corridor running across the south side of the quadrangle should be carried out simultaneously. But by the time that second great pile, with its hundred rooms—some of them very large—was well in hand, it began to be questioned whether, after all, accommodation

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would be sufficient. Every new ship added to the Navy means an addition to the headquarter staff, and such additions were coming thick and fast. Moreover, it was only when they began to come in from the outlying buildings in which various branches of the service had been temporarily lodged that the severe compression under which the work of the Department had been carried on came to be fully realised. It was, we believe, intended that the Director of Works should have found accommodation in the second of the new buildings. That was found to be impracticable, and it was eventually decided to drop the idea of a mere connecting covered-way, and to set up a third great new pile of offices instead. That has been actually commenced, and Messrs. Chessum & Son, of Bow, are now engaged upon the foundations. The architects of this third erection are to be Messrs. Leeming & Leeming, who have carried out the other two blocks. The new pile will, of course, correspond with the edifice overlooking St. James's Park, the characteristics of which were largely dominated by the original old Admiralty building to which it was an addition.

This coming structure on the Horse Guards' side of the quadrangle will probably constitute the most important frontage of the modern Admiralty. While, of course, the general style of it will be that of the two other portions, it will be somewhat more imposing and elaborate, the money for it having been voted before the outbreak of the South African war. It is a pity that it should have been necessary to depart from the original idea of a low ornamental corridor along this side of the Horse Guards' Parade, for the open quadrangle would have been rather imposing from the outside, while the inside would have been much pleasanter and the backs of the buildings lighter and airier. But the addition has been found imperative necessary.

And even this great third block does not seem likely to be the end of the business. Already there is, we understand, a fourth addition in contemplation, and the probability is that before the Horse Guards' frontage has got far on its way a new building will be decided on to face Whitehall, and running down from the Park to the Paymaster's Office, thus effectually extinguishing Ripley's ungainly pillars and pediment which the screen on the street-frontage line was erected in some measure to mark. The old Admiralty buildings there is no thought of disturbing, but if this final project is carried out, these old and interesting offices, from which the British Navy was controlled in its most famous days, will form only the central point of a

great modern institution flanking Whitehall on the west, as the War Office will soon flank it on the east. This final erection would, of course, have to be not only extensive, but, from its position on a main West-end thoroughfare, must necessarily be imposing and elaborate, and therefore very expensive. It is hardly to be expected that money will be voted for it till we can see the bottom of our little business in South Africa.

### WOLVERHAMPTON WATER-SUPPLY.

A PUBLIC meeting of the owners and ratepayers of the borough was held in the Free Library Lecture Hall, Wolverhampton, on Monday evening, to consider the expediency of the Corporation promoting a Bill in the ensuing session of Parliament to extend their water undertaking and obtain powers to raise money for that purpose. The mayor (Mr. C. P. Plant) presided over only a few people, and the proceedings were of a most formal character.

His Worship, in opening the proceedings, said it would appear from the small attendance that the ratepayers were in favour of the object the Corporation had in view.

Alderman Marston, the chairman of the water committee, explained the objects of the Bill, and traversed the ground he covered when relating the scheme to the members of the Town Council a few weeks ago. He explained that a similar Bill was introduced into Parliament twelve months ago, and the facts had not been altered. The town required a further supply of water, as the population was gradually increasing, and the Bill last year would have been passed but for a misconception as to the meaning of the compensation clauses. It was then intended to give compensation to all who had water taken away from them, but Parliament misunderstood the purport of the Bill and threw it out. Compensation clauses were again inserted, and, judging from the negotiations which had passed with the owners of property, there was reason to believe that a friendly arrangement would be come to before the Bill was brought to a second reading. This year the clauses relating to extending the limits of supply had been eliminated, and it was not intended to increase the water area. With regard to compensation, it was now proposed to supply water to any house or residence within two miles of the site of the works in case, through the operations of the water committee, the water was taken away from them. In addition, the water would be laid on to the houses without



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ny charge whatever. It was also proposed to supply local authorities with water at a fair rate per thousand gallons, so that they would be able to supply the residents in their districts which were short of water at a reasonable rate. In other respects the Bill remained the same as that of last year. They were asked last year to go to Birmingham for a supply of water, and that question had been considered, and interviews had taken place with the Birmingham authorities, who had given them every consideration to become customers. It was thought, however, that water could be got cheaper from Hilton and Stapleford. The Birmingham water, too, would have to be treated at a further expense. The Birmingham Corporation proposed to charge 6d. per 1,000 gallons. That was considered a low price considering the enormous cost of the Birmingham scheme, but if Wolverhampton took 1,000,000 gallons a day it would cost 10,000l. per annum, and that amount would be too great. The new scheme of laying down pumping plant at Hilton and Stapleford, together with tramway and reservoirs, would cost 149,000l., and for new mains and other works 101,000l. would be required, so that it was proposed to ask for 250,000l. Up to the present time the waterworks scheme had realised a profit, and it was not anticipated that the new works would necessitate any call on the rates. The Mayor then moved a resolution in favour of the Bill being promoted, and this was seconded by Alderman Joseph Jones, and carried without a dissentient voice.

### NEW ASYLUM FOR YORK.

A NEW asylum for York having become a very pressing need, the asylums committee of the Corporation have issued the following *résumé* of the history of the project for the erection of such an institution:—

It having become necessary that the city should provide an asylum of its own for the reception and maintenance of its pauper lunatics, the finance committee in 1899 advertised for particulars of price, &c., of estates of not less than 50 acres, in a ring fence, within a radius of ten miles of York, suitable for the erection of an asylum. Several offers were submitted, and the committee having considered the same decided to recommend the Council to purchase Acres House Farm, Naburn, comprising 140 acres, for 12,350l. The Council adopted this recommendation on August 14, 1899, the purchase being, however, subject to the approval of the Lunacy Commissioners and

the Home Secretary, and to the sanction of the Local Government Board for borrowing the necessary money, application for which was directed to be made by the Council.

Dr. Needham, one of the Lunacy Commissioners, officially inspected the farm, and a copy of his report was printed for the information of the Council, together with a letter from the secretary of the Commissioners, intimating that on receiving the assurance of the committee mentioned in Dr. Needham's report the contract for the purchase of the farm would be forwarded to the Home Secretary for approval.

The assurance referred to was that the committee had satisfied themselves that they might erect the proposed asylum on Acres Farm without risk of danger or inconvenience to its inmates by the proximity of the sewerage works of the city. This assurance was given and the approval of the purchase of the land by the Home Secretary was obtained.

The Local Government Board also gave their sanction to the borrowing of the purchase money, after one of the Board's inspectors had held a local inquiry in respect thereof, the period of repayment extending to thirty years.

With a view to improving the boundary line of the property, and so that all the buildings might be in the parish of Fulford Water, the Council on the recommendation of the committee subsequently purchased from Captain Key additional land, to the extent of 15a. 1r. 13p. and 25 yards, for the sum of 1,303l. 11s. 10d. The Local Government Board has granted sanction for borrowing the money, repayable in thirty years.

In November 1899 the committee considered the question of the appointment of an architect for the asylum, but before coming to any decision it was decided that they should visit and inspect the asylums at Middlesbrough, Sunderland and Beverley, and they accordingly visited those institutions.

On the recommendation of the committee, the Council on February 5, 1900, appointed the city engineer as the architect for the asylum, and Dr. Pope, the medical superintendent of the Middlesbrough Asylum, was subsequently retained to advise in connection with the plans at a fee of 150l. The city engineer was to be allowed the necessary clerical assistance in the preparation of the plans, &c.

The city engineer accordingly proceeded to prepare the necessary plans of the new asylum, which it is intended shall provide for the accommodation of 362 patients, with an ultimate increase to 486.

The preliminary plans were submitted to the Lunacy Commissioners in June 1900, and after considerable delay and some

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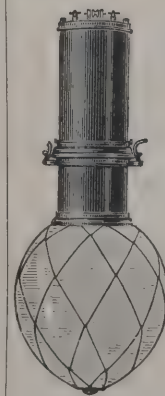
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modifications therein to meet the requirements of the Commissioners they were ultimately approved. This fact was reported to the Council on October 7 last, when the plans were also submitted for and received the approval of the Council, as required by the Lunacy Act. The complete plans have now been submitted to the Lunacy Commissioners for their provisional approval. The committee are considering the system of heating and ventilation to be adopted at the asylum.

The committee add that arrangements are being made with the North Riding Asylum and the Bootham Asylum for the renewal of the contracts for the reception of pauper patients.

### CARDIFF NEW TOWN HALL.

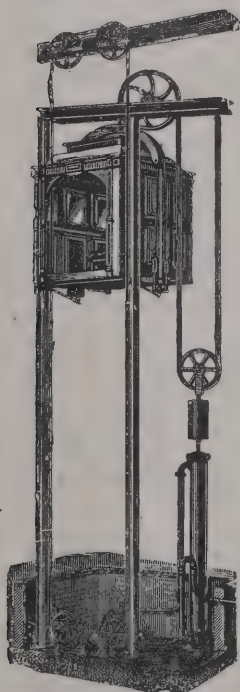
IN 1878 the Cardiff Corporation obtained power to borrow 850,000*l.*, and of that sum 200,000*l.* was for the purposes of the new town hall and law courts. Owing to an alteration in the design of the new buildings, by raising the elevations, the estimate of 200,000*l.* has been exceeded by 33,000*l.*, and the total amount sanctioned to be borrowed under the Act has been exceeded by 38,548*l.* 16*s.* 8*d.* The Corporation, therefore, applied to the Local Government Board for a provisional order to remove the limitation of the borrowing powers imposed by the Act. Last week Col. Slacke was engaged at the town hall for close upon three hours in holding an inquiry into this matter. Opposition was offered by Mr. J. B. Ingledew (on behalf of the Taff Vale Railway Company), Mr. S. Hern (in the interest of the Cardiff Property Owners and Ratepayers' Association), Mr. Isaac Watkins for the Cardiff House-owners' Association, and others.

The Mayor was first called upon to give evidence, and referred in detail to the progress which the town had made, and said he saw no prospect of a diminution in the rate of commercial progress. Since 1875 the capital expenditure of the Corporation upon public works and other improvements had amounted to 2,638,995*l.*, and the total indebtedness of the borough was 2,470,795*l.* 16*s.* 3*d.*, including waterworks, tramways and electric lighting. In 1898 the Corporation promoted a Bill for powers to purchase Cathays Park, on which to erect a new town hall and law courts. The proposal was passed with great cordiality at a meeting of ratepayers. By the Act of 1898 the Corporation were authorised to borrow amongst other amounts any sum not exceeding 200,000*l.* for erection of town hall and law courts. By section 59 it was provided that

the Corporation might borrow for the purposes named (except tramways) and for furnishing the town hall and law courts such further sums as might be sanctioned by the Local Government Board. Under the Act the total amount to be borrowed could not exceed 850,000*l.* With regard to the sum of 200,000*l.* for the town hall, &c., it was ultimately found that those buildings would cost 233,000*l.*, and the Local Government Board sanctioned the borrowing of an additional 33,000*l.* under the Cardiff Corporation Act, 1898. In the early part of the present year it was found necessary to apply to the Board of Trade for sanction to the borrowing of further moneys for tramway purposes under the powers of the Act of 1898, and therefore they had been authorised to borrow 888,548*l.* 16*s.* 8*d.*, or 38,548*l.* 16*s.* 8*d.* in excess of the maximum sum stated in the Act. The Corporation had therefore been authorised to borrow sums to the amount of 30,570*l.* beyond the borrowing powers stipulated in the Act, and in order that the matter might be immediately dealt with an satisfactorily arranged the town clerk was instructed to ask the Board to consent to their sanction in respect of 33,000*l.* being borrowed under the powers contained in sections 105 and 106 of the Municipal Corporations Act, 1882, instead of under the Cardiff Corporation Act, 1898. The Council had decided upon this course inasmuch as in the estimate of the borough engineer for the Act of 1898 no provision was made for any expenditure on the town hall beyond the sum of 200,000*l.* mentioned in the Act. The Board, however, could not consent to this transfer, and as it would be necessary hereafter to approach the Board for the borrowing of moneys for the furnishing of the town hall, the Council came to the conclusion that it was very desirable that all moneys in excess of the 200,000*l.* specifically appropriated under the Act of 1898 for the new town hall should also be borrowed under that Act, and considered it desirable to amend the Act so as to make provision for further borrowing powers. The power to borrow would only be used with the sanction of the Local Government Board.

Mr. Lanchester, the architect, gave particulars showing how the increased cost had arisen. Besides raising the height of the façade and the right-angle pavilions, there had been increased strong-room accommodation provided, larger rooms for the borough engineer's and health superintendent's department, additional offices in the water rentals department, private lavatories for head officials, two extra rooms in the town clerk's department, luncheon-room, &c.

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Mr. H. M. Ingledew then submitted his objections. He intended that the object for which this money was required should not come within section 303 of the Public Health Act, that there was a debt of over 775,000*l.* over the two years' assessable value, and that therefore the Local Government were barred from giving the power sought, and, further, that all ratepayers assented to was a maximum expenditure of 10,000*l.* The company he represented, the Taff Vale, paid one-twentieth of the rates.

The Town Clerk said that the Corporation's local Acts proceeded against the objection Mr. Ingledew had raised as to the total indebtedness exceeding the two years' assessable value to the objection under the Public Health Act, all Corporations had power to erect suitable offices and buildings. He denied that the rates had gone up during the last three years, and said the ratepayers would not have wished the Corporation to spoil the new town hall for the sake of a few thousand pounds.

The inquiry then closed, and the result will be made known due course.

### WINWICK ASYLUM, LANCASHIRE.

LAST week the opening ceremony in connection with the new Lancashire asylum was performed. The estate on which the building is erected is known as Winwick Park, and it was purchased from the Ecclesiastical Commissioners in 1894 for 100*l.* Brickmaking was begun in 1896, and in October 1897 Messrs. Neill & Sons, of Manchester, signed the contract for the building of the asylum for 253,000*l.* The progress of the work has been delayed on several occasions by strikes. It is hoped, however, that it will be quite completed within a few months. What remains to be done is principally furnishing and laying out the grounds. The accommodation is for 2,000 inmates—1,000 males and 1,000 females—with 200 attendants. The buildings comprise an administrative block in the centre, and the pavilion system has been adopted. The various parts of the building are connected with the administrative block by long corridors. The length of the corridors is in all seven miles. There are two wings. A short distance away on the Warrington side there is an isolated hospital for infectious diseases, and on the Newton side is a row of houses for the officers of the asylum. The whole of the buildings are lighted with the electric light. There is a generating station on the premises

with three dynamos, which also supply the power for working the laundry. A large water tower with large water tanks is provided in case of fire, and there is also a tower for condensing steam to prevent any inconvenience arising from steam escape. A very complete laundry and cookery establishment, a large recreation hall, a church with accommodation for 800 people, and a railway siding connected with the London and North-Western Railway are among the other provisions. At the present time there are fifty imbecile children in the old hall.

At the opening ceremony Mr. Francomb, chairman of the visiting committee, in an interesting address alluded to the fact that there had been a large amount of extras in the contract, and they were chiefly extras in the foundation, the soil of the district having proved to be very treacherous. The site cost 22,130*l.*, for which they had over 200 acres of freehold land. For railway bridge they had spent 2,094*l.* Twelve cottages and two lodges had cost 5,292*l.*, the brickmaking 25,450*l.*, the building 276,400*l.*, the electric lighting 13,732*l.*, architect's, quantity surveyor's and engineers' commissions 15,754*l.*, the salaries of the clerk of the works and assistants 2,000*l.*, the new farm building 8,180*l.*, the alteration to the old farm buildings 2,550*l.*, Warrington Corporation for gas and water mains 1,075*l.*, making a grand total of 382,955*l.* That was at the rate of 200*l.* per bed, and he was assured by Dr. Rhodes that it was almost the cheapest asylum ever built. They had been building about four years, and would have been finished before now had they not been terribly bothered with strikes.

### VAUXHALL BRIDGE.

IN the City of London Court, on Tuesday, before Mr. Lumley-Smith, K.C., actions were brought by Messrs. Pethick Brothers, who are constructing the new Vauxhall Bridge over the Thames, against Messrs. William Cory & Sons, Ltd., 52 Mark Lane, E.C., and the Thames Steam Tug and Lighterage Company, to recover 50*l.* and 20 guineas respectively for damage done in collisions. It appeared from the evidence that the plaintiffs in October last were driving 50-foot piles into the river at Vauxhall to form a coffer dam, and the works were properly lighted. The tug *Rajah* came up in the dead of the night and smashed two piles, involving an expense of 50*l.* The second defendants allowed a barge to run into the plaintiffs' pile-driving machinery, when damage

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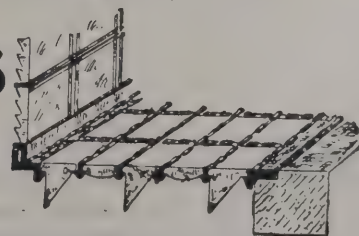
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to the amount of 20 guineas was done. The defendants' case was that the rebuilding of Vauxhall Bridge had given rise to a great many accidents, and that they ought not to be held to blame for what was unavoidable. The contractors took up a great deal of the fairway of the river, and it had become a great danger to navigation. It was very hard on the owners of barges and other craft using the river daily. The Judge said for craft to get by Vauxhall Bridge was like driving along Cheapside with the road up on both sides. Corys' tug *Rajah* ought not to have had so many tugs fastened to her. Defendants' counsel said that if that argument were to prevail a man with only one eye should not go along the Strand because it was densely crowded. The Judge said the tug did not give the piles a sufficiently wide berth. He must find for the plaintiffs in the first case for 45*l*, and in the second for 20 guineas. In a third case the contractors recovered 5*l*, costs following in each action.

### PLUMBERS' NIGHT WORK.

THE following opinion by Sheriff Balfour has been given in a reference between the Master and Operative Plumbers' Associations in Glasgow with reference to a dispute which arose out of the Glasgow Exhibition work, regarding the question as to payment of operative plumbers for work done by nightshift. The opinion explains the circumstances, and is as follows:—

"This arbitration applies to a dispute which has arisen between the Master Plumbers' Association and the Operative Plumbers' Association, and the circumstances are as follow:— Certain operatives were employed by Mr. Renfrew, the plumber, at the Glasgow Exhibition, and in consequence of the requirements of the Exhibition they were unable to work during the day. On Tuesday, June 18, 1901, they stopped work at 1 P.M., and started again at 9 P.M. the same evening and worked all night until 9 A.M. the following morning (Wednesday), when they stopped work, and did not resume again until Wednesday night at 9 P.M. The men continued working at night from 10 P.M. until 9 A.M., with two breaks of half an hour each night for meals, until Saturday, June 29. They were then paid on the footing of receiving the usual wages for fifty-one hours per week and time and half for the time wrought after the fifty-one hours. They received the payment under protest and

claimed to be paid time and a half for all night work, without reference to working fifty-one hours in the week. The rule applicable to the working time for Glasgow, as agreed upon between the parties, and which came into operation on May 1901, have been submitted to me, and according to these rules the working hours from February 16 to November 14 are from 6 or 6.30 A.M. to 5 P.M., taking two hours for breakfast and dinner, for the first five days of the week and on Saturdays from 6 or 6.30 A.M. to 1 P.M., taking an hour for breakfast. With regard to overtime, the rule is that all time wrought after fifty-one hours per week from February 16 to November 14 is to be paid at the rate of time and half. There is nothing said in the rules as to night shift, that is, as to men working only at night and not during the day. The rules provide for the men working during the day and completing fifty-one hours per week, and for any work done in addition to the fifty-one hours they are to be paid time and half, and there is no rule that the men are to be paid time and half for night work alone. The rules do not therefore apply to the dispute which has arisen, and the question arises as to what is a fair and reasonable sum for Mr. Renfrew to pay to men who have been engaged in night-shift work alone. It is clear that the men are not entitled as a matter of contract to time and half for the whole night work, and what Mr. Renfrew has done is—he has paid the men the usual wages for the fifty-one hours per week of night work and time and half for the surplus over the fifty-one hours per week, and further, Mr. Renfrew has offered them 1*s*. per night extra for working during the night, which the men have refused. It appears to me that, in the absence of any rule on the subject, the payment already made by Mr. Renfrew, along with the offer of 1*s*. per night extra, is a fair and reasonable offer, and should be accepted by the men, and that the men are not entitled to time and half for the whole of the night work. With regard to the four cases in which the operatives state that men were paid time and half for night work I do not think that these cases are sufficient to establish a custom of trade. It is unnecessary to deal with the alleged compact made by the leading hand, James Watson, on behalf of the men, because although it is averred by Mr. Renfrew that a compact was made by Watson that the men were not to receive any allowance beyond time and half for the surplus over fifty-one hours per week, this is denied by Watson, and the men say that he had no power to enter into such a compact on their behalf."

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# The Architect.

## THE WEEK.

THE *Gazette* on Tuesday announced that a petition was presented to the KING for incorporating "The British Academy for the Promotion of Historical, Philosophical and Philological Studies." To some extent this is a revival of a more consolidated form of the scheme for the foundation of an institution resembling the Académie Française. At the beginning of the reign of GEORGE III. it took the title of the Academy of Minerva, and there was a belief among wits that Dr. JOHNSON would be the Grand Owl. About thirty years ago public attention was directed to the question by an essay of MATTHEW ARNOLD on the influence of academies. The academy that is now projected will not, however, concern itself with polite literature; it will deal with such serious subjects as moral and political sciences, history, philosophy, law, politics and economics, archæology and philology. The necessity of such a body was manifested at meetings of the European and American academies, when it was found that the Royal Society, which was the representative of Great Britain, was devoted to science rather than to philosophical, philological or historical studies. A British Academy was founded as the result, but as it possesses no official standing, application has been made to HIS MAJESTY for incorporation by royal charter. Among the first fellows named in the draft charter are Viscount DILLON, President of the Society of Antiquaries, and Mr. ARTHUR J. EVANS, Keeper of the Ashmolean Museum, Oxford, who are the only representatives of archæology. The petition has been referred to a committee of the Lords of Council, to whom all petitions in favour of or in opposition to the proposed charter should be sent on or before February 14.

By section 145 of the London Building Act, it is well known that two clear days' notice is to be given to the district surveyor respecting every building or structure or work that is affected by the provisions of the Act or the by-laws. At first sight it might not appear that a street box for the purpose of inspection in connection with electric energy was such a building structure or work. But it has been decided by the High Court that such is the case. The Charing Cross and Strand Supply Corporation, Ltd., were a few days ago summoned before Mr. Alderman CROSBY at the Guildhall by Mr. EDWARD WOODTHORPE, district surveyor of the northern division of the City of London, for beginning certain works without having served the required notice. The Alderman convicted the company, and imposed a fine of 40s., with two guineas costs. The company are eager to have such a case argued before a special Divisional Court consisting of more than six judges. It may be inconvenient to companies to be subjected to visits from district surveyors, but a class of construction is now carried out below pavements and streets which can become as dangerous as any warehouse, shop, or private residence. There should be some control, and there are no officers so competent for the duty as the district surveyors. It is not to be expected, however, that important companies will be satisfied with the judgments given in police courts, especially when it is known that the magistrate has not had an elementary training in law. To remove all doubts and misgivings, it would therefore be well that the decision of the High Courts should be invoked.

If a statue should ever be set up in Brighton as a memorial to the Rev. A. D. WAGNER, who died on Tuesday morning, it ought to take the form of one of those mediæval priests who are represented as holding the model of a church as expressive of their predominant quality. In the nineteenth century he stood without a rival as a church builder. His father, who was also a Brighton vicar, set an example, for he erected Christ Church, All Saints Church, St. Paul's and the parish church of St. Peter's. Miss WAGNER had the old royal chapel removed stone by stone, and it is now known as St. Stephen's. The Rev. A. D. WAGNER was in his twenty-fifth year appointed by his father as vicar of St. Paul's, and he held that position for twenty-two years. He was known to have sympathy with

Mediæval ways, and as Brighton prided itself on its Puritanic orthodoxy, Mr. WAGNER was often attacked in the streets, and on one occasion an attempt was made to shoot him. He erected St. Mary Magdalene's, St. Bartholomew's, the Annunciation, the Holy Resurrection, and St. Mary's, Buxted, and endowed them and the schools connected with them. With his brothers he built and endowed St. Martin's Church as a memorial to his father. The extent of his outlay was never divulged by him, but it must have amounted to an enormous sum. The Church of the Resurrection is partly underground, for in order to escape the opposition of property owners in the neighbourhood it was necessary to have the nave between 30 and 40 feet below the street level. His enthusiasm was not confined to the building of churches. In order to meet the deficiency of suitable accommodation for the working classes he erected 400 houses, and then found that they were considered as too costly for the tenants. During his lifetime Mr. WAGNER endeavoured as far as he could to conceal his munificence, and some memorial should be raised as a tribute to a man who possessed many of the apostolic virtues and who was never weary of well doing.

THE announcement that a memorial, at a cost of 19,000 francs, is to be erected at Formigny will be a surprise to many visitors to Normandy. A memorial already exists of the battle which was fought in 1450, when the English army was defeated and Normandy ceased to be a British possession. It would be an advantage if the new memorial were to announce the circumstances in an impartial way. In 1446 the marriage of HENRY VI. and MARGARET, the daughter of RENÉ of Anjou, brought about the restoration, it may be only nominally, of the dukedoms of Anjou and Maine to the queen's father. The surrender, however, caused great discontent in England, as will be found described in the play of "Henry VI.," in which the national view is expressed by the speech of the Duke of YORK. He is made to say:—"Anjou and Maine are given to the French; Paris is lost; the State of Normandy stands on a tickle point, now they are gone." The Duke of SUFFOLK who carried the negotiations through was impeached, then banished, and his head was struck off while on shipboard. The rebellion of JACK CADE was one of the consequences of the general discontent with SUFFOLK. The French king was able to use Maine to attack Normandy, and by the defeat of Sir THOMAS KYRIEL the duchy was lost. In the course of a year Calais alone remained of all the English possessions in France. After so many years it seems hardly worth while to recall a battle in which the odds were immeasurably stronger on one side.

A FEW years ago we described a process for producing Celtic interlaced patterns in decoration. A paper was read on the same process by Mr. THOMAS COOKE TRENCH at the Convention of the Association of Master Painters which has been held in Dublin. It has had a practical application in the church of St. Michael, Clane. The difficulty to be overcome is mainly the prevention of crossings of the ribbons at inapposite places. By the French system the artist first covered the space to be dealt with with lines crossing one another, and woven in and out like basket-work. He then proceeded to join all the ends, two and two together, and finally he obliterated crossings here and there, joining the ends thereby set free in a manner differing from that which they originally followed. Any one could join ends, any one could obliterate crossings, but the excellence of the pattern consisted in the skill with which those processes were carried out, and therein lay the art. The development of interlaced patterns is well adapted to occupy the leisure of amateurs. Men and women of that class could hardly be more innocently employed during their leisure hours than by adorning Irish churches, where there is no money to pay decorators, with the ancient forms, which easily can be made to appear as if they were without beginning or end. But if the work can in that way be produced gratuitously or for the cost of the materials employed, it is not to be supposed that members of the Association of Master Painters would undertake contracts on similar terms. Much is now said about the beauty of Celtic ornament, but there is a general agreement that its financial aspects must be carefully avoided.



## OLD MASTERS EXHIBITION. -II.

THE variety which we have pointed out as marking this year's exhibition, is not confined to the great gallery. It characterises the collection which is to be found in the rooms we have yet to describe. Each of them contains works which would be capable to form an independent exhibition on a small scale.

In Gallery No. IV. we first meet with a fine canal scene by AART VAN DER NEER. He was a seventeenth-century painter who had a predilection for villages that were found close to rivers or canals. In Holland his countrymen admired him most when he showed the effect of moonlight on the water. The picture in the Academy would serve for several places in Holland. The canal is lined by high trees, and there are signs of industry not only in the sailing-boat, but also among the fishermen in the foreground. A portrait by VANDYKE is unlike the majority of the painter's works, for he has selected a plebeian type of youth who, although holding books, is not sicklied o'er with the pale cast of thought of the student. JAN GRIFFIER'S *View on the Rhine* is another excellent river scene, and deserves attention from the interest attached to the painter's career. Originally he was a carpenter, next he became a tile-painter, then a flower-painter, and finally, a landscapist. He came to London soon after the Great Fire, and being fascinated by the Thames, he bought a yacht on which he lived with his family, and spent his time in painting scenes along the river between Windsor and Gravesend. Not until he had suffered shipwreck a couple of times did he settle on shore. The view on the Rhine has a suggestion of some of the castled crags, and helps to indicate how far men felt the beauty of the river in the seventeenth century. PIETRO FRANCESCO MOLA is represented by an able landscape in which, after the Italian manner, nymphs are seen bathing in a pool. In its present condition the trees are the best part of the work. Although a landscapist, he gained some distinction as a painter of historic incidents, and in the National Gallery there is a *St. John Preaching in the Wilderness* by him. He was the son of an architect, and in Rome was elected President of the Academy of St. LUKE. The *Sibyl*, by GUIDO, is one of those heads of young women which GUIDO loved to paint, and of which the so-called *Beatrice Cenci* is the best known example. They form a class of work which might easily have been produced during the period when the artist was in a state of thralldom to picture dealers, and was compelled to produce a stipulated quantity of work every day. Although the *Sibyl* is described as having "white and blue drapery," very little blue is to be seen, for one peculiarity of the series of heads is that they wear white head-dresses as well as white robes.

Although *The Last Supper* by TITIAN is no more than a sketch for the large picture which was painted for PHILIP II., it deserves to be considered as a masterpiece. The larger work was sent to Spain in 1554. The painter had then passed his seventieth year. According to the letter which the artist wrote, it occupied him almost continually for nearly seven years. The canvas had to be cut down in order to fill the space in the refectory for which it was intended. TITIAN must have been aware of the arrangement of DA VINCI's fresco in S. Maria delle Grazie, and endeavoured to rival it. He also shows the figures seated at one side of the table, but they are less formally grouped. Instead of the simple surroundings which TITIAN employed in his *Supper at Emmaus*, there is an immense arch behind CHRIST, through which we see a fine landscape. The colours have faded, but originally this sketch must have been delightful. The large altar-piece by TITIAN belonging to Mr. PIERPONT MORGAN is in excellent condition. The VIRGIN looks over her shoulder at the Infant CHRIST, who blesses St. JOHN, and St. JOSEPH is contemplating the group. The faces do not appear to have been idealised, and convey the impression of being portraits. The Venetian School is also represented by the *Diana and Acteon* and *Atalanta* of PAUL VERONESE, besides a sketch measuring about 3 feet by 2 feet of TINTORETTO'S *Marriage Feast*, in the sacristy of S. Maria della Salute, which BURCKHARDT describes as "a magnificent genre picture of a domestic character (not princely, like P. VERONESE), in which at least the miracle

and its effects are in a praiseworthy manner placed in the foreground." It was one of the pictures which REYNOLDS must have had in his mind when he said the bustle of the Venetian School was, in MACBETH'S words, "A tale told by an idiot, full of sound and fury, signifying nothing." Students of the Academy have only to look at the three examples of TINTORETTO which are in the exhibition, in order to realise how prejudiced the first President could occasionally become in his criticisms. TINTORETTO sought to suggest active life, and he has succeeded to an extent that has never been excelled. There is another notable *Virgin and Child*, by FRA BARTOLOMMEO; a portrait of a lawyer, by GHIRLANDAIO; an excellent landscape by SALVATOR ROSA, which bears out the judgment of REYNOLDS, that there was a perfect correspondence between all parts of his works—rocks, trees and sky.

Sir PETER LELY is not the painter we should expect to see in an exhibition like the present, for, indeed, his beauties would be rebuked by the company of so many serious women on the walls. His one example is, however, to be excused, for it is a portrait of VANDYKE, whose influence made LELY abandon history pieces and landscapes for portraits. It may be doubted whether the portrait was taken from life. VANDYKE is depicted as a very young man, not more than twenty years of age at most, but when VANDYKE was twenty LELY was only twenty. Moreover, it is supposed that LELY did not see any of VANDYKE'S works until 1641, which was the year of ANTHONY'S death. There are portraits of two ladies by VANDYKE; one is represented holding a basket of flowers, and in both a great many pearls are introduced. Mr. PIERPONT MORGAN has lent a landscape by REMBRANT which is noteworthy for its beautiful trees. By RUBENS is *The Family of the Duke of Buckingham*. The duke was one of his English patrons, and possessed no less than thirteen of his paintings. It is possible the picture in the Academy was executed during the short stay of the artist in England. The children are admirably arranged, but the sadness of the duchess's expression is remarkable. At the time she was a widow, the duke having succumbed to the fanatical FENTON, and grief for her loss may have left so much trace. There is only one work by KNELLER in the exhibition, *A Portrait of the Earl of Bradford*. Of the years the qualities of the German artist have been depreciated, which is only a reaction from the idolatry which once surrounded him. The noble whom we see in the picture appears to have been riding, and the pose is natural; the colours, too, are quiet—a brown dress, white sleeves, lace collar and a fair wig. CANALETTO'S *St. Mark in Venice*, is like many other of his views of the city, for he has contrived to express the space and the stability of the buildings. Realistic landscapes are in favour. By MURILLO of a view across a valley to a wooded rocky height will give a new notion of his powers. *Painter and His Family*, by EMMANUEL DE WITTE, is one of the most charming of the representations of the domestic life of an artist. As a rule, he preferred to show interiors of a higher architectural character than his own dining-room, but the happiness which seems to surround the painter and his family would make a humbler room attractive. Another interior, and it may be of more pictorial value, is JAN STEEN'S *Grace before Meat*. Although REYNOLDS was no great admirer of the Dutch school, he said on one occasion, "JAN STEEN had a fine manly sense of painting that might become even the design of RAPHAEL." Examples of his art are rare in England, and on that account the Duke of RUTLAND'S picture should receive attention. It illustrates the homeliness of Dutch folk, and a commonplace scene is exalted by the reverence which is shown by the family while a mother teaches a child to repeat a prayer. All the details are treated with great care. The BORGias were an ugly race, and a sight of the medal containing a portrait of the notorious LUCRECE is sufficient to put an end to all the romance which has surrounded her history. The Cardinal GASPAR BORGI is represented by VELASQUEZ. VELASQUEZ does not appear to have been a criminal. CÆSAR BORGIA, who was also Duke of GANDIA, but whose portrait by VELASQUEZ will not diminish the aversion which the family is held.

There are only thirty paintings to be seen in the gallery. They begin with NICHOLAS POUSSIN'S *Bacchante*



*Italian Boys.* As a rule he preferred statuesque men and women or full-grown satyrs and fauns. The nine boys shown in the picture are rather adipose for amorini, and it is hardly reverential to childhood to suggest it can become intoxicated, but the picture is interesting as the effort of a grave man to treat an unaccustomed subject. MICHEL ANGELO's friend "Messer GIORGIO" was, like most Renaissance artists, endowed with versatility. His "Vite de' più eccellenti Pittori, Scultori, e Architetti," however, have insured for him an immortality which he could not have acquired by his pictures or his buildings. The portrait group belonging to Oriel College, Oxford, will on account of VASARI's name gain admiration, although many masterpieces may be hung near it. In it he has depicted DANTE, PETRARCH, BOCCACCIO, GUIDO, CAVALCANTI, MARSEILLO FICINO and ANGELO POLIZIANO, and there is so much vitality in the faces the painting does not altogether look like an imaginary conversation scene. The *Cleopatra* by GUIDO, and *Philip IV.* by VELASQUEZ, are among the numerous versions of those subjects. HONDECOETER's *Birds' Concert* is, as usual with him, very brilliant and not without humour, for the melody produced by an owl, a jay, a duck and a plover could hardly be seraphic. EUSTACHE LESUEUR was an admirable painter, but he exemplifies the ruth of WILKIE's remark, that no master has been able to uphold his reputation without skill in colour. The ability shown in the arrangement of the *Queen of Sheba* and the *Taking-up of St. Stephen* is unquestionable, but they are as cold in appearance as if they were intended to be placed in a Carthusian infirmary or mortuary. *Pharaoh's Daughter and the Infant Moses*, by TINTORETTO, is not remarkable for local truth, especially as we see a hunting scene in the background; it might have been one of those works which originally bore no relation to Scripture. The large altar-piece, *The Trinity*, by SANDRO BOTTICELLI, must have added in parts, because the figures now appear as if they were cut out of one canvas and pasted on to another, so marked is the contrast between them and the background. More interesting as a work of art is BERNARDINO CAVININI's *Virgin and Child with Saints*. He lived in the sixteenth century, and is said to have died in 1578. He was mainly devoted to fresco. Some say he followed GAUDENZIO, but there is no doubt he was an admirer of LEONARDO. In the picture in the Academy we seem to have a repetition in the foreground of the Child angel playing a violin, which was first attempted by FRA BARTOLOMMEO. There are various other amorini, and several figures of saints as well as of men and women, who may have paid for the picture. It is an admirable work, both for the modelling of the figures, the colouring and the composition. A third altar-piece of a similar character is by BARTOLOMMEO MONTAGNA, by whom several pictures are to be seen in Vicenza and Verona. The introduction of an apple on the foremost plane of the picture appears to be so erroneous that the figures will not receive the admiration they deserve. The colours have become darkened, but the reverential treatment and the austere spirit in the faces suggest that the artist was no ordinary picture manufacturer, and merits more renown than has been given to his lot.

Several portraits of Englishmen and Englishwomen are in the gallery. *John Chamber, M.D.*, belonging to Merton College, Oxford, shows a man of eighty-eight who still looks competent to give medical advice. It is in HOLBEIN's style, and may be classed with a portrait of a man which is ascribed to the German artist. The portrait of Queen ELIZABETH, from Jesus College, Oxford, evidently came from the hand of some able if unknown artist. There was a belief among her subjects that she was more than mortal, and such a picture would help the illusion. The full-length portrait of ANNE VAVASOUR, one of the Queen's gentlemen, is remarkable for the power shown in the face and the elaborateness with which the costume is executed. A portrait of EDWARD VI. is attributed to WILLIAM STRETES, who was the king's painter, and by whom he was paid marks for two portraits of his youthful Majesty. The lucky boy does not seem to be happy in his position. Another full-length portrait, attributed to VAN SOMER, is of Lady TANFIELD, the wife of a Chancellor of the Exchequer, and a pendant to it is Viscountess WILMOT. More is seen in another full-length *Lady Pope*, belonging to

Trinity College, Oxford. The portrait of Sir WILLIAM POPE is by MARK GERARD, of Bruges, who lived in England for over fifty years. He was the author of a book on drawing, which is believed to have been the first of its kind published in this country. The *Painter's Mother* is a work by REMBRANDT, and there is also a portrait of himself by Sir ANTONIO MORE, who was fond of that subject. The *Four Peasants* by VELASQUEZ are no doubt likenesses; they were studies for the *Bacchus* at Madrid. They are, however, coarse enough to raise revolt against realism, and should be placed in some pictorial chamber of horrors.

As there are over fifty oil-paintings in the Water-Colour Room it is evident they are all of smaller size than those seen in the other galleries. We have two of EMMANUEL DE WITTE's interiors of Dutch churches, one by VAN DER VLIET and one by SAENREDAM, which are shown with almost painful accuracy. In those days it was not uncommon to play games in churches or to bring dogs into them. GUERCINO's *Charity* would bear to be ascribed to CORREGGIO. The two small but exquisite sketches of Venice by GUARDI are marvels of handling. The head called *Martin Luther*, which is said to be the work of ALBERT DÜRER, is unlike the engravings after the paintings by HOLBEIN and CRANACH. The latter was a close friend of the reformer's, and his painstaking portrait is likely to be a faithful resemblance. According to HEINE, LUTHER was not only the greatest, but also the most German of all Germans, and in his character he represented the virtues and vices of the wonderful German people. He was at once a mystic and a man of action. Considered in that way, the engravings are more suggestive of LUTHER than the head in the Academy. The new portrait reveals a man of a different type, undoubtedly intellectual, but of far less courage and outspoken resolution. The *Bacchante*, by GREUZE, and *The Grace before Meat*, by CHARDIN, have been familiarised in various forms, and will be recognised as old acquaintances by all visitors. DAVID TENIERS, whether the elder or younger is not stated, must at one time have been in a prosperous condition. For he not only shows in a picture his château, garden and lake, but introduces in the foreground an allegorical figure of Abundance with four attendant Cupids, while not far off is an inn with the usual group of revellers; the combination is extraordinary. It would be an interesting question to discover why TERBURG's picture of the *Satin Gown* is universally admired. One reason may be given, which is, that we do not see the lady's face. It is a pity many other Dutch painters did not imitate his example. JACOB OCHTERVELDT was one of those artists who have had consideration for amateurs who are not Dutchmen. The *Lady Playing on a Harpsichord* in the Academy is shown by a back view; the dress is of white satin, with a black bodice cut low; but although the proportions are Batavian the picture is sure of general commendation.

The Black and White Room is occupied with drawings by CLAUDE, but there are four studies by RAPHAEL which mar the unity of the collection.

From our survey it will be evident that the exhibition now open will well repay the visits of all who can admire pictures. It was assumed that the Academicians would be forced to draw upon foreign collections, but with the exception perhaps of Mr. PIERPONT MORGAN, who probably would not wish to be regarded as a foreigner, all the contributors belong to this country. Among those who have contributed several pictures and drawings are Lady WANTAGE, the Duke of DEVONSHIRE, K.G., the Earl of NORTHBROOK, the Earl of BRADFORD, the Earl of LEICESTER, K.G., Viscount COBHAM, Viscount DILLON, Right Hon. LEWIS FRY, Sir E. J. POYNTER, Sir F. COOK, Sir J. C. ROBINSON, Sir W. AGNEW, Sir J. CARMICHAEL, Sir A. NIELD, Major CORBETT-WINTER, Major CHAMBERS, Captain HOLFORD, Mr. J. P. HESELTINE, Mr. J. KNOWLES, Mr. G. SALTING, Mr. R. BANKES and Mr. C. BUTLER.

**American Capitalists**, it is stated, have obtained concessions for electric car lines from Cairo to Mount Sinai and thence along the Arabian Littoral to Mecca. A branch is to connect Damascus with the system at Mount Sinai. It is believed that the traffic during a single annual Mohammedan pilgrimage to Mecca would pay a handsome profit on the cost of construction.



## THE GLORIES OF FRANCE.\*

AN interesting and useful acquisition would be an instrument, if one could be invented, which would gauge mental enjoyment in a way similar to that employed to determine the duration of sunshine by meteorologists. We are sometimes surprised to find that on what appear to be dull days an average amount of brilliancy is recorded, and we might also be able to discover if we possessed suitable apparatus that men who take their pleasures as if they were punishments contrive to have as much enjoyment of life as others who are envied for their manifest capacity to extract delight out of unpromising materials. Take, for example, a visit to some great building by an amateur and an architect, and contrast the difference between the effects it produces on them. To the amateur, assuming him to be instructed, the visit is like the realisation of a dream. The picture formed by his imagination is surpassed, and from the expressions of his gratification it may be concluded that his only regret is that ordinary buildings are not equally beautiful. Much of Mr. RUSKIN's criticism was inspired in that way. When PUGIN angrily exclaimed, "Why doesn't the fellow build something!" he was suggesting one of the reasons which make amateur criticism what it is. The architect can rarely permit himself to have such raptures. The building may have its rebukes for his own modest practice, it may offer hints which he is anxious to remember for future use, or it may compel him to enter into comparison between himself and the architect—most likely unknown—who designed the example before him. In any case the view becomes a subject for reflection, and if he should venture on remarks they are certain to be prosy if compared with those of the amateur. It is on that account so few descriptions of their journeys by architects are popular. They may be valuable to those who can sympathise with the writers, but the ordinary reader turns aside from them. For the public, FREEMAN, PETIT, RUSKIN, WALCOT, &c., have an interest which is never bestowed on architects. Yet if the truth could be ascertained, the dry essays of the architects may have been inspired by more real gladness than was possessed by the amateurs, but the sense of reality has had a sobering effect, and consequently buildings are not treated as if they were visions.

We have been led to offer these remarks from reading the volume in which Mr. BUMPUS describes his visits to several of the cathedrals and churches of France. We have records of summer holidays which are enough to make envious many tourists who come back bored after a trip on the Continent. The author was evidently in a mood to perceive much besides sermons in stones and good in everything that was found in the neighbourhood of a Gothic church. Prepossessed by the drawings of PROUT, WILD, PETIT, NESFIELD, PUGIN, DELAMOTTE and others, the French buildings appeared to him as cherished friends, and he was in the blissful state which is denied to architects, of being able to enjoy their presence as long as he pleased without any anxiety as to the extent to which they could be utilised. Happily for himself, Mr. BUMPUS was able to discover much else besides architecture to captivate his attention. He notices the musical services with the enthusiasm of an expert who is not confined to one style, and follows the order of church services with more than a mere layman's interest. His manifest contentment to remain in churches regardless of the worldly attractions which for the majority of weak mortals make French towns worth a visit is, we fear, not to be acquired by any reading, but in much else Mr. BUMPUS's example will, it is to be hoped, find many imitators. So much innocent, refined and healthy epicureanism which can be realised without much expense is exactly what many need in our time.

Among the places described in the volume are Dieppe, Caen, Bayeux, Coutances, Séez, Chartres, Le Mans, Tours, Bourges, Etampes, Sens, Joigny, Pontigny, Auxerre, Troyes, Châlons-sur-Marne, Chaumont, Langres, Dijon, Autun, Moulins-sur-Allier, Souigny, Nevers, Beauvais, Senlis, Noyon. They do not exhaust the "Glories of France," and we trust that Mr. BUMPUS will employ his holidays in

some of the remaining cities and towns which possess noble examples of architecture. He admires French work heartily but unlike some enthusiasts, he is not forgetful of the beautiful churches which are in England, and in his comparison of the work on both sides of the Channel he is impartial, as will be evident from the following passage:—

There are features in the great French churches to which those of our own land can lay no claim—their portals "scooped into the depth and darkness of Elijah's Horeb cave" and lined with sculptured effigies, but, it must be confessed, not always well proportioned to their façades; their chevets with graceful coronæ of chapels; their rose windows and their wealth of ancient painted glass—a wealth surprising when the fanaticism of the Huguenots, the vitiated taste of the Louis Quinze period and the fury of the Great Revolution are in turn reflected upon. Comparing the historic interest, architecturally, of the generality of the French cathedrals with that of our own, must be admitted that while ours are as a rule less valuable as monuments of one great church-building epoch, the re-edification, enlargement and embellishment of them extending over several centuries, whereas in France the majority of her great cathedrals were completed in all essentials ere the thirteenth century had more than half passed away—the blending of one style with another has always been so much more felicitously accomplished with us as to render an English cathedral the constant source of delight and that endless field for study and research to which, with all its grandioseness, a French one can hardly lay a similar claim. Indeed, in certain instances as in the façades of Paris and Sens, the combination of styles has been far from satisfactorily achieved.

As we have said, Mr. BUMPUS does not confine himself to architecture. He has much to say about ritual. At St. Etienne, Caen, he found that a procession round the entire church is still observed prior to one of the masses. As late as 1856 there were, it appears, no less than nine local "uses" in the united sees of Beauvais, Noyon and Senlis. But those relics of Gallicanism have almost disappeared. We hear much about the impressiveness of the cathedral of Chartres. According to the old saying, one ought to live in Rome like the Romans, and the meaning is no less applicable elsewhere. Mr. BUMPUS evidently acts in that way; for to understand a church thoroughly is a help to share in the services, and we suppose the more rigorous member of the English Church will not be shocked when he is told that Mr. BUMPUS joined in procession, for in that way he traversed parts of the building which might have otherwise been unnoticed. At Le Mans overpowered him still more than Chartres, for when relating his emotions on entering the building he says:—

Oh, for a mastery of vivid thought, for a wealth of pictorial words, that an adequate idea might be given of the greatness and magnificence of this wondrous choir, where the most enthusiastic admirer of the beautiful must pause in sole certainty of having reached perfection. How can I adequately make mention even in declaring its grandeur—a grandeur affording a striking contrast to the contemporary, but more rugged one of Chartres, to be unimaginable—of this choir of Le Mans? A marvellous sight to behold; it is, indeed, more like the preternatural shapes we gaze upon in dreams, embodying in its gigantic proportions the most expressive graceful motif, and withal the most minute and carefully finished details—than the sober realities emanating from skill and handicraft of living men. After having viewed those cathedrals entitled to a place in the first class—Amiens, Chartres, Paris, Rheims and Rouen—I may confidently affirm that I am at a loss to particularise any one the choir of which has, for beauty and solemnity, so indelibly impressed features on the memory as a *chef d'œuvre* in design and execution as that of Le Mans.

It is not often in these days we find a critic of architecture who is willing to acknowledge there is anything which he cannot discern a fault. We are, therefore, much pleased by the novelty as by the sincerity of his avowal. But the sanctuaries of Le Mans and other cities of France, it appears, cannot show altar hangings of needlework equal to those found in English churches. The church of Notre-Dame de la Couture is said to have a finer type of nave for congregational purposes than can easily be imagined. In the remarks on several of the churches, it is easy to see the position of a worshipper been assumed, and the planning becomes an important consideration.

At Tours Mr. BUMPUS found the daily capitular office performed with musical accompaniment and solemnity.

\* *Summer Holidays Among the Glories of France, her Cathedrals and Churches.* By T. Francis Bumpus. London: T. B. Bumpus.



He experienced that the cathedral grew in interest as he became more acquainted with it. He was struck by the peculiar arrangement of the choir, which made it necessary to have the well-known flying buttress carried out far beyond the general outline. Although a lover of Gothic, he has a good word for the new domical church, which has been erected near the site of St. Martin's Abbey. He compares it with the building on top of the hill of Montmartre, and considers it as a superb piece of work, and one which atones in some measure for the loss of the mediæval abbey. In describing the cathedral of Bourges he says:—

It is not often that one visits a world-famed church without disappointment. That of Bourges not only equalled, but much surpassed all previously conceived ideas of it, while its situation at the summit of gently rising streets, whose picturesque houses give scale to its immensity, with the light freely admitted on all sides, and with the archiepiscopal gardens extending the whole length of its south side, is one enjoyed by no other great French churches.

It is pointed out that in Bourges, as elsewhere, the most freedom is allowed to all who attend the services. Unfortunately English visitors are disposed to abuse the liberty, and their peculiar manner of acting as if they were feudal lords coming amongst superstitious serfs imposes a strain on French courtesy. In Sens Mr. BUMPUS found the Classical baldachino did not seem so out of place amidst Gothic surroundings as he had anticipated. But in a French church there is so much that is reminiscent of Rome, one incongruity more or less makes little difference. Habit causes each part to be considered independently, and the relation between them and the whole is generally disregarded. The abbey church at Pontigny, where THOMAS À BECKET obtained a refuge, is described "as a model for a town church, where, means being straightened, neither dignity nor good effect need be sacrificed where the work is entrusted to a master hand." One of the most interesting parts of the book relates to Auxerre, where the people seem to really appreciate the beautiful buildings bequeathed to them. Next Troyes with its fine cathedral is brought before us; then we are carried to Châlons-Marne, where the church of Notre-Dame was restored under the eye of M. CHAMPAÑOIS, the curé. An interview with him is recorded by the late G. E. STREET, and he stated at the time that the design by CLUTTON & BURGESS, which won the first premium in the Lille competition, was a copy of his church.

It is impossible to mention a page in Mr. BUMPUS'S book which is not interesting. He endeavoured to make himself at home in the towns he visited, and there is no trace of that superciliousness which is to be found in many narratives of travel in France. We do not know of any work in which ecclesiology, taking the word in a wide sense, is so genially treated. If it were less fruitful in information, the book would be useful to tourists for suggesting the spirit in which buildings should be visited by strangers. The pages are illustrated by a large number of reproductions of photographs showing the most important parts of the cathedrals or churches.

### THE HARDWICK TAPESTRY.

HARDWICK HALL is well known as one of the most interesting, as it is one of the most imposing, of the stately homes of England. It was built by the Countess of Crewsbury, renowned as Bess of Hardwick, whose sinister connection with the Queen of Scots and Arabella Stuart brings her into the main stream of English history.

The Long Gallery has always been famous, says the *Times*, for its tapestry hangings, and here a few years ago it was covered that, amid the mass of sixteenth-century work, there was a whole series of strips, isolated and to all appearance disconnected, of a much earlier date. Accordingly, the Duke of Devonshire had these taken down and sent to South Kensington, where they have been pieced together and restored with the zeal and efficiency that the officers of the Museum are accustomed to display in the service of the public.

It is now shown that they form a series of four, and the first piece, about 35 feet by 16 feet, restored to its original completeness, is exhibited for the present in the Tapestry Court, where it holds its own with the choice of the best periods.

The subject is a hunting scene, or rather a series of pictures of the chase. On the right is a bear hunt, in which a group

of strangers from the East are taking an active part. One, turbaned and barefooted, rides a camel, while several are using the *jarid*, a kind of dart shaped like a huge arrow, still common in Persia, and, as the Arabic name implies, originally made out of a palm branch stripped of its leaves. The same accuracy appears in the details of costume, and is difficult to account for, unless we suppose that the artist had access either to reality or to genuine Eastern pictures. In the centre of the composition there rises a castle, which, with moat and drawbridge, it has evidently puzzled the draughtsman to build. Some boys have been playing on the bank of the moat, and one of them has fallen in, and is being attacked by swans, while another tries from the bank to scare the angry birds with a stick. The left is taken up by an otter hunt. The animal is just being lifted out of the water on a three-pronged spear or trident. Behind the castle, boys rob a heron's nest in a tree, or present on their knees some specimens of the long-legged brood to a grave personage and his lady in gold chains and elaborate headdresses. In the distance we catch a glimpse of the sea, with ships, one of which flies the red cross of St. George. Finally, of the artist it cannot be said that, like Adonis, "hunting he loved, but love he laughed to scorn," for stately groups of knights and dames stroll up and down, and look on at the hurry and excitement of the scene in the intervals of their amiable converse.

We are accustomed to call tapestry of this kind Flemish, and for no better reason than that, as a rule, we are less certain of the early art of England in its true character and limits than of almost any other. But, in the first place, there is a robustness of type, a feeling of open-air freshness and vitality that contrast sharply with the tone of asceticism and seriousness that pervades the contemporary work of Brussels and Bruges. There is nothing to suggest that the artist is dependent for his images on some illustrated treatise of Veneri; on the contrary, it is more as if he were reproducing with the care and zeal of an enthusiast some of his own adventures *sub jove frigido*. Moreover, the very defects of the work stamp it as home-made. The Flemish craftsmen were further advanced in the art of perspective. They would not have appeared so helplessly at sea with the problem of setting the castle in something like a plausible relation to the landscape and the figures. The costume points to about the middle of the fifteenth century, and there is much both in the style and in the spirit of the piece that reminds one of English miniature art; while to Flemish work of this kind it stands, generally speaking, in the same relation as English to Flemish glass.

Unfortunately there are no documents to show how the tapestry came into the possession of the Cavendish family; but it seems clear that it belonged to the original furniture of Hardwick Hall. The countess was herself an expert and industrious needlewoman, and intolerant of idleness even in the Queen of Scots; but her taste lay in the direction of allegory and Bible history, as we can see in the minstrels' gallery at Hardwick, where there still hangs a panel representing the sacrifice of Isaac, with the countess herself looking on, starched and stiff, in her Elizabethan finery. This may explain, if it does not excuse, the scant respect with which she treated a mere hunting-scene with no strain of allegory or tendency to edification.

### BITS OF OLDER EDINBURGH.

MANY writers have from time to time endeavoured to explain the transformation which has taken place in Sir Walter Scott's "romantic town." Edinburgh was not unique in its subjection to the law of change, but somehow the difference between the present and the past is more marked there than in other cities. The latest contribution to the series of contrasts is the following interesting article by "J. S.," which appeared in the *Scotsman* of Monday last:—

Any one who has lived, moved and had his being in such a city as Edinburgh cannot without a mournful feeling reflect on certain of its once-cherished landmarks and long familiar aspects being for ever swept away. By "Older Edinburgh" is not meant the Edinburgh as it gleams through prehistoric mists, nor even as recorded in the legends of a long way less remote antiquity, but Edinburgh, say, of three-score years ago, or perhaps three-score and ten, and as it can still be easily remembered by that solitary myth, the oldest inhabitant. The city had, with all its drawbacks, a fine old-fashioned charm about it then, and for fifty or sixty years before that time was truly and in every way the capital of Scotland. At no period did she more worthily deserve the designation of the Modern Athens. She was then headquarters of the intellectual, and the powerful and the titled strength—the poetic genius and the forensic talent of the land. Alas! much of her glory has since that date departed. Even all her modern architectural polish and advancing commercial greatness have not made up for a non-resident nobility and an empty palace. That, however, *en passant*. At the time of which we



write there still remained some vanishing traces of what had been an earlier state of things, while there was much belonging to that period itself which was existing then, but now has disappeared. A few personal recollections applying to both these headings may, if not of much practical service, at least possess a certain amount of interest.

In general terms the city, old and new, may be said to have at that period or a little previously extended north and south from about Pitt Street toll bar—for tolls abounded then—to George Square, with a scattered prolongation out by Bristo to St. Leonards. East and west again it stretched from somewhere not much past the Calton Hill to a little way beyond the Lothian Road. Within that area many changes, and no doubt many of them improvements, were shortly to be brought about. Of these, perhaps no greater have at any time or in any part of Edinburgh occurred than those which within the period under notice have taken place in the locality now occupied by the new and extensive Waverley station. Not a great deal more than sixty years ago what is now the East Princes Street Gardens—and particularly the most eastern portion—remained a neglected spot and much in a state of nature. The west gardens again—once stigmatised as “the pest bed for all the city”—had by this time been laid out and were becoming quite a pleasure-ground for those who were the fortunate proprietors of keys. In the east this stage had not been reached, and in many ways the case was very different. Of course no railway, and consequently no Waverley Bridge, existed, but from about opposite the foot of South St. Andrews Street a straggling footpath as a short cut and a tolerable cart or carriage-way of somewhat greater length, and known as the Little Mound, extended across what was little better than an ordinary bleaching green to Market Street upon the other side. This street consisted of a rugged pile of ancient tenements extending eastwards to the arches of the North Bridge, the loftier houses of the High Street and the towering altitudes of the Royal Exchange forming an imposing background. Various archways, stairs, courts and narrow closes made their way through and among those tenements to the heights of the old town, somewhere near and opposite the Tron. Much mystery was attached to several of these wynds and darker corners in this quarter. Time-worn doors of what were held to have been plague cellars, and alleged to have been shut up ever since the last invasion of that scourge, were pointed out in some of their obscure recesses. Mary King’s Close, much of it by that time in a ruinous condition, had for long been superstitiously avoided in dark nights as the most specially haunted region in this neighbourhood, and the most gruesome legends of what had there been seen were still afloat. Mounting, tier after tier, among the mass of dwellings on this steep slope were situated “The Markets;” the high flesh-market, the low market, the middle market, the veal market, the poultry market, the tripe or clysteric market—all chronicled as being once upon a time established there; while the lower or ground floors of the houses facing Market Street were nearly all devoted to the sale of crockery or stoneware. Here also wending its way up alongside the markets was the famous Fleshmarket Close, whose primitive taverns could have told no end of tales about the high jinks and convivial ongoings of the wealth and fashion and sometimes even of the legal luminaries of a bygone day. On the opposite side of Market Street, and rather lower than the level of the roadway, stood a long one-storeyed building, with small iron-barred but open windows—the city shambles. Looking through these windows from the street, it was possible to see the slaughtering going on. An archway and descending steps opening through the middle of this building led to the green market, situated at the lowest level of this piece of ground, and just about where the chief railway booking offices now stand. It consisted of three sides of a square of open sheds fitted up for the sale of fruits and vegetables; the fourth side, next the North Bridge, was open and had been appropriated by the stalwart and comely fishwives of Newhaven as an impromptu market on their own account, by simply ranging themselves there, with their creels and general stock-in-trade in line from north to south. There were many curious stories told about the doings in this market, such as that of a well-known and eminent physician of the period being “slapped” with a raw “haddie” by an irate virago, roused at his too hard haggling for the fish. Between the green market and Princes Street—which stood at a much higher elevation—the space was occupied by the remains of Ann Street, part of which had been already taken down on the erection of the “new buildings” of the North Bridge—and by a row of houses called Canal Street. This street was so named on account of its being expected that the Union Canal would pass in front of the houses there, the first plans of the projected enterprise contemplating that the canal should have been continued through the Nor’ Loch valley, turning down to Greenside, where a basin or dock was to be constructed, from which the canal should join the Firth of Forth at Leith. From Canal Street a broad flight of steps led up once more to Princes Street, emerging almost

close beside the opening of the carriage-way and footpath already mentioned, and not far from the situation of the present railway stair. Bounding these steps on the east side was a rough stone wall, much used as an emporium for the sale of ballads, or “ballants” as they were often called—a species of literature now quite extinct. It took the form of songs printed upon separate slips of paper, each measuring about 10 inches by 5, the letterpress being only on one side. These were strung upon long stretches of twine nailed to the wall for the perusal and purchase of the passers-by. The songs were usually of a popular and “fetching” nature, often ornamented by somewhat sketchy woodcut as a heading, and cost a penny each. Sometimes on extraordinary occasions there were mingled with the songs readings of a more immediate fascinating and piquant character, such as “The last speech and dying words, just newly published,” of some delinquent who had that morning expiated his iniquities at the head of Liberty Wynd. Of both the “ballants” and the speeches, the contributor of these notes has on more than one occasion as a boy been extravagant enough to become a purchaser. Rising to a great height above Canal Street and its neighbourhood was the back of the then still standing new buildings now replaced by the new gigantic railway hotel. An inside stair, one of the new buildings led up to its successive floors, and opened upon the balcony of the old Rainbow Coffee-house from which there was an exit to the pavement of the bridge itself. Between the roadway to Canal Street and the bridge, on the line of Princes Street, there stood the only block of houses ever built on that side of Princes Street previous to the railway hotel now in course of erection there. These were occupied by the Turf Hotel, M’Queen’s Hotel and other establishments, among which were the old coach office where seats were booked for Leith, Seafeld, Portobello and some short stages of the kind. The Leith coach started from Smart’s or MacGregor’s office every half hour, and the coach for Seafeld from the Duty House at the corner of the bridge every hour from 10 A.M. to 9 P.M., the coach for Portobello leaving Croall’s and Turnbull’s offices at 2 P.M. Street every hour during the day throughout the summer season. Most of these conveyances carried two classes of passengers; they were, moreover, of remarkable construction, appearing as if the body of one of our modern broughams had been stuck upon the rear of a roomy family carriage. Other vehicles also started from these offices at hours to suit the sailings of the London steamboats, the *Royal William*, *Royal Adelaide*, the *James Watt*, the *Monarch*, &c., which had now for some time superseded the old Leith and London smacks. The fares for these coaches were high, and there was besides a toll and halfway house upon Leith Wynd and another toll, which was long afterwards continued, on the Portobello Road. Each of the hackney carriages of that time had two horses, and upon the one-horse ones being introduced they were at first known by the name of noddies.

All that has been as yet described was situated on the west side of the North Bridge. Immediately adjoining the east side again were the vestiges of the old Physic Gardens established here about 1670. These were removed to New Shrub Hill, on Leith Walk, about 100 years afterwards, and still later to their present site at Inverleith Row. There they now exist on a far more extensive scale, as the Botanical Gardens. All that remained of the old Physic Gardens so sixty years ago was little more than the mere name. The extent was never very great, but now was only indicated by a bit of waste ground reaching to the foot of Halkerston Wynd and Carrubber’s Close. This gave its name to the continuation of Market Street on passing under the arch that side of the bridge, as “The Physic Gardens.” To the north of what had been the gardens stood the old Orphan Hospital, the predecessor of the present handsome building near Bell’s Mills. This was a commodious and somewhat ecclesiastical-looking edifice of three storeys, surmounted by a slender pointed spire and ancient clock, once belonging to the Netherbow Port. In the immediate vicinity of the Orphan Hospital were Lady Glenorchy’s Chapel, founded in 1774 and seated for 2,000 persons with gratis sittings for the poor; venerable and historic Trinity College Church, founded in 1462 and taken down in 1845, the stones of which upon demolition were marked for reconstruction, and lay for 100 years upon the Regent Road waiting until that should be accomplished, stood next to this; and a little further south was associated with the charity of the Trinity Hospital, all of whose structures were removed during the successive operations of the North British Railway. Behind the Orphan Hospital upon its recreation grounds, where, 100 years before Whitefield used in his open-air conventicles to denounce the drama, there had long ago arisen Shakespeare Square and the old Theatre Royal, opened in 1769, all in their turn again to be removed for the erection of the new General Post Office in 1861, at which time, by the way, the uniform of the postmen was altered from the scarlet swallow-tailed coat and tall hat to the blue tunic and cap now worn by these officials.



Theatre Royal of Edinburgh came to be regarded as a great dramatic training school. By this time on its boards had figured all the great actors and actresses of the day. In addition to the higher class of tragedy and comedy, it had, by this time, produced dramatic versions of most of the Waverley novels; while operatic performances had by no means occupied a subordinate place in what it had supplied. "Il Barbiere," "La Gazza Ladra," "Masaniello," "Oberon," "Le Nozze de Figaro," "Il Turco in Italia," were found appearing in its bills. Its general company had comprised such names, within not many years, as T. P. Cooke, Mackay-Edmunds, W. H. Murray, Pritchard, Montague Stanley, Lloyd, Diddiear, Mrs. Siddons, Miss Noel, Miss Ellen Tree, the Misses Coveney, Miss Cleaver, Miss Nicol, Miss Fairbrother and many others, who added to the prestige of the Edinburgh stage. Opposite the theatre, a short way up Register Street, and in Gabriel's Road, was Ambrose's Tavern, at this time famous for the suppers of the Ettrick Shepherd, Christopher North, and the rest of the immortal coterie of the "Noctes Ambrosianae." Gabriel's Road was part of an ancient footpath used by the lairds of Inverleith on their way to St. Giles's Cathedral, and memorable for a woeful crime from which it got its name.

Shifting to another quarter of the town and extending into a somewhat later period, considerable changes have occurred and many great improvements have been made upon the Eastern Mound. The Mound—"Geordy Boyd's Mud Brig," constructed between 1780 and 1830—had now and for long before been established as a thoroughfare between the old and the new town. "Geordy Boyd," a clothier in the High Street, was said to have commenced it, by providing for himself a dry pathway across the bog to visit the more modern portion of the city. The Royal Institution, founded in 1823 and built upon 2,000 wooden piles, now graced its northern extremity, and in 1836 this edifice was further embellished by several rows of handsome columns being added, by a colossal statue of Her late Majesty being erected on the north portico, and by eight sphinxes being placed upon the four angles of the roof. South of this structure the Mound was to a great extent an empty space of unarrayed simplicity. No national gallery existed; a flat tableland of considerable expanse afforded accommodation for menageries and caravans and all sorts of shows and travelling entertainments. Among other purposes for which this open ground had been subservient was the then unwonted spectacle of a grand display of fireworks on the passing of the 1832 Reform Bill. The narrator of these memoranda, while as yet untrammelled by any political bias whatever, witnessed with delight and amazement its jubilant magnificence from a safe distance, at the head of St. David Street. Between the upper end of this waste ground again and the further portion of the Mound towards Ramsay Gardens a few small temporary shops, factories and unpretentious offices had been set up; while adjoining them, first one and latterly two enormous circular wooden buildings had been erected, called rotundas, and were fitted up as panoramas, Marshall's being the oldest and most popular. There on hundreds of square feet of canvas were exhibited pictorial representations of whatever was the last sensation of the day. Sometimes one or other of these rotundas supplied accommodation for a circus, when it paid a visit to the town, as in the days of Ducrow and Ryan, who had both occupied them in this way. At a later date, and in the same locality, a small theatre was erected known as the Victoria Temple and afterwards as the Victoria Theatre, Gourlay, one of the best Scottish comedians of the day, being the lessee. This place of entertainment was said to have at last slid down the bank behind it into Princes Street Garden. All these were soon after this removed to make way for improvements on the Mound, including the erection of the National Gallery, founded in 1850 and opened in 1859. On the completion of this building the present roadway of the Mound was planned and carried with the gentle curve it now describes round the south end of the Gallery towards Bank Street and the Lawnmarket. Previous to this merely a rough stone wall bounded the east and west sides, in a straight line from Princes Street to Mound Place and Ramsay Gardens. Only on the east side had there ever been any pavement for foot-passengers. Even this was by no means broad, and was always much encumbered with old bookstalls and the easy chairs of their proprietors—some of whom, if all tales be true, were not long in securing considerable wealth and high positions. The wall, too—like that of the stairs leading to Canal Street—was largely patronised as a favourite "pitch" for ballad mongers. All this was confined to the east side of the Mound; no one thought of traversing the west side, nor was there any access there to the adjoining gardens. For any of these alterations on the Mound, whether for better or worse, no railway was responsible. The railway had no doubt unnelled through its substance, but would have blushed to find this catch the eye.

It was very different with the Lothian Road. While the North British Railway had done the work of a magician in the

east, the Caledonian effected several transformations almost as striking in the west. Prior to that time the Lothian Road presented very much the appearance of a lonesome and suburban district. It was alleged to have been originally constructed in a single day, on the occasion of a wager by Sir John Clerk, of Penicuik, that this could be accomplished. Up to the incorporation of the Caledonian Railway Company, the whole stretch from Princes Street to Port Hopetoun was all but houseless. One or two isolated tenements rose at long intervals from the west side, and even these were at no distant date to be demolished. Kirkbrae House, opposite St. John's, the Riding School, the Military Academy and the Diorama were the more conspicuous, while somewhat back from the main thoroughfare were St. Cuthbert's workhouse and Laing's horse bazaar. Kirkbrae House, at the corner of St. Cuthbert's Lane—not very long before a hedge-row—stood till the new station was begun. So also did the notable brick edifice of Free St. George's, built there shortly after the disruption for Dr. Candlish's congregation. The riding school had been established in this locality upon Angelo Tremamendo's Royal Riding "Menage," as it was then called, situated in Nicolson Street, being pulled down to make room for the new Surgeons' Hall. The Royal Military Academy occupied a situation somewhat in front of the riding school. It had been successfully conducted under the superintendence of Captain Orr, who had carried the colours of the Black Watch at Waterloo, and had before its destruction supplied more than 1,000 officers to our army. The Diorama, famous for its artistic effects, stood further up the road, with St. Cuthbert's Workhouse some distance from it—a very different institution from its comparatively elegant and luxurious successor at Craighleith. All these structures were removed between the founding of the first station of the Caledonian Railway, half-way up towards Port Hopetoun and the building of the present one in Princes Street. The opposite side of the road had up to this time presented an equally desolate aspect with the other. Not long before, indeed, it had been principally occupied by barns and byres, and sheds and building yards, one of which had for some time given accommodation to the collection of stone figures long known as Forrest's statuary, which, along with what was designated as "Short's Observatory," had been removed from the Calton Hill. Leading from that side of the Lothian Road again, and winding round the base of the grandly precipitous Castle rock as far as the old West Bow, where it was to open upon the High Street, the new west approach had been begun in 1825, and with the formation of the "King's Road" and the "King's Bridge," completed in 1836. Beyond Port Hopetoun the immediate neighbourhood was much as it remains up to the present day.

Changes in other quarters, as well as changes in many of its ways, have, in Edinburgh within these three-score years and ten, kept pace with all the local metamorphoses which have been here described; changes, indeed, the mere outline of which, far less their description in detail, would require an amount of space which never could be looked for here. The ruthless hand of improvement has but small respect for the historical, the romantic or the picturesque. Even at the present day the most beautiful of all the streets of Europe, and the old rock fortress overlooking it, have suffered much at the hands of this physician. It is in such circumstances that memories of the past may always serve some purpose in recalling what things were before they vanished from our thoughts, and in restoring some that have become obliterated from our recollection. Time works wonders. What now seems trite and commonplace another century may robe with interest. Old memories, like old wines and old fiddles, improve by keeping. It does not, however, follow that to keep them long enough, they should be buried.

#### MANCHESTER SOCIETY OF ARCHITECTS.

THE fourth meeting of the winter session was held at 44 Mosley Street, on Thursday, January 9. Mr. A. Darbyshire, the president, took the chair, and Mr. J. D. Crace, hon. A.R.I.B.A., read a paper on "The Relation of Colour to Architecture." At the close of the paper Mr. Crace went round the room and pointed out the special points of interest in the numerous coloured drawings he had prepared of internal decorations. The paper which should have been read by Mr. Halsey Ricardo on "The Revival of Gothic Architecture" at the last meeting is postponed, as on the date arranged for the reading the train service between London and Manchester was upset by snowstorms. The monthly prize for a design for a shop was won by Mr. Claude Paterson. The November subject for a band stand was won by Mr. H. Solomon.



## NOTES AND COMMENTS.

THE gift of 200,000*l.* by Sir E. CASSEL for the erection of an open-air sanatorium will have the effect of inducing a great many people to give more attention to the new mode of treatment. If consumption is to be grappled with there must be sanatoria proportionate to the number of sufferers afflicted with the disease. The brochure by Dr. CHARLES REINHARDT, entitled "Life in an Open-air Sanatorium" (London: JOHN BALE, SONS & DANIELSSON), is therefore opportune. He was one of the earliest advocates of the system, and is at present physician-in-charge of the Hailey open-air sanatorium. It is not to be expected that architects, although they may have had experience in hospital construction, can understand the new requirements without study. Useful information has been given by Dr. REINHARDT. There are no mysteries about the new hospitals, and it would seem as if they cannot be too simple. Fresh air appears to be the most desirable element in accomplishing a cure, but it is well to be assured by an expert of the extent to which simplicity may be carried.

A CORRESPONDENT in Scotland writes to ask for information on the "method or rules for describing a plot or area of ground from its plan, or as to making a plan from a description where no plan is given." He encloses as an example a legal description relating to. "All and whole that plot of ground situated in Main Street, containing 33 square yards or thereby, bounded on the north-east in the first place by the centre line of Main Street 40 feet wide, along which it extends 35 feet or thereby; and, in the second place, by a steading of ground along which it extends 12 feet 11 inches or thereby, on the north-west by the said steading of ground, along which it extends, firstly, on the centre line of a mean gable wall and range thereof, 63 feet or thereby, and, secondly, 37 feet or thereby, &c." Our correspondent asks whether the description of which the above is a small sample can be considered as sufficient. If tested on the ground the measurements may be correct. It is not likely a Scottish judge would accept the description without some verification, and as long as things remain as they are on and about the plot of ground the phraseology is as clear as what is generally found in conveyances. But in all cases a description of property should be accompanied by a plan, for should the main street be altered, the main gable wall taken down and the adjoining properties change hands, words alone will be found inadequate to point out the exact limits of what was conveyed. Deeds relating to landed property which are not accompanied by plans are recognised by lawyers as an excellent source of revenue.

THE principal task of the French Academy is meant to be the preparation of a dictionary of the French language. Judging by the rate of progress at which the work is done, the globe will have cooled down and be unfit for human habitation before the end of the alphabet is reached. At the same time, the want of an authoritative dictionary is more apparent in England than in France. The judges in the Law Courts are our best interpreters. It was only on Tuesday that the Court of Appeal determined the meaning of the word "adjoining." A sub-lease of a house in High Street, Marylebone, was granted in which there was a covenant that the tenant would not do anything to "interfere with the quiet enjoyment of any adjoining or neighbouring premises," nor "object to any works to adjoining premises which may be sanctioned by or on behalf of the lessor or the superior landlords or landlord, nor claim any easement against the lessor or his superior landlord over any adjoining or neighbouring premises by reason of any act or thing done or suffered by any tenant of such adjoining or neighbouring premises." That was a common covenant in the leases of the Howard de Walden estate. A property company proposed to erect buildings which would cause an obstruction of light to the premises in question, and the lessee brought his action to restrain the company. The immediate lessor, who was interested in the company, endeavoured to stop the action on account of the above covenant. Mr. Justice JOYCE decided that the lessee was precluded from raising objection to any building works on adjoining premises which had

been sanctioned on behalf of the lessor or the superior landlord. An order was, therefore, made staying the proceedings. The plaintiff was, however, successful before the Court of Appeal. It was argued that the word "adjoining premises" extended not only to buildings which came in physical contact with the demised building but also to any buildings which were situated near enough to the demised building for works done on the premises to situate to affect materially the demised premises or obstructing easements enjoyed by the demised premises at the date of the demise. But their lordships declined to approve of any other meaning of "adjoining" than was expressed in the Metropolitan Building Act, 1894, where adjoining owner and adjoining occupier relate to land, buildings, storeys or rooms which are in physical contact with a building owner's property. Adjoining is not, therefore, equivalent to neighbouring, and a knowledge of this fact may sometimes prevent litigation.

AMERICAN inventiveness is applied to the saving of labour on a small as well as on a colossal scale. One of the latest efforts is for quickly producing titles on plans. Fifty or sixty years ago the titles on surveys of estates were often splendid specimens of calligraphy. It was not merely the lettering that was attractive, but vignettes were sometimes introduced as part of the composition. The work was, however, slowly accomplished, and it was not uncommon to spend a month over a title of a valuable property. Afterwards a cheap class of lettering was employed. The stencilling was adopted at least for parts of titles, and engraved letters were manufactured and sold as substitutes for the laboriously formed efforts of the draughtsman. In the United States a small hand press has come into vogue with a special ink that dries quickly. In railway offices where titles used to cost on an average about 10*s.* each the printed titles by the new method can be got out for about a tenth of that price. In a little time we may therefore expect that lettering on plans by hand work will have gone the way of many other lost arts.

## ILLUSTRATIONS.

CATHEDRAL SERIES.—RIPON: THE CHOIR TO EAST WINDOW.

THE DAVID LEWIS HOSPITAL, LIVERPOOL.

ST. MARY'S CHURCH, ECCLESTON, FROM EAST END OF SOUTH AISLE, LOOKING INTO CHANCEL.

THIS church was built by the late Duke of Westminster as the parish church of Eccleston, near Chester. It is entirely formed of the beautiful red stone of the neighbourhood, being of ashlar inside and out. It is made complete, as few churches are, with carved fittings, and all the windows filled with excellent stained glass. The floor is laid entirely with marble, and an organ is happily placed, high up over the tower-arch.

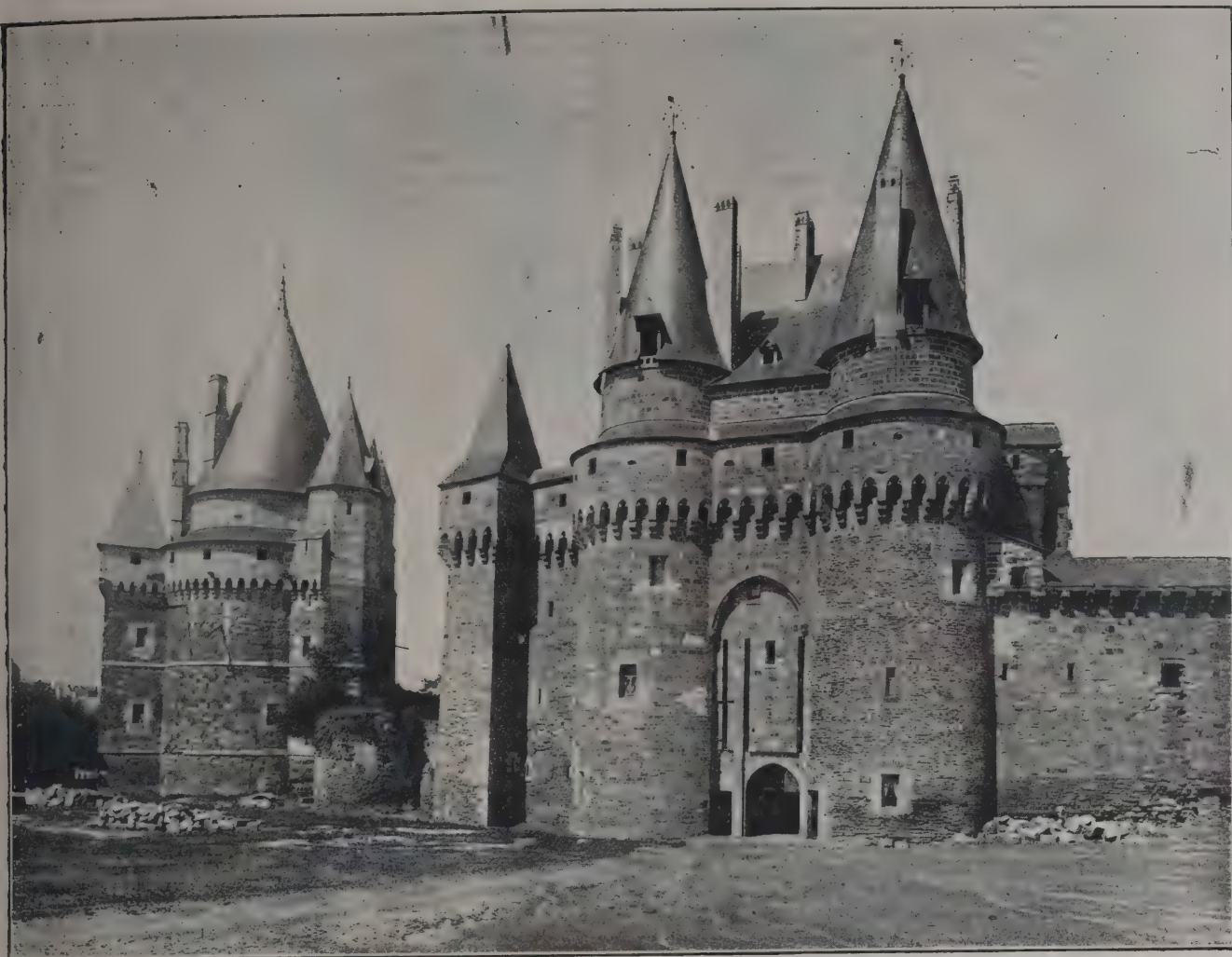
In the view a canopy of stained and gilded oak is shown. Under this there is now placed an altar monument with an effigy of the late Duke, well carved in alabaster, and which was not there when the view was taken. Though the actual dimensions of the building are not large, yet it has much of the effect of a small altar church, vaulted, as it is, throughout in stone. The floor is of marble, and has a high carved oak canopy with figures. The western tower rises well above the clerestory and has double belfry windows. In style it is strictly English of the fourteenth-century manner, but is original in its composition and design.

The architect was Mr. G. F. BODLEY, A.R.A., of Grosvenor Inn. The work was well carried out by Mr. FRANK DEDDINGTON.

COTTAGE HOMES, DRYMEN, N.B.

THE illustrations we give this week of the Convalescent Homes for Girls have been erected by Mr. WILLIAM EWING GILMOUR, in memory of his daughter, for the purpose of employing by Messrs. JOHN ORR-EWING & CO. Mr. CAMPBELL, of Glasgow, was the architect.





THE TOWER OF ST. LAURENT AND THE CHÂTELET.

### THE CHÂTEAU DE VITRÉ.

THE town of Vitré, which is about nine miles from Laval, is constructed upon a hill, at the foot of which is a valley through which the river Vilaine runs. The château is erected on a point of the hill. The town was defended on the north by a wall laid out almost in a straight line, and on the south side by another strong wall which was carried to the foot of the hill. Vitré was so well enclosed that entrance was only obtainable through three gateways and a postern. The three gateways have been destroyed, and the postern is only to be judged in a restored state. Towards the end of the fifteenth century several small towers were constructed as well as bastions in order to cope with the new means of attack. In consequence of those changes the ancient appearance of Vitré is hard to realise. However, a great many of its houses preserve their Mediæval character.

The most important building was the château. It could only be approached through a number of dependencies which formed the first line of defence. Then a court was crossed obliquely in order to reach a bridge that was placed across the ditch. At each of the three angles of the château was placed a tower. The principal tower was named after St. Laurent. It dominated the gate of the city, and commanded the route to Rennes. In other parts there were also several towers, and the building must have been thought an invaluable source of defence. The interior court was irregular in plan. On one side were the kitchen, the bakery, a square tower called after Cæsar, besides cellars and storehouses. On the first floor were the habitations of the owners. But the arrangement is only conjectural, for the whole of the ancient interior arrangements were destroyed in order that the château might be converted into a prison for the department of Ille-et-Vilaine.

Vitré was an appanage of the Comte de Rennes. About

A.D. 990 it was made over to Martin, the son of Tuhæel Beranger, who was the founder of the Barony of Vitré. In 1239 it passed, by marriage, to the house of Montmorency Laval, in 1412 to the house of Laval Montford, and in 1605 to the family of Tremoille. As far as can be made out, the first château of Vitré did not stand on the site of the existing remains. In 1222 it is recorded that prisoners were confined in the building. Exactly two centuries later there is an account of reparations of the château, and in 1582 the Parliament of Brittany used it as a refuge to escape from an epidemic. In the sixteenth century, during the disturbances which arose out of religious differences, the building was repeatedly attacked. In 1590 it was on the point of being surrendered, but was preserved by the bravery of the captain, whose name was Rallon. Two years afterwards it was again attacked, but as it was protected by 1,200 men it was believed invincible. At the time of the Revolution it was declared to be national property, and was utilised first as a prison and then as a barrack. After the fall of Napoleon it was restored to the Tremoille family, who in 1820 made it over to the Department. In order to convert it into a prison it was, as we have said, in a large measure destroyed. It is supposed that the tower of St. Laurent was erected on remains dating from the eleventh century, while the tower itself dates from the thirteenth century. The central part of the châtelet is thought to have been erected in the fifteenth century.

The château must have been of immense size. During several years the ruins were used as a quarry. Vitré possessed invaluable archives, but as the chamber in which they were placed was undefended, the boys of the town gained admission to it and carried off the documents in large bundles. Only a few of the parchments were preserved, and they were deposited in Rennes. But they have also been lost sight of, and it was with difficulty the history of the buildings has been traced.



## AN AMERICAN DRAUGHTSMAN'S OFFICE.\*

**A**FTER completing the course of studies in engineering there is really only one thing lacking to start the young engineer toward success. That one thing is opportunity. Many a successful engineer can trace his success to the right opening that gave him a chance to start. The young engineer is being sought after more each year and the opportunities to get started are on the increase.

A large number of these opportunities present themselves each year in the draughting-rooms of bridge and structural steelworks. When a young engineer secures one of these positions he must show a disposition to learn, work hard, and be willing to do anything. Willingness to take hold of anything will be a large factor to rapid advancement. Too much stress cannot be laid upon the theoretical side of the engineering course. Well-grounded theory is the foundation to practical success.

The design and building of a steel structure may be compared to that of a frame building in which all the nails would be located and holes made for them before putting the boards together, all the pieces of lumber would be laid out and sawed to fit before being put in place, the difference being that if the parts of the steelwork do not fit when put together it is not as easy to recut and shape them as it is with the lumber. If the pieces of steel do not fit when put together they are often spoiled, and must be thrown away. It is often difficult to get the pieces of material to replace the rejected parts. The material for a bridge is ordered from the rolling mills to shape, size and length required, assuming that nothing will be spoiled, just the same as lumber for a house is ordered from the lumber yards. The rolling mills are often hundreds of miles from the bridge shops, while lumber yards are usually in the community in which the house is being built.

The comparison above will serve to illustrate the truth that one of the most important requirements of the draughting-room is accuracy. The most careful and painstaking man will make mistakes, but the more nearly a person's work is free from mistakes the more it will be appreciated. Accuracy should always have the preference over rapidity. Rapidity or hurried work is almost always accompanied by a large number of mistakes or a slackness of the work in one place or another. Work rushed through an office without proper care and attention is almost always accompanied by a greater loss of time in correcting mistakes in drawings while passing through the shop than is saved in the first place, besides the expense of correcting errors that may not be found till the work is erected. The drawings and work of this kind are unsatisfactory, and should be avoided as far as possible.

The engineering force of a bridge company is usually divided into two departments, the estimating and the detailing.

The work of the estimating department is to prepare the estimates of weight and cost of all work that the company bids upon, prepare all stress sheets and preliminary plans when required, and they must secure all data and information necessary in preparing the detail plans. Sometimes the plans for making estimates are furnished by the parties wanting the work. Then it is only necessary to figure the weight and estimate the cost. If no plans are furnished, the stress sheets and preliminary plans must be worked up from the data furnished. When plans are furnished they are usually prepared by an engineer in the employ of the party wanting the work or by a consulting engineer who has charge of the work. The work is contracted for in one of two ways—so much per pound of shipping weight or so much for the work complete. The one is called a pound price and the other a lump sum; sometimes erected complete ready for traffic and sometimes f.o.b. (free on board) cars at a certain place, the party buying the material doing his own erecting.

The work of the detailing department, or what we shall hereafter designate as a draughting department, is to take the data furnished by the estimating department and make the detail shop plans. The work usually requires from three to five times the number of men as the estimating. It seldom occurs that a set of drawings comes into the office that can be sent into the shop without being made over, even though they are carefully worked out in detail; or that a set of plans made for one bridge can be used again, even though it should be of the same length and width. Especially is this true of railroad work, since the conditions vary so from year to year. Specifications for material and loading are changing constantly. Ten years ago a 100-ton engine was considered a heavy engine; to-day, 150-ton engines are common in specifications. Cases where plans were used again in this way have happened only a few times in the ten years' experience of the writer.

A shop that turns out 6,000 to 8,000 tons of work per year requires a draughting force of about eight, distributed about as follows:—The chief draughtsman, two men of experience who

can handle any kind of work, one or both being classed as checkers, three men to detail the bulk of the work and sometimes doing their own tracing, two men to do tracing and who will work into detailing. This makes a draughting force of eight scaling up in experience. Three years' experience in the draughting-room should make an engineer familiar with the ordinary work that comes up.

We will now take a bridge from the beginning and trace through the different steps until it is finished and turned over as completed to the parties buying it. We will assume that a railroad company desires to contract for a bridge. The chief engineer will write to the several bridge companies from which he desires to receive bids, giving the length of span, location, specifications for loading and material, and any other conditions that may govern this particular bridge, and the date of receiving bids. The estimating department takes the data given, prepares the stress-sheet, figures the weight of the bridge and makes an estimate of cost. The bids are received by the railroad company, and we will suppose that the bridge company we are considering receives the award of the contract. It is usually presumed that the lowest bidder gets the contract, although the time of delivery and other conditions may alter this. In the letting of public work where the plans and specifications are definite, the lowest responsible bidder gets the contract.

After the contract is secured all the data required to get out the details of the work are turned over to the chief of the draughting-room. This data will include the stress sheet, specifications and a data sheet, properly filled out, containing a list of items that usually come up in working out the detail. An order for material must first be made, and this may require sketches of such details as are not determined by the data furnished, as every piece of material ordered must have its place in the bridge and every piece required must be ordered.

This material is usually inspected at the rolling mills by some one employed by the railroad company, and must meet the requirements of the specifications. This order for material is turned over to the person whose business it is to place the orders with the rolling mills, and furnish the inspector with a copy of the same. It is a good plan to check the weight of the material ordered with the estimated weight of the bridge.

After the material is ordered the work may be laid aside until a convenient time comes to work up the details, unless the necessities of the case require immediate attention. The data is then all turned over to one or more men, as the case may require, to make the detail drawings. The chief draughtsman should go over the data with the draughtsmen, making such explanation as is necessary, and outline the manner in which the drawings are to be made. Time is saved by planning each sheet and each set of drawings before beginning the pencilling. The drawings are then pencilled and traced. On an average, from two to three days are required to pencil one drawing, and less time is required to trace a drawing than to pencil it. If drawings are to be sent for approval they are usually sent as soon as the tracings are finished and looked over, but before checking, in order to save time. This assumes that the general details, sizes and dimensions are correct, and that errors which affect the shop work alone do not concern the parties getting the bridge, and that these errors will be corrected in checking.

The tracings and all information are now given to the checker, who is supposed to check every figure on the drawings and indicate what may be lacking on the drawings to make them complete and conform to the requirements of the specification. It is a good plan to put a dot of red ink under each figure as it is checked, using waterproof ink so it will not run if the tracings get damp, as they generally do when filed in a vault. All corrections should be made with a blue pencil so as to be seen easily. The tracings are then returned to the man who detailed the pencil drawings to be corrected. All corrections should be checked by the detailer to be sure that the corrections are correct. After corrections are all made the drawings, with the blue pencil marks still on them, are given back to the checker, who looks the drawings over to see that all corrections have been properly made.

One of the duties of the draughting-room is to make out the shipping bill by which the material is shipped when the work is finished in the shop. Every piece of finished material of the different kinds has a line in the shipping bill, that it may be checked off and the weight placed opposite as it is shipped.

From twelve to fifteen sets of blue-prints are made of each set of drawings, distributed about as follows:—Six to the shop, one to the inspector, two for approval, three for file to the parties buying the bridge, and others as occasion may require.

The first work in the shop is to make the templates. Almost every different piece of material is first laid out on boards, the holes bored in their proper places, each piece marked, giving the number required, and any other necessary information. These pieces of boards are called templates, and are used for laying out the work on the pieces of steel by clamping or holding the templates on the pieces of steel. There are from one to eight pieces of each kind for one span.

\* A paper by Mr. R. G. Manning read before the University of Michigan Engineering Society.



of a bridge, and the templates are used on each piece, making one template serve to lay out as many pieces as there are of that kind. One template often serves for more than one kind where they differ only slightly by properly marking the template. Where rivet spacing is symmetrical about a centre line only, one-half of the length of the piece need be laid out on the template. Some of the large plates are often laid out on one of the plates itself, punched and then used as a template, as it would be too expensive to provide the lumber on which to lay it out.

The work then goes through the process of shearing, punching or drilling, assembling, reaming if required, rivetting, milling, boring, inspection, painting, shipping and erection. A draughtsman should visit the shop frequently to see how the work is done and acquaint himself as much as possible with the practical side of the work.

All the work of the draughting-room should be checked by some one other than the person who made the original. This cannot always be done, but should be carried out as far as possible. The work of this department is final and is so important that every precaution possible should be taken to eliminate the errors. It usually results in a saving of time to have the work thoroughly checked, as all mistakes will be discovered before the work has passed through the shop and is erected, and it takes a great deal more time to look up mistakes and correct them after the work is laid aside than it does to do it in the regular way while the work is fresh in the mind. When it is remembered that there are hundreds of figures and relations of parts on every drawing, and that they pass through the steps of preliminary computations, transferring to the pencil drawing, and tracing, with so many chances of misconception, it is very important to have the final work thoroughly checked.

The tools necessary for a draughtsman in a bridge office to have are two 45-degree triangles, 4-inch and 10-inch; two 30-degree and 60-degree triangles, 5-inch and 13-inch; two good right-line pens; one good 42-inch T-square, one that is stiff and not too light; one compass complete, one bow pen, one bow pencil, one engineer's and one architect's scale, pencil and ink erasers, scratcher, and piece of soap-stone to rub over a place in the tracing cloth that has been scratched, to renew the surface and prevent the ink from running. Transparent triangles and scales with celluloid faces are best.

A few of the practical wrinkles of the draughting-room will be found in the following:—

All blue and black pencil marks are removed from the tracing with benzine. Dampen a cloth with it and apply to the tracing. Lay the tracing on a newspaper, or some paper that is not wanted, before applying the benzine, as it passes through the tracing and will spoil a pencil drawing. Plenty of linen cloth is usually obtainable about the draughting-room by washing out the tracing cloth.

An ink to make white lines on blue-prints is obtainable by dissolving soda, lime or saleratus in water, or an ink can be obtained of dealers in draughtsmen's supplies. Any of these inks will run and blot the lines if the print becomes damp.

It is the practice in some offices to pencil the work on the tracing cloth and ink it in. In others the pencilling is done on paper and traced. The writer prefers the latter.

Tracing should be done on the rough side of the cloth, as it is easier to mark on that side in making corrections, changes, or additions. Tracing cloth has a tendency to roll up toward the glazed side, and when the border is put on the drawing on the rough side it will correct this tendency to roll; whereas, if it is put on the glazed side, it will tend to increase it.

There should be one size of sheet for detail work, and under no circumstances should this vary, as it is unnecessary and always proves a nuisance. Where the drawing cannot be made on one sheet it can be made on two or more, and so arranged that the sheets may be pasted together after printing; 23 by 35 inches for border lines and 24 by 36 inches over all is a convenient size.

Prepared ink is preferable to the stick ink, which must be ground, as it is more uniform, cheaper and cleaner.

Tracing cloth powder, which can be obtained of the dealer in small cans ready for use, is better and causes less trouble than powdered chalk.

The natural place for the title of a shop drawing is the lower right-hand corner, the top of the title being about  $3\frac{1}{2}$  inches above the border line. If a stamp is used for all of the title except that which describes the work on the sheet, the titles will be more uniform, and will add considerably to the appearance of the drawings. The title should be made plain and prominent for ready reference in the files. It should contain the contract number, sheet number, general title of the work, the special work on that sheet, scale, date, name of detailer, tracer and checker, and name of bridge company. In the lower right-hand corner a circle  $\frac{3}{4}$ -inch in diameter, with a horizontal line through the centre, having the number of the sheet above the line and the total number of sheets in the set below the line, makes a convenient means of reference.

The writer prefers to file the tracing flat in a drawer, one drawer containing as many tracings as is convenient.

The best way to stretch tracing-cloth on a drawing-board is by means of small one-half ounce tacks. The tacks are driven into and removed from the board by means of a special hammer made of  $\frac{1}{2}$ -inch round steel and tempered. One end is turned over at right angles to the length so that the end is three-quarters of an inch from the inner face, and the other end is straight and sharpened like a chisel. One end is used for driving and the other for removing the tacks. The whole is about  $6\frac{1}{2}$  inches long. The hammer is magnetised at a dynamo and will pick up the tacks so that they do not need to be handled with the fingers. Place the tracing-cloth on the board and empty a box of tacks on the tracing and tack the centre of the four sides with two tacks each, stretching the tracing tight. Then stretch the tracing by working from the centre of the sides to the corners, placing a tack every 2 or 3 inches. The tacks that are left loose on the tracing are taken up with the hammer and dropped back into the box. This gives a perfectly smooth surface to work upon, and the tacks do not interfere with the sliding of the T-square. The tacks are removed with the chisel end of the hammer, taking up one tack after another, the tacks all clinging to the hammer and then dumped into the box. The tracing is put down and taken up very quickly this way, and a thumb tack has not been used in our office for seven years.

There should be a uniform style of lettering for all shop drawings—one that is plain and easy to read. The Reinhardt slant letter is a very good one for this purpose.

Full, light black lines are used for dimension lines. There is enough contrast between the light dimension lines and the heavy lines representing the object drawn not to confuse the drawing. The full, black lines are put on the drawing more rapidly than either dotted or red-ink lines.

## THE DESIGNING OF CITIES.\*

FROM whatever point of view the question be studied, whether from that of convenience or that of artistic effect, one is compelled to admit the overwhelming merits of the adoption as the foundation element of any design of what may be called radial centres; that is, centres from which shall diverge in all directions the streets that are to constitute the main arteries of traffic or leading streets of the city. Just as a town or city has its lines of intercommunication with neighbouring aggregations of settlement, branching out in all directions, so should these radial centres be in direct communication with one another and with every part of the city. This is evidently the arrangement to which there would be what may be called a natural tendency to conform. The greatest area is reached with the least length of street, and the greatest distance to be traversed in passing from any one point to another, as compared with the direct distance between the points, is approximately a minimum when the angles between the diverging streets are about 60 degrees, that is when the radial system is hexagonal. This may, therefore, be taken as a guide in analysing the topography of a site in order to establish the first important element of the design, viz. the positions of these centres and main lines of traffic. The rectangular system of streets, so much in vogue in the States of our Commonwealth, is absolutely inconsistent not only with what may be called the natural arrangement, but also with the position of maximum efficiency; for the best system from the point of convenience is that which, without greatly increasing the aggregate of street length, enables the traveller to reach any desired point without having to pass over a distance seriously greater than its direct distance, and this requirement is obviously satisfied by the radial system only. The rectangular system has the further disadvantage of not admitting of architectural monuments, or other great central features, being brought into striking prominence from so many points of view; it is therefore, compared with the radial system, no less defective when judged aesthetically.

It would be a mistake to infer from its geometric merits that the hexagonal was the only proper form of the radial system. We may often need a greater number of converging streets than six from one point. At the Arc de Triomphe in Paris there are no less than fourteen converging avenues, at the Place de la Bastille ten, at the Place de la Nation nine. At the Capitol in Washington there are eleven long converging streets, and eight and ten in other places in the same city. At Karlsruhe, in Germany, there are no less than eleven radial streets about 120 degrees of arc, their directions all converging upon the Castle, Library and Cabinet of Natural History.

\* A paper by Mr. G. H. Knibbs, F.R.A.S., read before a joint meeting of the Institute of Architects and the Institution of Surveyors, New South Wales, and published in the *Building, Engineering and Mining Journal*.



*Position of Radial Centres.*

Radial centres may be described as points about which particular types of civic activity will tend to concentrate: they may be the foci of political, administrative, commercial or manufacturing energies, or of intellectual or æsthetic interest. Hence they must be on leading lines of communication, on the broadways of traffic, and consequently, also, the most careful regard must be paid in their selection, not only to the limitations imposed by the topographical features of the site, but also to those imposed by the positions of outlying centres and existing or potential roads and railways thereto. Similarly, strenuous care must be exercised as to their efficiency in times of peace and in times of war. Economy of effort in reaching industrial or other ends requires that activities having many points of contact, or frequent need of intercommunication, shall be so grouped as to reduce intercommunication itself to a minimum, and thus it happens that, in order to properly design a city, it becomes necessary in focussing its various energies to have throughout regard to convenience, efficiency and artistic effect. Nothing short of an exact appreciation of the topographical adaptability of the site, and of the interdependence and mutual influence of different forms of civic activity, is sufficient for so localising the occupation of the city that its political, administrative, military and various other features, previously specified, shall be the best possible from every point of view.

Digressing for a moment from the general question, it may be said that, in mentioning the necessity for attention to our military needs, it may be remarked that this is a matter we are likely to treat too lightly. It has been, so far, our good fortune in this land never to have heard the horrid clamour of Bellona; nevertheless the experience of mankind (*e.g.* Paris in the last Franco-German war) shows how important the military provision is, and how bitterly we may rue inattention thereto. Hence, however much it may be disregarded so far as immediate necessities are concerned, ample provision for facilitating the mobilisation and despatch of troops, war material, &c., and for the defence of the city, must be made in the design, in recognition of the inevitable contingencies of at least the more remote future.

Among the several radial centres or focal points to be provided in the design, that at which Parliament will be housed—and round which the great departments of public administration therefore be concentrated as a matter of convenience—will necessarily receive first attention as the grandest centre. For the accommodation of judiciary, commercial and industrial institutions, of a university and its affiliated colleges, of technical and high schools, of barracks, armouries and other provisions for the rapid mobilisation of troops, and also for sites for great public monuments and monumental buildings, other centres must be located in such a manner as best meets the practical needs of city life, and at the same time enhances the appearance of the city.

*Other Systems of Streets.*

As has already been stated, the radial system is unequivocally advantageous from every point of view. Reverting to the question of the best angle between the radial lines, it may be remarked that in a square divided by two diameters into four equal squares, and in a circle of equal area divided into six equal sections by three diameters, the total perimeter length in the latter case is only about 15½ per cent. greater than in the former, while the mean perimeter distance from all points to the centre is 14 per cent. less; that is, supposing the perimeter lines to represent streets, then the reduction of average distance to the centre is practically equal to the increase of street length necessary to obtain it. A little reflection will show that the hexagonal radial system is, as previously stated, the best from this point of view, and involves the introduction of ring streets round the centre, something like those at Karlsruhe in Germany, or those in one quarter of New Orleans in America, *e.g.* St. Charles Avenue. If, however, for the ring streets straight ones are substituted, the iteration of the hexagonal system leads to a division of the entire area into a series of triangles approximately equilateral in form. This scheme possesses the marked advantage of making the greatest distance of travel from any one point to any other never more than 15·47 per cent. greater than the direct distance between the two, while in the rectangular system of streets the distance may be as much as 41·42 per cent. greater. (Hence the ratio of advantage is 115·47:141·42=100:122·47.) While showing that the rectangular system pure and simple ought never to be accepted, this fact does not show that that system may not be beneficially combined with the hexagonal or any other form of the radial system. In travelling about a city set out on the rectangular system there is a distinctly better sense of orientation than where its streets are irregular, and it has always been felt that from the point of view of building construction it has much to commend it. Ancient Antioch, with its magnificent "golden" street, about four miles in length and 200 feet in width, was substantially rectangular

in design, and so also are the majority of cities. It is almost self-evident that a combination of the two systems practically secures the advantages of each, and this is the merit of L'Enfant's design for the capital city of the United States of America. (See fig. 1.)

A radial rectangular system like that of Washington is possible, however, only where the ground is sensibly level, and to attempt to apply it in its integrity to any site without regard to the topographical features of the latter would be to wholly misconceive the problem of design. Cities cannot be designed on a general pattern. Configuration of surface not only necessitates the setting out of streets in such position as will give the best gradients; it also modifies the design in respect of the localisation of its centres, and in respect of its general scheme from the standpoints of æsthetics and hygiene, a matter to which we shall later refer at greater length.

We may say at once, therefore, that the radial system, either with or without its cross or connecting streets in polygonal or



FIG. 1.

spider's web form, or in ring form, and the rectangular system may be combined in any way whatsoever suggested by the conformation of the ground, or by the necessities of localising the centres with respect to convenience or artistic effect. And similarly curved streets, or even streets of zigzag form, may properly be introduced, or rather should be introduced, wherever the resulting gradients show them to be advantageous. Not only may curved streets be employed where they are practically necessitated; they may even be introduced where traffic is only moderate in quantity, for the relief of an unartistic uniformity, provided that the element of gradient is thereby improved.

*Cardinal Direction of Rectangular Streets.*

In the temperate zones the sun's direction for six months of the year is never south of an east-and-west line, a fact showing that the north-and-south and east-and-west directions for the streets in a rectangular system is an error. Where topographical features do not interfere, the directions making angles of 45 degs. with the principal cardinal points are evidently the best so far as the theory of solar light is concerned. Ottawa and Montreal are laid out conformably to this idea.

In latitude 35 degs. south—the nearest fifth degree to the latitude of Sydney—the following proportions obtain between the meridian shadows at the summer solstice, the equinoxes, and the winter solstice, viz. the length of the sun's shadow at noon is respectively  $\frac{1}{5}$ ,  $\frac{7}{10}$  and  $\frac{3}{4}$  of the height of the supposed vertical object casting the shadow on a horizontal plane. The sun is east or west at the following intervals of time before or after apparent noon on the several dates mentioned, viz. :—

Dec. 22.	Jan. 19,	Feb. 19,	Nov. 21,
	Nov. 24.	Oct. 24.	Sept. 23.
h. m.	h. m.	h. m.	h. m.
3 30	3 50	4 50	6 0

The north-east and north-west faces have at all times eight hours of continuous direct sunlight; the south-east and south-west faces from 6½ to 1½ hours, or a mean of four hours, the duration of direct sunlight thereon at the equinoxes. The adoption of directions making angles of 45 degs. with the true north-and-south and east-and-west lines will often be greatly modified by the surface configuration. The theory of the best position is to be taken as a guide, not as an inflexible rule admitting of no variation.

*Width, Grade, Cross-section and Location of Streets.*

In dealing with the characteristics of streets in a capital city, the first principle that may be laid down is that the æsthetic requirements may be regarded as of commanding importance, and should therefore be given prominence in the



general idea, while utilitarian considerations should be subordinated to the last possible degree consistent with the fact that the general arrangements must be really practicable. Although there is no inveterate opposition between artistic effect and convenience, there must to some extent be a sacrifice of one to the other. Thus in respect of the element of width, economy of construction and maintenance, and mere convenience in the conduct of business would suggest the narrowest width of street that would avoid intense congestion of vehicular and pedestrian traffic, while from the sanitary and æsthetic points of view wide streets are preferable, since they are less dangerous and are both healthier and more beautiful.

Dealing with actual dimensions, and commencing at the lower limit, it may be affirmed that lanes of less than 10 metres width are very undesirable. Unimportant streets, so situated that they can never become of importance, might be designed with widths of from 20 to 25 metres. Streets of moderate importance likely to require tramways, cycle paths, central walks and so on would be satisfied by a width of from 30 to 40 metres; while still wider streets, set out with avenues of trees, flower-beds, &c., might be of any width from 50 to 75 metres. For the purpose of comparison it might be mentioned that the streets of Washington are from about 24 to 36 metres, and the avenues about 36 to 49 metres. The usual cross section of roadway with raised footpaths should hold good for the narrowest streets only. In those of medium width a row of fine foliage trees on each side next to the footwalk would constitute the usual feature. In streets where there is little traffic, as, for example, those in the residential quarters of the city, strips forming garden or grass plots, graced with shrubs of various kinds, might well form a feature. To obtain variety a somewhat wider street could have a centre-line or lines of ornamental trees with or without footwalks, or a cycle path, &c. The widest streets would allow of sidewalks, bounded by rows of trees or strips of garden, and a triple central avenue of fine proportions with double footwalks, and still leave ample room for two roads for tramway or vehicular traffic. Cycle and motor paths—already referred to—would always be so located as to involve a minimum of interference with other forms of locomotion.

Touching the question of the limits of street gradient, it may be observed that it must necessarily be sufficient to carry off surface drainage; its lowest limit would therefore be  $\frac{1}{2}$  per cent. For vehicular traffic no severer grade than 10 per cent. should be allowed, and it is hardly necessary to say that of alternative possible designs, that which, other things being equal, secures the lightest grades throughout, especially in the streets which carry the heaviest and greatest amount of traffic, is the better.

The interdependence of topographical features, types of occupation and character of street in a city intended to be ideally healthy and beautiful requires that the study of the design should be exhaustive. Every possible variation should be systematically analysed by a comparative method, for it is only in this way that the best result can be achieved.

The following are the main principles of location. For leading lines of heavy traffic light grades are required, and widths proportionate to its ultimate magnitude. Special regard must be paid to adequate provision for all future contingencies at such points of congestion as depôts and freight yards of all kinds, railway stations and similar places. As before said, provision necessary for the mobilisation and despatch of troops, war material, &c., must also be borne in mind, whatever opinion obtain as to the needlessness of this in the near future.

With respect to residential streets, gradient is of less importance, it being merely necessary that the general character of the street should harmonise with the class of residences adjoining. Where they are to be palatial, the streets should possess a collateral magnificence, while the streets in localities populated by the poorer classes must, of course, be less pretentious in design, though they, too, may well be made picturesque with foliage trees.

#### Engineering Features of Streets.

The necessity for some official control of the localisation of the different classes of occupation, which a regard for the general appearance and welfare of a capital city not only justifies but imperatively demands, permits its development to proceed on lines that obviate frequent changes in the constructional features of the streets, for these can all be thoroughly considered at the outset. The mains, conduits, tunnels, &c., required for water, gas, electric or various forms of power-supply, for sewerage systems, for telephone and telegraphic services or for underground communication of any sort can be located so as to involve the minimum disturbance of traffic and the least expense for maintenance and repair, and the characteristic breaking up of and injury to well-constructed streets in order to reach such mains and conduits can thereby be rendered an unknown element. We pay dearly for want of foresight in municipal arrangements, in the constructional

features of streets. In future city-design the opportunity undoubtedly exists for avoiding that continual waste of resource, which, turned to advantage in more lavishly equipping public institutions and in making the city ornate, can be so much better expended. An exhaustive consideration of the treatment of each street in regard to the necessity for tram or railways is also necessary to insure that the construction is developed on lines that avoid waste through the undertaking of various useless works or injury to necessary ones. It will be a wise economy also to make the foundations of all streets thoroughly, and in no way to stint the means for so doing.

The scheme of lighting to be adopted is an element in which decision antecedent to the development of the design is also requisite. Inasmuch as electric lighting does not involve, except at the generating station, any consumption of oxygen, and as the light itself does not produce those deleterious gases formed in the burning of coal gas, it is to be preferred wherever a start may be made *ab initio*.

More generally it may be said that the predetermination of the whole of the engineering or constructional features for the streets is essential to the design being so elaborated as to reduce the expense to an absolute minimum, and it is only through the initial location of such features that everything dependent thereupon can be consistently and harmoniously adjusted and the best results attained.

#### Size of Blocks between Streets.

If in any site the relation between the total area and that to be occupied as streets be antecedently assigned, the problem of ascertaining the size of blocks becomes numerically determinate as soon as the general scheme for the streets is decided. In Paris the streets cover an area of about one-fifth of the total, in Washington the ratio is still greater. With increase of street area, however, the construction and maintenance becomes correspondingly costly. The following suggestion as to suitable dimensions will sufficiently indicate the idea of general proportions:—

	Metres.
Public institutions, large factories and large establishments generally	100 x 200
Large suburban residences with grounds...	80 x 160
Larger business sites, city residences, &c.	60 x 120—160
Smaller establishments	40 x 80; 30 x 60—90; 20 x 60
Workmen's dwellings	10 x 30

If smaller areas than these last are admitted the elements of hygiene and beauty must be correspondingly sacrificed. The length of blocks may vary between, say, 100 and 200 metres, or, say, between 330 and 660 feet, and rear lanes be from 10 to 15 metres in width, say 33 to 50 feet.

#### Height of Buildings.

Apart from the impossibility of adequately dealing with fires breaking out in very high buildings and the consequent jeopardy to property generally, and apart also from any consideration of the æsthetic defects of such buildings, a certain height may be regarded as injurious, as unduly limiting the skyline, and as preventing sufficient access of direct and diffused sunlight to the properties in the neighbourhood. The question may be settled by considering the rectangular portion of the street system, adjusted to the N.E., S.W., and N.W. and S.E. positions. A review of the positions of the solar-shadow at different times of the day and year indicates that the height of buildings and the width of streets should be approximately of the same order. If a street have buildings immediately abutting on it, equal in height to its width, the maximum angle of sky transverse to the street is 53 deg. 8 min., and the minimum 45 deg. A skyline higher than 45 deg. is clearly too high, hence as a maximum limit the façade of any building abutting on the street should not be of greater height than the street. The façades will be better seen with a less angle; a two-thirds limit would, therefore, be preferable, *i.e.* a height of not more than two-thirds of the street width. Buildings standing back from the street frontage could, of course, be correspondingly increased in height.

(To be concluded.)

#### CULROSS MARKET CROSS.

THE market cross of Culross is being restored and re-erected through the munificence of Sir James Sivewright, K.C.M.G., of Tulliallan Castle. The work will be completed and the cross unveiled on July 1, 1902. When the project of restoration was first entertained, says the *Dunfermline Press*, the Rev Canon Bruce, Dunmarle Castle, Culross, acting for Sir James Sivewright, consulted Mr. J. W. Small, the well-known architect, who is an authority on Scottish market crosses, and recently published an elaborate volume on the subject. The following is quoted from Mr. Small's report on



the existing cross:—"The present shaft and arms of cross are comparatively modern, viz. 1819 date. The steps and old base are very much older, and I have not the slightest hesitation in saying they are as old as the date of the erection of the town into a royal burgh by James VI. in 1588. Consequently my attention was directed to existing market crosses in Scotland of this or later dates for precedents to restore the one under review. I consulted those in the immediately surrounding district, viz. Kincardine, Clackmannan, Stirling, Airth, Doune, Inverkeithing, &c., and have every confidence in submitting the design I have prepared as being in accordance with old precedents, and probably almost identical with that of the cross erected in 1588. On the front of the cross will be the burgh arms, with the date of the creation of the burgh (1588) in the tympanum of the pediment. On the side next the 'Study,' Sir James Sivewright's arms, with his initials in the tympanum. On the back panel the cypher of King James VI., taken from Mars Wark, Stirling, with the date of restoration in tympanum. In the remaining panel will be an inscription, and in the tympanum over it the provost's initials. Crowning all, the unicorn of Scotland holding in front of it the Garter of the Thistle, enclosing the Royal Arms of Scotland, similar to that on the Stirling Market Cross. The inscription referred to will be:—"Restored by the Hon. Sir James Sivewright, K.C.M.G., LL.D., of Tulliallan, July 1, 1902; John A. Erskine Cuninghame of Balgownie, Provost. E.R." [King's initials.] The character of the lettering will be taken from an old stone with the representation of the burgh seal, at present built up in the wall of the staircase to the belfry of the old Town Hall, Culross."

The following details from the specification will show how the work is to be done:—"The present shaft and cross-head to be removed and carefully erected on the 'Tron' (a square piece of masonry about 4 feet high, opposite Town House) The old steps and base are not to be interfered with (but will be prepared to receive the new cross). The shaft will be tapered from 15 inches square at base to 13½ inches at top, and will have a large splay off its four corners, to be in one stone 10 feet long, let into old base and fixed with a copper dowel 20 inches long. The cap to be moulded and carved as shown, and fixed to base with a copper dowel 18 inches by 1 inch. The panelled top will be in one stone, 25 inches high, with pilasters at angles and carved on the four faces as follows:—Front face, arms of Culross; 2nd face, arms of Sir James Sivewright; 3rd face, cypher of King James VI. from Mars Wark, Stirling; 4th face, inscription of donor. The cornice to be in one stone with four curved pediments and seat for unicorn, and the pediments to be curved in each tympanum as follows:—Front, date of creation of burgh, 1588; 2nd, initials of Sir James Sivewright; 3rd, date of restoration, 1902; 4th, initials of Provost Cuninghame. The apex will be a unicorn sitting on its haunches, same as on Stirling market cross, and holding in front of it the collar of the Order of the Thistle and the Royal Shield bearing the Arms of Scotland. The present well at foot of cross to be removed to side of house opposite."

After Mr. Small had prepared all the drawings and made the arrangements for proceeding with the work, he received an appointment in South Africa, which necessitated his removal thither in the beginning of December last. He has left the work in the hands of Mr. Alexander Neilson, sculptor, Dundee, to be carried out under the superintendence of Mr. William Gaudie, architect, Panmure Street, Dundee.

## SOCIETY OF ANTIQUARIES OF SCOTLAND.

THE usual monthly meeting of the Society of Antiquaries of Scotland was held in their library at the museum, Queen Street, Edinburgh, on Monday evening, Mr. David Murray, LL.D., vice president, in the chair. The first paper was a report on the excavation of the Roman camp and other works at Inchtuthil, which the Society had been induced to undertake last season on the invitation of the proprietor, Sir Alexander Muir Mackenzie, of Delvine. The report was given in two sections, the excavations being described by the Hon. John Abercromby, and the plans of the camp and the structures connected with it by Mr. Thomas Ross, architect. The operations began in February last, and were continued till the end of August, under the supervision of Mr. Alexander Mackie, who has been in charge of the Society's excavations at several other Roman sites. Inchtuthil, on the left bank of the Tay, close to Delvine, and about seven miles south-east of Dunkeld, is an ideal site for a fortified station. It is a flat plateau of somewhat triangular shape, comprising an area of about 250 acres, the banks rising steeply to a height of about 55 feet, and further protected by the marshy ground below, and partly encircled by the river. The front of the camp was constructed parallel to the least broken side of the plateau. Though its ramparts are

much obliterated, the general form is still traceable as a square of about 55 acres, each side measuring 520 yards. The ramparts were 20 feet wide, with a ditch also 20 feet in width, and from 6 to 7 feet deep. The rampart was doubled on the south-east side where the natural defence was weakest. A road 20 feet wide divided the area within the ramparts into two unequal parallelograms. There were no foundations of permanent buildings or other signs of a protracted occupation found in the interior of the camp, but fragments of querns and Roman pottery were sure evidence that the occupation had been for more than a few nights. The better to defend the access to the south-east there was a rectangular redoubt about 170 yards long and 130 yards wide about 150 yards from the camp. There were no traverses in front of the gateways. The best evidence that the camp was intended to be occupied for some considerable time was supplied by the discovery of a Roman bath, placed about 100 yards outside the south-east corner of the ramparts. It had a frontage of 125 feet and was 75 feet in width, and was partly surrounded by a ditch 5 feet deep. Outside the ditch were foundations of buildings disposed in the form of a short street. Near this corner, on the outer face of the inner rampart, three large ovens were brought to light. The camp and redoubt, however, are not the only earthworks on the plateau. Its south-west angle had a slightly rounded end, about 90 yards long by 60 yards wide, which is defended by five ramparts and as many ditches drawn across from edge to edge of the steep slopes that surround the point. The site of a hut, roughly paved with flat stones, was found within the area of this fort. But as there was nothing to indicate Roman occupation, the probability is that this extreme end of the plateau was a native fort of a time later than the Roman invasion. After referring to the notices of Inchtuthil by Maitland, Pennant, Pococke, Roy and other writers of the eighteenth century, and pointing out that the Roman building mentioned by more than one of them as lying to the west of the camp could not be the bath now discovered, Mr. Abercromby passed to the consideration of the probable date of the camp. Unfortunately the objects found in it, consisting chiefly of Roman pottery and tiles, with a few harness mountings of bronze, included no inscriptions and only one coin, much oxidised, but most probably an early issue of Domitian. It was thus possible that the camp may have been occupied by one of the legions of Agricola, but in the absence of better evidence the date must remain an open question. A tumulus, known as the Woman's Knowe or Gallows Knowe, lies about 50 yards to the east. When excavated it was found to be surrounded by a ditch at the base, and to consist of a clayey loam capped by a layer of water-worn stones about 2 feet deep, the height of the tumulus being about 6 feet and its diameter 93 feet. In the centre was a cist containing an unburnt burial at full length and oriented, the head to the west and the feet to the east. Nothing was found to give a clue to the period, but it was probably later than the Roman time, as another burial in a tumulus on the top of the rampart certainly was. A third tumulus, excavated at the same time at Ruffel, contained a cremated interment. Mr. Thomas Ross, architect, gave a description in detail of the various works connected with the camp, and of the bath building and its different rooms, illustrated by diagrams and lantern slides, with many photographs. The next paper was a record of explorations in the cairns of Arran, with an anatomical description of the human remains discovered by Dr. T. H. Bryce, of Glasgow University. The work was begun on the initiation of Dr. Ebenezer Duncan, of Glasgow, who had made a partial examination of a cairn near Lag, and subsequently invited Dr. Bryce to undertake a thorough examination of it and another near it. This having been done by permission of the factor, Mr. Auldjo Jamieson, with some novel and interesting results, suggesting a more extended series of investigations to determine, if possible, the relative age of the cairns and of the remains of their builders, a grant was obtained from the Society for this purpose, and the results now gathered, along with those obtained in 1860 by Dr. James Bryce, LL.D., from exploration of the stone circles of Arran, give a fairly complete view of the prehistoric sepulchral monuments of the island. The structures explored fall into three groups—cairns enclosing megalithic structures, cairns with single short cists, and cists within the area of circles of standing stones. Of the first class, four examples, at Torlin, near Lag, at Clachaig, on Sliderry Water, and near Shiskin, were fully excavated. At Torlin and Clachaig the cairn was still in great part extant, but elsewhere the megalithic structure stands denuded. It consists usually of great slabs set on end or on edge, in the form of a trough-like chamber, subdivided into compartments, or a series of megalithic cists placed side to side. Probably in all cases the chamber was roofed in by large flags. At Torlin and Clachaig were found remains of several individuals of both sexes and all ages in heaps in the corners at different levels. At the other sites the presence of charcoal layers indicated cremation, and the bones of domestic animals pointed to the practice of a funeral feast. The implements found were all of stone, mostly of flint, but one polished axe and a polished



perforated hammer were also found. The pottery consisted, of round-bottomed vessels of dark ware, either undecorated and with rude projecting ears, or with an almost horizontal brim, decorated with straight lines and dots. At Beachana, in Kintyre, a similar cairn was explored in 1891 by the Kintyre Scientific Association, of which no record was published, but the writer was indebted to Mr. Gray, of the Marine Biological Station at Millport, for the facts, and to the authorities of the Campbelltown Museum for the opportunity of describing the relics. These were a flint implement, a shuttle-shaped ornament of jet and six urns of the same type as those from Arran. In Islay two cairns of the same class yielded corroborative results. The only cairn of this type previously described in Scotland is one near Crinan, explored by Canon Greenwell in 1864. These examples form one group, to be classed with structures of analogous character in Ireland, about which, however, little is known. They must all be referred to the Stone Age. The pottery is of Stone Age type, but certain specimens are of a form hitherto unknown for vessels of this size in the British Isles. In regard to the second group of cairns enclosing short cists, such cists were found in the Clachaig megalithic cairn as secondary interments, in an oval mound at Clachaig called Ossian's Grave, in a small round cairn at Brownhead, and also within the circles of standing stones on Mauchrie Moor, explored by Dr. James Bryce. These cists yielded flint implements, jet beads and a bronze pin, and they all contained pottery consisting of flat-bottomed urns, richly ornamented and quite different in type from the pottery of the megalithic cairns. Some of them enclosed burnt bones, some fragments of unburnt bones, and one a skull, which could be measured. At Blackwaterfoot there stood a large cairn, now demolished. Working on its site, Mr. Thomas Wallace recently exposed a cist in which was a bronze dagger blade with longitudinal triple mouldings, and the rivets by which it was affixed to the handle, accompanied by a fluted gold fillet, which seemed to have ornamented the hilt. These were generously presented to the National Museum by Mr. Wallace. No pottery or bones were found in the cist, which was subsequently examined and the remainder of the cairn investigated without further result by the writer. All these short cists, whether in cairns or stone circles, seem to belong to the Bronze Age. The human remains in the megalithic chambers were those of a race of short stature, with oval-shaped heads, long oval faces, and short, narrow and weak jaws. They are of the same type as the long barrow people of England. The skull found by Dr. James Bryce in a cist within a circle is broad, and of an entirely different type. The local contrast in the structural features of the monuments, the character of the interments, the nature of the implements, and especially of the pottery, indicates a succession in the early occupation of Arran—a long-headed race in the stage of Stone Age culture, succeeded by a broad-headed race acquainted with bronze, who must have made a long stay before the culture of the Iron Age reached them. The paper was illustrated by large diagrams and lantern slides.

## TESSERÆ.

### Process in Sculpture.

LITTLE change has taken place in the processes used in the fine arts during the many ages in which they have been practised. Even the few novel inventions that have been brought to bear upon them have tended in no way to improve their quality; some, on the contrary, have been found rather to detract from their excellence than otherwise. The only change which new discoveries have created in the fine arts has been the saving of time and labour, the multiplying of copies with greater facility, and the consequent cheapening of cost. It may be fairly presumed that the ancient Greeks and Romans, in the palmy days of sculpture, employed much the same methods in working their statues as do the artists of the present day. It is true there is no direct evidence of their having modelled them previous to commencing the marble, but their terra-cottas and bronzes show indubitably their knowledge of modelling in clay, and their acquaintance with the processes of moulding and casting; and it is but fair, especially when we consider the excellence of their marble figures, and the numbers which they produced, to infer that they must have applied that knowledge to facilitate the working of them. It is probable, again, that the manner of taking measurements on the marble from the model was much about the same as it now is. The Italians, a people not noted for throwing aside old notions, or much addicted for exchanging old lamps for new, still adopt the most simple plan for this purpose, that of dropping plumb-lines from fixed points over model and marble in order to ascertain the relative position of parts.

### Materials Employed in Ancient Sculpture.

The ancients employed a greater variety of substances for their statues and groups than the moderns. Many of them, however, were chosen merely because they were the native productions best suited to the object—for instance, the syenites, basalts and granites of the Egyptians. Then, again, the Greeks were fortunate enough to possess within their own islands the beautiful Parian marble of which their ancient statues are composed; and the Italians have had the advantage of a white limestone existing in their own country, superior even in purity and fineness of crystal to that of the Greeks, and this last, commonly known by the name of statuary marble, is that now chiefly employed in sculpture. Vitrified substances were in use among the ancient Egyptians for small works; as may be seen from specimens in the British Museum. They were in the habit, too, of employing more than one material in the same work; for example, of making the statue itself of wood or stone, with glass or jewels inserted for the eyes, and the draperies and ornaments of metals. The Israelites, who in all probability adopted most of the methods of the Egyptians, followed this plan also, for frequent allusion is made to it in the sacred writings. Indeed, if we consider the method which Moses used to destroy the molten calf, as described in two distinct places—Exod. c. xxxii. v. 20, and Deut. c. ix. v. 21—we shall perceive that, though generally understood as a molten image, it must have been composed of either wood or stone—probably the former—and merely decorated with molten ornaments, for had it been entirely cast or molten he could not have ground it to dust, nor have strewn the ashes in the brook, as he is said to have done. The ancient Greeks employed not only marble and bronze, but ivory and gold. The ivory was cut into thin plates and laid on the surface, by which a beautiful flesh-like colour was imparted to the naked portions of the statues, while the precious metals served to give colour to the drapery.

### Grandeur in Painting.

Grandeur refers less to the subject than to the manner in which it is treated. It consists, firstly, in making everything subservient to the principal object in view; secondly, in avoiding the introduction of anything that may interfere with that object; and, lastly, in the absence of any peculiarity of execution which shall lead the mind from its proper duties. And thus it arouses the deepest feelings of the observer, to the utter exclusion of all minor sources of delight. No matter what may be the nature of the subject it treats of, tragic or comic, sacred or profane, domestic or historic, its presence will ever be felt throughout the whole work. It is this quality which marks the difference between the sublimity of Michel Angelo and the pretension of his imitators, between the expression of Raphael and the insipidity of Carlo Dolce, between the grace of Correggio and the affectation of Barroccio, between the glow of Titian and the glare of Rubens, between the fertility of Paul Veronese and the exuberance of Pietro da Cortona, between the solemnity of Tintoretto and the gloom of Caravaggio, between the simple truth of Velasquez and the obtrusive materialism of Ribera, between the elegance of Vandyke and the allurements of Lely, between Rembrandt and Ferdinand Boll, Ostade and Metz, Jan Steen and Teniers, De Hooe and Terburgh, Cuyp and Both, between Reynolds and Lawrence and, lastly, between Turner and every landscape-painter who lived before him. It has often been said that this quality depends in a great measure on the mere dimensions of a work, and no doubt as regards natural scenery and architecture the observation is partially correct. The Colosseum at Rome is grander than the amphitheatre at Verona, and the Swiss mountains than those of our own country; but with respect to the human form we need no evidence beyond what colossal sculpture affords to prove that size instead of imparting grandeur has often a contrary effect; and were an artist to paint a man 20 feet high (witness the *Satan* by Lawrence) he would only arouse a feeling akin to that produced by the sight of monster gooseberries which we hear of in the dull season. There can be no doubt that in pictorial illustrations a great advantage is derived from employing the average standard of the human figure, but that such a practice is not absolutely necessary to impart grandeur may be proved by many works.

### Ancient Irish Churches.

That the unadorned simplicity and contracted dimensions of the earliest Irish churches were not at least altogether the result of poverty and ignorance of the arts in their founders appears to be extremely probable. Poor those honoured individuals unquestionably were, but that poverty generally, if not in all instances, appears to have been voluntary, as became men walking in the footsteps of the Redeemer, and who obtained their simple food by the labour of their hands; but that they were ignorant of the arts or insensible to their influence could scarcely have been possible in men, very many of whom—Romans, Gauls and Britons—were educated where those arts, though they had become debased, were still culti-



vated, and we have not only abundant historical evidence to show that many of the ecclesiastics in those early times obtained celebrity as artificers and makers of the sacred implements necessary for the Church and as illuminators of books, but we have also still remaining the most indisputable evidences of their skill in those arts, in ancient croziers, bells, shrines, &c., and in MSS. not inferior in splendour to any extant in Europe. It is indeed by no means improbable that the severe simplicity, as well as the uniformity of plan and size which usually characterises the early churches of Ireland, was less the result of the poverty or ignorance of their founders than of choice, originating in the spirit of their faith or a veneration for some model given to them by their first teachers; for that the earliest Christian churches on the Continent before the time of Constantine were, like these, small and unadorned, there is no reason to doubt, and the oldest churches still remaining in Greece are similar to those in Ireland.

#### Destruction of Rood-Lofts.

The order of Edward for the taking down of roods applied, in the first instance, simply to the removal of the rood figures, *per se*, being afterwards erroneously concluded to extend to the rood-loft or gallery of access to them. This gallery was formed on the upper beam of the screen, into which the joists of it, with the supporting timbers of the rood figures, were framed, and its either side was defended or fenced in by a parapet along its length, to secure safe passage across. It was this gallery or passage to, and as such, connected and associated with, the objected-to rood figures that it was the object of the reformers of Elizabeth's time to do away with, as is very clearly and explicitly shown by her order. The indiscriminating ignorance and prejudice of the age, however, failed to distinguish between transposition, "transposed" being the word of the order, and destruction, as it had already done between reformation and abolition, and from the lack of a clear understanding or a wilful misconception of former orders, had with the rood-gallery and its figures pulled down, and were continuing to pull down, the entire upper portion of the screen, extending the demolition in some instances to the entire structure of it, leaving them as that at Southwold, and in a number of other cases, is now seen stripped to their naked framing and entirely denuded of their upper part. To this condition it was not the authorised intention to reduce them. Elizabeth's order clearly defines the extent to which they were to be altered and the mode in which they were to be finished and left after such alteration. The words are as follows:—"It is thus decreed and ordained that the rood-lofts"—roods had already been previously for the most part removed—"as yet, being at this day aforesaid, untransposed, shall be so altered that the upper part of the same with the soller"—an old term for an upper storey—"be quite taken down unto the upper parts of the vautes" (vaulting) "and beam running in length over the said vautes, by putting some convenient crest upon the said beam towards the church;" that is to say, the rood-loft or gallery was to be taken down to the beam or cornice above the groined canopy or vault, and was there to be finished with a crest ornament or brattishing, the common mode of finishing such a cornice or termination.

#### GENERAL.

**Mr. James Ponsford, M.I.C.E.**, died at Cairo on January 2, after a very brief illness. Mr. Ponsford had been engaged for many years in leading positions, as an engineer, upon the construction and working of railways in European and Asiatic Turkey, and had received the Medjidieh of the Fourth Class from the Sultan for his services.

**Professor J. H. Marshall**, late of King's College, Cambridge, and for three years past associated with Mr. Bosanquet in archaeological researches at Athens, has been appointed by the Secretary of State for India the first Director-General of the Archaeological Survey of India, for a period of five years in the first instance.

**The Harrogate Town Council** have decided to erect a new town hall at a cost of 40,000*l.* Competitive designs are to be sought.

**In Memory** of the late Sir A. W. Blomfield, under whose direction St. Mary's Church, Bryanston Square, W., was improved and adorned, and who was an active and earnest parochial worker for many years, a brass tablet has been affixed to the south-eastern wall, near the doorway of the church.

**Mr. E. B. J. Knox**, finding the conditions again favourable, has resumed practice in Johannesburg as architect and civil engineer.

**Mr. M. Sullivan** will read a paper before the Society of Architects on Thursday next entitled "Early British and Celtic Art."

**The Duke of Marlborough** has offered to the Corporation of Oxford a large picture, "The Rape of the Sabines," painted by Pietro da Cortona. The gift will be formally accepted at the next meeting of the city council, and will be placed in the municipal buildings.

**The Brighton Town Council** propose to expend a sum of 45,000*l.* on the construction of a system of telephones.

**A Committee** has been formed to carry out the plan for the restoration and preservation of the well of the Venerable Bede at Monkton Dene.

**The Salary** of Mr. McCarthy, architect to the Corporation of Dublin, has been fixed at 750*l.* a year.

**Mr. Joseph M. Houston**, of Philadelphia, has been selected as architect for the new Capitol to be erected at Harrisburg.

**The Earl of Idlesleigh**, chairman of the Royal Commission on Sewage Disposal, has sanctioned the appointments of Miss Harriette Chick, B.Sc., and Miss M. O. Power, former students of the Bedford College for Women, as assistants to Dr. Houston, chief bacteriologist to the Commission.

**The Council** of the Royal Society of Painter-Etchers and Engravers have elected the following Associates of the Society:—M. E. Kershaw, B. Gorst, Hermann Struck and L. Taylor.

**Mr. Arthur Henry Newton**, of the firm of Winsor & Newton, Ltd., artists' colourman, Rathbone Place, has left property valued at 105,955*l.* 5*s.*

**The Yarmouth Town Council** have decided, in spite of all protests, to demolish for the sake of street improvements the northern portion of an old flint wall which was built in 1395.

**Mr. Goscombe John** has presented to the Devonshire Hospital, Buxton, a plaster statue of the late Duke of Devonshire.

**The Local Government Board** have approved of the expenditure of 79,468*l.* in connection with the Joyce Green Hospital, and of a contract being entered into with Messrs. Leslie & Co. for the erection and completion of the additional pavilions, isolation hospital and other works connected with the scheme without first advertising for tenders.

**The Estimate** of the cost of constructing the electric railway between Brighton and London is in round figures 7,338,403*l.*, apportioned as follows over the three lines:—Railway No. 1, 607,580*l.*; ditto No. 2, 2,240,176*l.*; ditto No. 3, 4,490,647*l.* It is proposed to spend 330,000*l.* on stations; accommodation bridges and viaducts, 1,128,361*l.*, and 2,408,720*l.* on tunnels. The cost of the line is estimated at about 7,310*l.* per mile.

**Mr. John Galen Howard**, of New York, who has been preparing the plans for the new mining building for the University of California at Berkeley, is to be superintending architect for the execution of plans for the greater University designed by M. Bénard, of Paris.

**The Finance Committee** of the Liverpool Corporation have been considering the proposed acquisition of part of St. James's Mount by the cathedral committee as a site for the Cathedral, and, after considering the joint reports of the town clerk, the controller of accounts and the corporation surveyor, have adopted a resolution to the effect that, so far as that committee is concerned, the preamble of the Liverpool Cathedral Bill should not be opposed.

**The Foundations** of the ruins of Lewes Priory are now visible, but the excavations are shortly to be filled in.

**The Lighting Committee** of the Brighton Town Council recommend that Mr. W. R. Galbraith be engaged as consulting engineer in connection with the electric power house works now in progress at Southwick, under Messrs. Pedrette & Co's contract, at the inclusive fee of 3½ per cent. on 25,000*l.* (875*l.*), the Corporation to pay in addition the wages (about 3*l.* per week) of an inspector, to be recommended by Mr. Galbraith.

**The Third Members' Meeting** of the Liverpool Architectural Society will be held at 6 P.M. on Monday next, the 20th inst., in the Law Library, 41 Castle Street, Mr. P. C. Thicknesse in the chair, when a paper will be read by Mr. R. Wynne Owen, A.R.I.B.A., on "The Value of Sketching," which will be accompanied by lantern slides and some examples of original sketches by well-known architects.

**Mr. H. Ricardo** will read a paper on "The Architect's Use of Enamelled Tiles" at the meeting of the Applied Art Section of the Society of Arts on Tuesday next at 8 P.M.

**The Annual Meeting** of the Royal Society of Antiquaries of Ireland will be held in Dublin on the 28th inst. The Council find it necessary to draw attention to the fact that a considerable proportion of members still fail to pay their subscriptions, though deriving all the benefits of membership, and receiving the publications which are produced at so much cost. A list of those in arrear was read out at the annual general meeting of the Society held in January last, and forty-four members were struck off the roll.

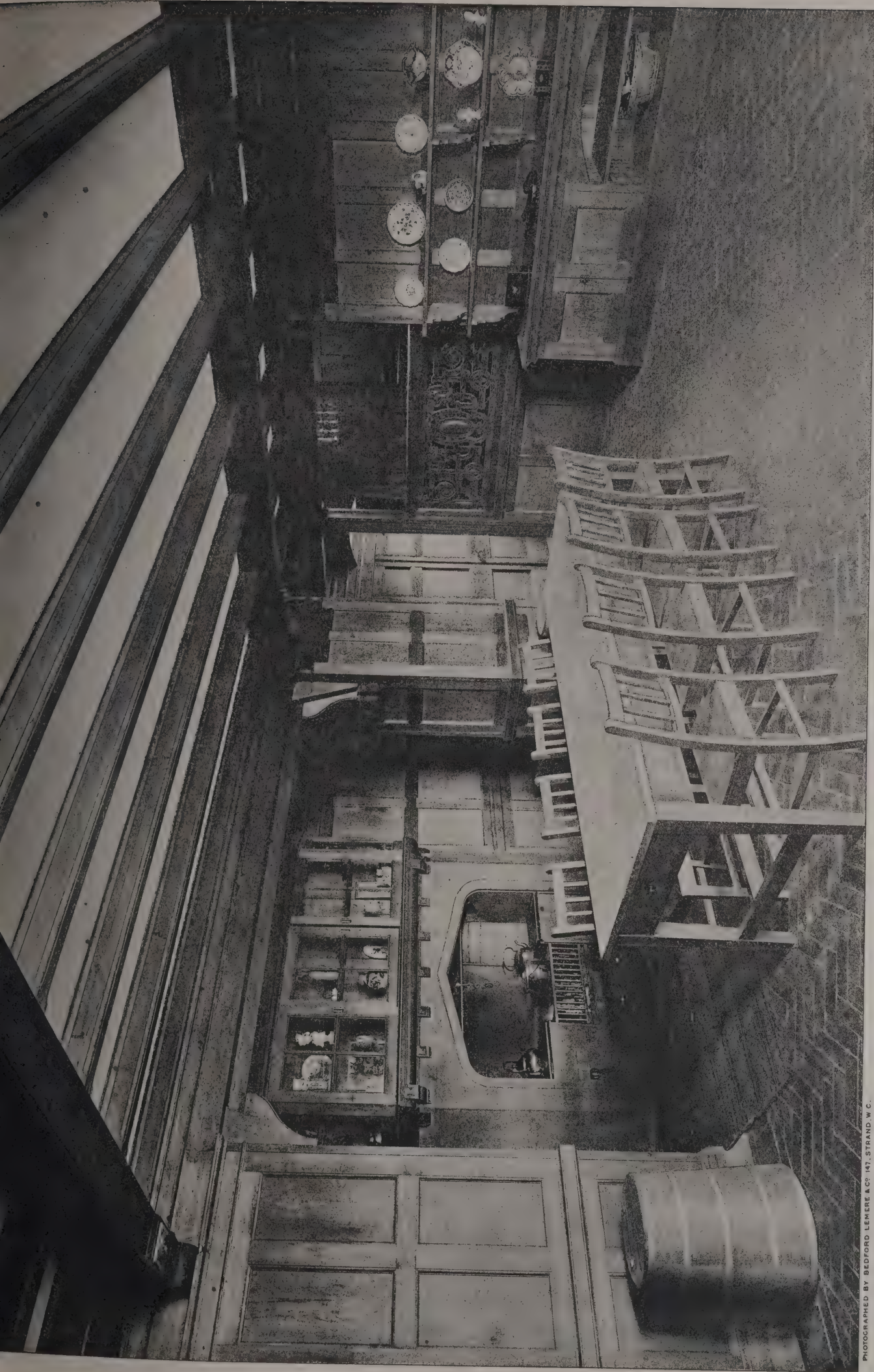


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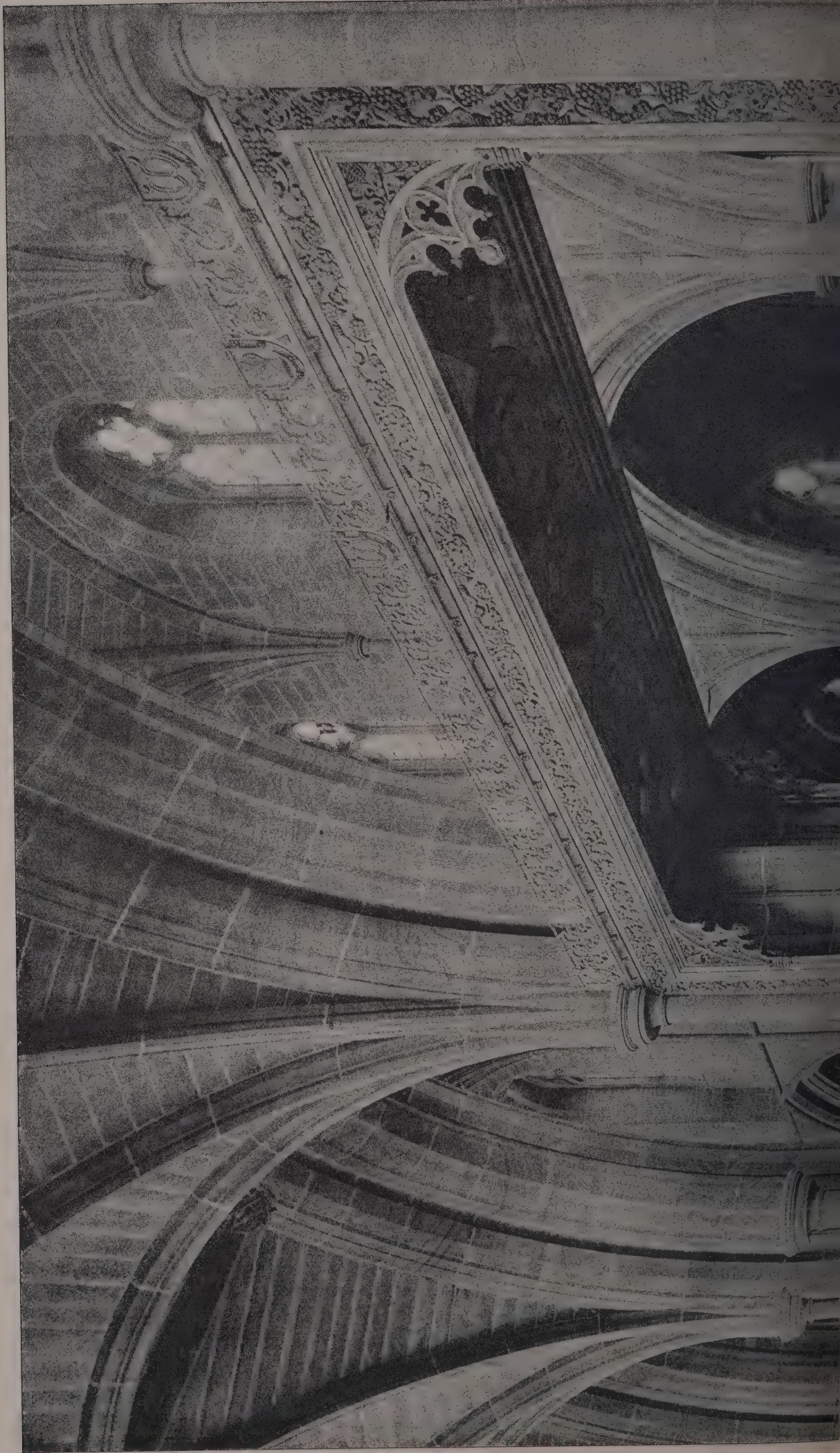




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S. MARY'S CHURCH, ECCLESTON: FROM EAST END OF SOUTH AISLE, LOOKING INTO CHANCEL.

G. F. BODLEY, A.R.A., Architect.







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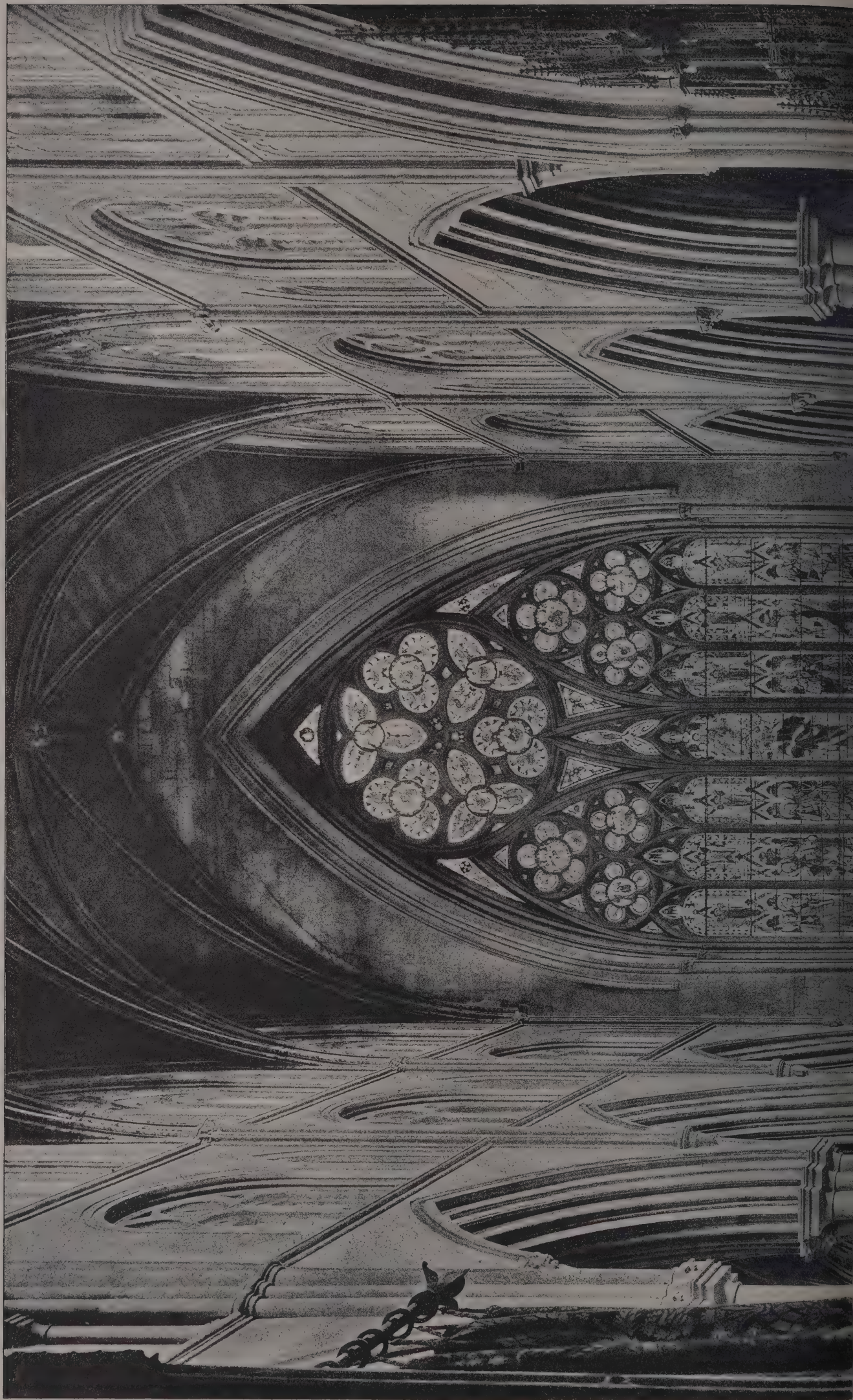






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CATHEDRAL SERIES, No. 378.—RIPON: THE CHOIR TO EAST WINDOW.







THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. All information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, Westminster.

**BATTERSEA.**—Jan. 31.—Premiums of 50*l.*, 25*l.* and 10*l.* respectively are offered for the three best sets of designs, &c., of dwellings, as follows:—(a) A house of two storeys; (b) a house consisting of two self-contained tenements; and (c) a house consisting of three self-contained tenements. Mr. W. Marcus Wilkins, town clerk, Municipal Buildings, Lavender Hill, S.W.

**GLASGOW.**—Feb. 1.—Schemes, plans and estimates of cost are invited for erection of dwellings for the poorest classes upon ground at Alexandra Park. Premiums of 100*l.*, 50*l.* and 25*l.* respectively will be awarded to the authors placed first, second and third in order of merit. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

**HULL.**—Jan. 31.—Designs are invited in competition for the new art school. Premiums will be awarded to the designs placed first, second and third in order of merit (100*l.*, 60*l.* and 40*l.*). The architect whose plans are carried out will be paid the usual 5 per cent. commission, the premium to merge in such commission. Mr. Sidney R. J. Smith, 14 York Buildings, London, W.C.

**IRELAND.**—Jan. 20.—Plans, &c., are invited for drainage of Howth and Sutton, Dublin (and an alternative system for the latter). A premium of 50*l.* is offered. Mr. John O'Neill, clerk, board-room, North Brunswick Street, Dublin.

**ISLE OF WIGHT.**—Jan. 31.—Designs are invited for a suitable monument as a memorial to Her late Majesty, to be erected in St. James's Square, Newport, Isle of Wight. A premium of 25*l.* is offered for the accepted design. The Secretary, Isle of Wight Queen Victoria Memorial Committee, 20 Holyrood Street, Newport, Isle of Wight.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Jan. 31.—Applications are invited from architects willing to submit designs in a limited competition for rebuilding the Liverpool Infirmary for Children. Colonel C. Forbes Bell, Eagle Chambers, 17 Fenwick Street, Liverpool.

**WALES.**—Feb. 4.—Competitive designs are invited for municipal offices proposed to be erected by adapting, adding to and rearranging the town hall buildings at Mountain Ash. A premium of 75*l.* will be paid to the author of the design placed first in order of merit. Mr. H. P. Linton, clerk, Town Hall, Mountain Ash.

## CONTRACTS OPEN.

**BARKING.**—Jan. 24.—For supply and erection of additional electricity generating plant. Mr. E. H. Lister, clerk, Public Offices, Barking, Essex.

**BARNESLEY.**—Jan. 25.—For erection of a villa residence, surgery, stables, &c., at Worsborough Bridge, near Barnsley. Messrs. Senior & Clegg, architects, 15 Regent Street, Barnsley.

**BEDFORD.**—Jan. 21.—For erection of a corrugated iron hospital and outbuildings, &c., near the present isolation hospitals belonging to the Corporation, and for alterations and additions to the existing hospitals. The Borough Surveyor, Town Hall, Bedford.

**BERMONDSEY.**—Jan. 20.—For construction of three underground conveniences. Mr. Fredk. Ryall, town clerk, Town Hall, Spa Road, S.E.

**BIRMINGHAM.**—Jan. 24.—For erection of stabling, roller-house, workshops, offices, workmen's dwellings, together with certain other works, including the covering of Hockley Brook, paving yard, &c., Aston Manor. Mr. G. H. Jack, surveyor, Council House, Albert Road, Aston Manor.

**BLACKPOOL.**—Jan. 29.—For erection of a station at South Shore, Blackpool, for the Lancashire and Yorkshire and

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London and North-Western Joint Railways. Mr. R. C. Irwin, Secretary, Hunt's Bank, Manchester.

BOOTLE.—Jan. 21.—For wiring of the baths, library, &c., in Marsh Lane, Bootle, Lancs, for the purposes of electric lighting. Particulars may be obtained at the Borough Electricity Works, Pine Grove.

BREWOOD.—Jan. 20.—For reseating in oak the nave of the parish church. Mr. Ashton Veall, architect, 84 Darlington Street, Wolverhampton.

BRIGHTON.—Jan. 21.—For erection of a shelter for hose-cart and fire-escape at the workhouse, Elm Grove. Mr. B. Burfield, clerk to the Guardians, Parochial Offices, Brighton.

BRISTOL.—Jan. 30.—For enlargement of the petty sessional courts and offices, Bridewell Street, Bristol. Mr. Henry Williams, architect, Imperial Chambers, Corn Street, Bristol.

BURY.—Jan. 20.—For construction of a central tramway dépôt in Rochdale Road, Bury. Mr. Arthur W. Bradley, borough engineer, Bury.

BURY.—Jan. 21.—For erection of gas offices and show-rooms in Broad Street, Bury. Mr. Arthur W. Bradley, borough surveyor, Bury, Lancs.

CANTERBURY.—Jan. 22.—For erection of sanitary conveniences in Burgate Street. Mr. Arthur C. Turley, city surveyor, Tudor Chambers, Canterbury.

CARLISLE.—For repairs and alterations at Orton Hall farm, Great Orton. Messrs. Carrick, Lee & Sons, solicitors, Brampton and Carlisle.

CHELMSFORD.—Jan. 20.—For erection of boundary walls at the union house, Wood Street. Messrs. Chancellor & Son, architects, Chelmsford.

CHELMSFORD.—Jan. 31.—For making, erection and setting to work and maintaining for six months of a 15-b.h.p. oil-engine at their waterworks pumping-station, Ingatestone, Essex. Mr. James Dewhirst, engineer, Engineer's Office, Avenue Chambers, Chelmsford.

COLWALL.—Jan. 21.—For erection of footbridges over the railway at Colwall, Twerton and Hirwain, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, London.

CROMER.—Jan. 22.—For improvements at the West Cliff, Cromer, Norfolk. Messrs. Douglass & Arnott, engineers, 15 Victoria Street, Westminster, S.W.

DROYLSDEN.—For erection of new boiling-house and other alterations to James Robertson & Sons' Ashton Hill Lane Preserve Works, Droylsden, Lancs. Messrs. George & Sons, architects, Old Square, Ashton-under-Lyne.

DUNDEE.—Jan. 27.—For construction of a main sewer, consisting of about 2,170 yards of 18-inch salt-glazed fireclay or stoneware pipes and about 1,664 yards of 15-inch pipes, with manholes, &c., for the drainage of back-lying portion along the north side of the city, for the Town Council. Mr. Wm. Mackison, engineer, Municipal Offices, Commercial Street, Dundee.

FULHAM.—Jan. 27.—For supply of transformers, mains, conduits, lamp-posts and street boxes. Mr. R. M. Prescott, town clerk, Town Hall, Walham Green, S.W.

GOLCAR.—Jan. 21.—For erection of five dwelling-houses, Scar Lane, Golcar, Yorks. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

GRIMSBY.—Jan. 20.—For extension of the plant at the electricity works. Town Clerk, St. Mary's Gate, Grimsby.

GUILDFORD.—Jan. 28.—For alterations and repairs to the double tenement and farm buildings and the erection of an outbuilding at Woodlands farm, Slyfield Green, the sewage outfall for the parish of Stoke. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

HALIFAX.—For erection of boundary walling at Willow Field, Burnley Road. Mr. W. H. D. Horsfall, architect, Tower Chambers, Halifax.

HARTLEPOOL.—Jan. 25.—For erection of a generating station, and the supply and erection of plant, viz. (section 1) erection of buildings; (2) boilers, two of marine type; (3) engines and dynamos, steam, feed and exhaust pipes, valves and other apparatus; (4) storage battery; (5) switch-board; (6) arc lamps; (7) feeder mains, arc-light leads, &c.; (8) arc-lamp columns and brackets; (9) overhead travelling crane. Mr. C. Robson, borough accountant, Hartlepool.

HASTINGS.—Jan. 27.—For erection of galleries in the electric-light station, Earl Street, Hastings. Mr. P. H. Palmer, borough engineer, Town Hall, Hastings.

HAVERHILL.—Jan. 29.—For erection of a house, offices and stores in High Street, Haverhill, Suffolk. Mr. A. Ainsworth Hunt, architect, Sudbury.

HEXHAM.—Jan. 27.—For erection of a main road bridge in masonry and brick over the river South Tyne at Warden,

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ADDRESSES: DARLINGTON, NEWCASTLE-ON-TYNE, SUNDERLAND, MIDDLESBRO' and NORWICH



Hexham, Northumberland. Mr. J. A. Bean, county surveyor, Moot Hall, Newcastle.

HULL.—Jan. 21.—For erection of a junior department in connection with the Chapman Street Board school, Kingston-upon-Hull. Messrs. Gelder & Kitchen, architects, Lowgate, Hull.

HULL.—Jan. 23.—For extension of the electric-light works, Sulcoates Lane. Mr. A. E. White, city engineer, Town Hall, Hull.

HULL.—Jan. 29.—For erection of waggon repairing shops, messrooms, &c., Hessle Road, Hull, for the North-Eastern Railway Company. Mr. William Bell, architect, York.

ILFORD.—Jan. 27.—For supply of copper rail bonds, fixed; stoneware cable conduits, laid and jointed; draw-boxes, &c. Mr. John W. Benton, clerk, Council Offices, Ilford.

IRELAND.—Jan. 20.—For additions and alterations at the Munster Institute, Cork. Inquiries should be addressed to the Office of Public Works, Dublin.

IRELAND.—Jan. 21.—For erection of a central laundry at the workhouse, Belfast. Messrs. Young & Mackenzie, architects, 7 Donegall Square East, Belfast.

IRELAND.—Jan. 22.—For ventilating the infirmary ward at the Limerick workhouse. Mr. H. J. Guinane, clerk, at the Workhouse.

IRELAND.—Jan. 24.—For drainage works, water supply and fire mains, plumbingwork and building works, at the Clonmel workhouse. Mr. Timothy Beary, clerk, Board Room, Clonmel Union.

IRELAND.—Jan. 25.—For erection of schools, Queenstown, co. Cork. Mr. Samuel F. Hynes, architect, 21 South Mall, Cork.

IRELAND.—Jan. 27.—For supplying and fitting-up with machinery, &c., new central laundry at the Belfast workhouse. Messrs. Young & Mackenzie, civil engineers, Belfast.

KING'S LYNN.—Jan. 21.—For supplying and fixing a screw mooring in King's Lynn Harbour. Mr. D. W. Ward, clerk, King's Lynn.

LAMBETH.—Jan. 22.—For pulling-down the Guardians' offices, &c., in Brook Street, Kennington Road, S.E., and the purchase of old materials therein. Mr. W. Thurnall, clerk, Brook Street, Kennington Road.

LEEDS.—Jan. 21.—For repairs to the various schools of the Board during ensuing year. Mr. W. Packer, clerk, School Board Offices, Leeds.

LEEDS.—Jan. 21.—For electrical equipment of the new workhouse and infirmary at Rothwell Haigh, near Leeds. Mr. F. W. Mee, clerk to the Guardians, Union Offices, Hunslet.

LEEDS.—Feb. 8.—For erection of the police station and free library in Harrogate Road and Town Street, Chapeltown. Mr. William H. Thorpe, architect, 61 Albion Street, Leeds.

LEYTONSTONE.—Jan. 22.—For supply of three direct-coupled engines and dynamos and one motor-booster, one battery of accumulators, all engine and battery-room accessories, the whole of the feeders, distribution mains, junction boxes, main and sub-distribution boards, and all wiring, fittings, lamps, &c., for about 1,756 lamps. Mr. Fred E. Hilleary, clerk, Workhouse, Leytonstone, N.E.

LITCHAM.—For rebuilding the King's Arms inn, Litcham, Norfolk. Mr. Louis F. Eagleton, architect, Bank Chambers, King's Lynn.

LITTLE ILFORD.—Jan. 28.—For extension of water mains and the supply of new hydrants, &c., at the City of London cemetery. Mr. H. Montague Bates, clerk to the Burial Board, Guildhall, E.C.

LIVERPOOL.—Jan. 20.—For erection of a caretaker's house and extensions to the county laboratory, Brownlow Street. Mr. Henry Littler, architect, County Offices, Preston.

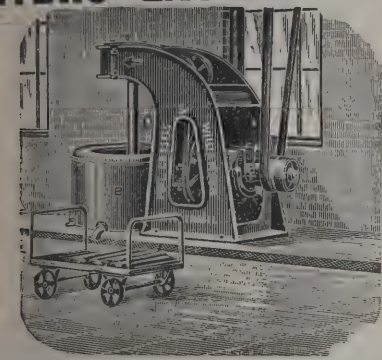
LIVERPOOL.—Jan. 27.—For construction of public baths at Lister Drive, West Derby. Mr. W. R. Court, engineer and chief superintendent, Municipal Offices, Liverpool.

LIVERPOOL.—Jan. 29.—For supply of three-phase high-tension motor-generators, positive and negative boosters, battery-charging boosters, &c., and batteries of accumulators with accessories. The Chairman and Directors, South Lancashire Electric Traction and Power Company, Ltd., 12 St. John's Lane, Liverpool.

LONDON BRIDGE.—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

LUXULYAN.—Jan. 22.—For restoration of Lockingate district church, Luxulyan, Cornwall. Specifications can be seen on application to the Vicar.

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MANCHESTER.—Jan. 21.—For supply, delivery and erection at the Stuart Street generating station of the following switchboards—(a) main high-tension three-phase switchboards at generating station, (b) exciter and auxiliary switchboards at generating station, (c) high-tension three-phase switchboards at ten sub-stations, (d) low-tension switchboards at ten sub-stations. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MANCHESTER.—Jan. 28.—For supply, delivery and erection at their Stuart Street generating station of elevators and conveyors for coal and ashes for the electricity committee. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MELTHAM.—Jan. 30.—For construction of sewage purification works, consisting of bacteria and oxidising beds, aerating channels, and other works connected therewith. Mr. William Carter, clerk, Town Hall, Meltham.

MIDDLESBROUGH.—Jan. 21.—For supply and erection of plant for the extension of the electricity work. Mr. George Bainbridge, clerk, Town Hall, Middlesbrough.

MIDDLETON.—Jan. 21.—For supply of electricity meters. Mr. Frederick Entwistle, town clerk, Middleton, Lancs.

NANTWICH.—Jan. 28.—For erection of a technical institute in Beam Street, Nantwich. Mr. C. E. Davenport, architect, Nantwich.

NEW MILLS.—Feb. 1.—For erection of male and female casual wards, infirmary laundry, and other buildings at the workhouse, Low Leighton, New Mills. Messrs. Garlick & Flint, architects, 5 Terrace Road, Buxton.

NORWICH.—Jan. 24.—For enlargement of the head post office at Norwich. Particulars may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

PAIGNTON.—Jan. 31.—For supply, delivery and laying of about nineteen miles of 15-inch, 9-inch and 6-inch cast-iron water-mains, with sluice valves, air valves, meters, washouts, &c., the erection of a road bridge over the river Dart, and the construction of a covered service reservoir, boundary walls, &c., in connection with the Moorland water-supply contract. Mr. Frederick William Vanstone, engineer, Palace Chambers, Paignton, Devon.

PEGSWOOD.—Jan. 29.—For erection of a passenger station and stationmaster's house at Pegswood, Northumberland, for the North-Eastern Railway Company. Mr. William Bell, architect, Central Station, Newcastle-on-Tyne.

PELAW.—For erection of an employé's dining-room and a block of four cottages at Shields Road, Pelaw, Northumberland. Mr. F. E. L. Harris, architect, 1 Balloon Street, Manchester.

RAUNDS.—Jan. 24.—For erection of Conservative Club at Raunds, Northants. Messrs. Talbot Brown & Fisher, architects, Wellingborough.

ST. AGNES.—Jan. 29.—For taking-down the present cloak-room at the boys' school and erecting a new one, St. Agnes, Cornwall. Messrs. Carder & Carder, 4 Princes Street, Truro.

SALFORD.—Jan. 31.—For erection of new central fire station in The Crescent. Mr. Henry Kirkley, architect, 134 Deansgate, Manchester.

SCOTLAND.—For erection of a house at Longmorn, near Elgin. Mr. R. B. Pratt, architect, County Bank House, Elgin.

SCOTLAND.—Jan. 22.—For enlargement of Juniper Green school, Colinton. Mr. J. A. Carfrae, architect, 3 Queen Street, Edinburgh.

SCOTLAND.—Jan. 22.—For erection of a bandstand in one of the public parks of the city of Edinburgh. Mr. R. Morham, architect, City Chambers, Edinburgh.

SCOTLAND.—Jan. 27.—For erection of a new hospital for infectious diseases at Eskdale. Mr. R. M'George, solicitor, Langholm.

SCOTLAND.—Jan. 27.—For cutting tracks and laying a supplementary main water-supply pipe from Lochornie reservoir to the burgh of Lochgelly, and other works. Messrs. Buchanan & Bennett, C.E., 12 Hill Street, Edinburgh.

SCOTLAND.—Feb. 7.—For erection of a tramcar dépôt at Oswald road, Kirkcaldy. Mr. Wm. L. Macindoe, town clerk, Kirkcaldy.

SHEFFIELD.—Jan. 20.—For pulling-down and re-erection of buildings at the corner of Change Alley and Norfolk Street. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SHEFFIELD.—Jan. 28.—For erection of stables, engine-house, &c., at Bamford, about twelve miles from Sheffield, for the Derwent Valley Water Board. Mr. Edward Sandeman, engineer, Bamford.

SOUTH HETTON.—For erection of shops at South Hetton, Durham. Mr. Robert Hogg, Fatten Pasture, Murton Colliery.

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**STAMFORD.**—Feb. 17.—For erection of an engine-house, cottage and outbuildings thereto, in Albert Road. Mr. J. B. Everard, engineer, 6 Millstone Lane, Leicester.

**STANLEY.**—For erection of semi-detached villa at Stanley, Durham. Mr. Wm. Forster, architect, Stanley, R.S.O.

**STRATFORD-UPON-AVON.**—Jan. 27.—For erection of a cow-house and pigsties at Comyns Park Farm, and for painting and repairs at King's Lane cottages and waterworks cottage, Snitterfield. Mr. Roden Dixon, borough surveyor, Municipal Offices, Sheep Street, Stratford-upon-Avon.

**STYAL.**—Jan. 30.—For erection of cottage homes for 120 children at Styal, Cheshire. Mr. James B. Broadbent, architect, 15 Cooper Street, Manchester.

**WALES.**—Jan. 20.—For supply and erection of an electric-lighting plant for the new dock at Llanelly. Mr. J. Vaughan Stewart, Harbour Offices, Llanelly.

**WALES.**—Jan. 20.—For completion of tower of Bettws-y-Coed Church. Messrs. Austin & Paley, architects, Castle Park, Lancaster.

**WALES.**—Jan. 20.—For erection of the infectious diseases hospital at Llandough, Penarth. Mr. Edgar I. Evans, surveyor, Arcade Buildings, Penarth.

**WALES.**—Jan. 21.—For erection of a villa residence at Llangollen. Mr. Denny, architect, Llangollen.

**WALES.**—Jan. 25.—For alterations and additions to Ystalyfera County school, Glamorgan. Mr. W. W. Williams, architect, Island Chambers, 63 Wind Street, Swansea.

**WALES.**—Jan. 25.—For erection of a detached house at Ebbw Vale. Mr. H. Waters, architect, Beaufort.

**WALES.**—Jan. 25.—For erection of twelve houses at Turberville Road, Llwynypia, Rhondda Valley. Mr. W. C. Pritchard, Glamorgan Offices, Llwynypia.

**WALES.**—Jan. 29.—For erection of a large mixed school with offices, boundary walls, &c., at Aberfan, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect, 50 High Street, Merthyr.

**WALES.**—Jan. 31.—For erection of school at Penygraig, near Pontneathvaughan, Glynneath. Mr. Thomas Roderick, architect, Ashbrook Honse, Clifton Street, Aberdare.

**WALES.**—Feb. 1.—For construction of tanks, flushing-chambers, and for providing and laying about 3,349 lineal yards of 4-inch and 211 lineal yards of 3-inch cast-iron mains and other works, for the Gwyrfai Rural District Council. Mr. E. Evans, 8 Castle Street, Carnarvon.

**WALES.**—Feb. 3.—For erection of 100 houses at Pen-y-darren, Merthyr Tydfil. Mr. T. Aneuryn Rees, clerk, Town Hall, Merthyr.

**WALES.**—Feb. 7.—For erection of a house (29 feet frontage) at Crumlin, Mon. Mr. R. L. Roberts, architect, Abercarn.

**WALES.**—Feb. 11.—For erection of a gardener's cottage at the Rest Convalescent Home, Porthcawl. Mr. S. H. Stockwood, solicitor, Bridgend.

**WEST BROMWICH.**—Jan. 29.—For supply of boilers, feed pump and piping, steam dynamos and condenser, boosters, traction switchboard, and the extension of lighting switchboard. Mr. J. H. Wray, borough electrical engineer, Electricity Works, Black Lake, West Bromwich.

**WESTMORLAND.**—Jan. 27.—The South Westmorland Rural District Council invite tenders for (1 and 2) 16 tons of cast-iron water-pipes and a few bends; (3) construction of a 100,000-gallon concrete tank, and laying half a mile of 3-inch water-pipes in connection at Natland. Mr. Alexander Milne, clerk, Kendal.

**WORKINGTON.**—Jan. 22.—For pulling-down and rebuilding three sets of business premises, Pow Street, Workington. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

**WREXHAM.**—Feb. 1.—For erection of dwelling accommodation for the horsekeeper, &c. Mr. Thomas Bury, town clerk, Guildhall.

**WREXHAM.**—Feb. 18.—For reconstruction of the main lantern lights along the roof of the butchers' market, &c., and reconstruction of market sanitary arrangements and conveniences. Mr. Thomas Bury, town clerk, Guildhall.

THE appearance of Unter den Linden and other principal streets in Berlin will be shortly much improved by their being repaved with asphalt, a municipal reform for which it is announced that a sum of 175,000*l.* has just been granted. Hitherto, as compared with the handsome and fashionable streets of Paris and even "ugly and dirty" London, the famous Berlin thoroughfare has distinctly suffered by the retention in the carriageways of the old-fashioned and unsightly, if pre-eminently durable, method of paving. In future Unter den Linden should be a thoroughfare of which all Germans may be rightly proud.

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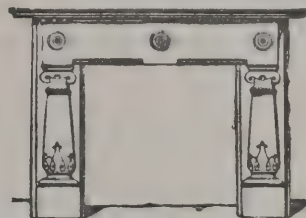
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For street works in the borough. Mr. W. J. NEWTON, C.E., borough engineer.

G. CUNLIFFE & SON (*accepted*).

**BOLTON-UPON-DEARNE.**

For street works in Beevers Street, Goldthorpe, Bolton-upon-Dearne, Yorks. Mr. J. W. WILSON, surveyor.

M. Grantham	£560	0	0
G. Houghton	540	0	0
J. P. Searle	341	7	9
B. ROBERTS, Doncaster ( <i>accepted</i> )	314	19	2

For street works in Lockwood Road, Goldthorpe, Bolton-upon-Dearne, Yorks. Mr. J. W. WILSON, surveyor.

M. Grantham	£711	0	0
G. Houghton	645	0	0
B. ROBERTS, Doncaster ( <i>accepted</i> )	469	15	4
J. P. Searle	391	5	6

**BRENTWOOD**

For construction of sewage tanks, filter-beds, engine-house and other works at Brentwood sewage works. Messrs. JONES, engineers, Parliament Mansions, Westminster, S.W.

Pedrette	£3,987	0	0
Gibb & Co.	3,667	0	0
Neave & Son	3,536	0	0
Bell	3,221	0	0
Jackson	3,000	0	0
Cunliffe	2,893	0	0
C. Ford	2,830	0	0
Coxhead	2,603	0	0
Wilson-Border	2,502	0	0
Wheeler	2,477	0	0
Felkin & Watson	2,450	0	0
HARRIS & ROW, Shoeburyness ( <i>accepted</i> )	2,271	0	0

**CHINGFORD.**

For erection of a house, Rowden Park Estate, Chingford. Mr.

T. WILSON, architect, 34 New Bridge Street, E.C.  
WOOD (*accepted*) £750 0 0

**CARDIFF.**

For widening the Hayes Bridge, the widening of the North Road Bridge, and the reconstruction of the East Wharf Bridge. Mr. W. HARPUR, borough engineer.

F. Ashley	£5,026	1	7
J. Allan & Sons	4,805	4	3
Lattey & Co, Ltd.	4,678	10	8
E. Turner & Sons	4,484	0	1
D. W. Davies	3,824	0	0
W. T. Morgan	3,760	13	8
C. DAVIES, Court Road ( <i>accepted</i> )	3,576	3	5

**DERBY.**

For enlargement of Derby head post-office, for H.M. Office of Works, &c.

J. W. Smith	£5,087	0	0
J. Cooper & Son, Ltd.	4,175	0	0
R. M. Hughes	3,791	0	0
Ford & Co.	3,764	16	0
Walker & Slater	3,678	0	0
R. C. Greaves	3,655	0	0
J. H. WILLIAMSON ( <i>accepted</i> )	3,613	0	0

A. Allowance for old materials.

**DOVER.**

For pulling-down and rebuilding the Dewdrop inn, Tower Hamlets Street. Mr. A. H. STEELE, architect, Effingham Lawn, Folkestone Road, Dover. Quantities by the architect.

Keeler Bros.	£1,168	7	2
Turner & Co.	1,075	0	0
Lewis & Sons	1,060	0	0
Goldsmith & Tapley	1,050	0	0
Brisley & Co.	1,031	1	8
Beaufoy	998	0	0
Austen & Lewis	988	0	0
Stokes	970	0	0
Francis	962	0	0
Griggs*	940	0	0

\* Recommended for acceptance.

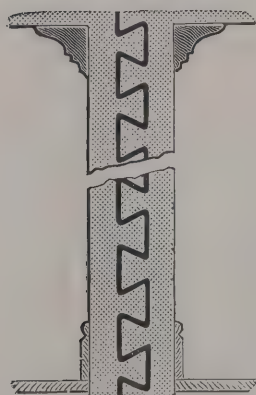
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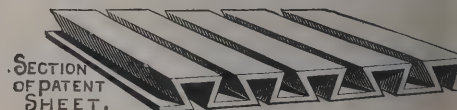
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C. Bloomfield	1,162	0	0
Adams	1,137	15	7
E. J. BETTS, Enfield Highway (accepted).	1,095	0	0

HARROGATE.

For erection of a house and stable at Harrogate. Messrs. ADKIN & HILL, architects, 10, 11 and 12 Prudential Buildings, Bradford.

Accepted tenders.

S. Mounsey & Son, Guiseley, mason.
T. T. Taylor & Son, Bradford, joiner.
T. E. Bedford & Son, Leeds, plumber.
J. Smithies, Bradford, tiler.
J. W. Sugden, Bradford, plasterer.

HEMEL HEMPSTEAD.

For street works in Cemetery Road and South Hill Road. Mr. WALTER R. LOCKE, borough surveyor.

Cemetery Road.

Wallace & Inns	£660	0	0
G. Powdrill	550	0	0
H. Brown	537	0	0
Felkin & Watson	521	16	8
G. Bell	498	0	0
T. Free & Sons	466	0	0
H. Bentham	443	0	0
H. WILLIAMS, Harpenden (accepted)	427	0	0

South Hill Road.

H. Bentham	536	0	0
Wallace & Inns	527	0	0
Felkin & Watson	471	0	0
H. Brown	425	0	0
G. Powdrill	375	0	0
T. Free & Sons	360	0	0
G. Bell	356	0	0
H. WILLIAMS (accepted)	295	13	0

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A. W. RICHARDSON & Co., Boar Lane (accepted)	£349	15	11
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For cleaning and painting the interior and exterior of the Hunslet Baths.

JAGGAR BROS, Hunslet (accepted)	£79	0	0
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Redhill (accepted)	187	10	0
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G. Trollope	209,757	0	0
J. Mowlem & Co.	199,102	0	0
J. Shillitoe & Son	191,000	0	0
Perry & Co.	189,300	0	0
McCormick & Sons	185,581	0	0
Leslie & Co., Ltd.	175,678	0	0
H. Lovatt	175,540	0	0

For alterations and additions to the infirmary kitchen, Wandsworth and Clapham Union. Mr. CECIL A. SHARP, architect, 11 Old Queen Street, Queen Anne's Gate, S.W.

Huntley Bros.	£597	0	0
A. Leather	567	0	0
J. J. Richards	490	0	0
F. Clarke	486	0	0
R. A. Jewell	444	0	0
H. DAKIN & Co. (accepted)	347	12	0

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J. Norris & Sons	18,340	50
General Builders, Ltd.	17,997	100
J. Mowlem & Co.	17,979	—
Martin, Wells & Co, Ltd.	17,399	10
Kirk & Randall	16,996	30
J. F. Robey	16,980	25
T. E. Mitchell	16,950	—
W. Norton	16,835	20
J. Christie	16,640	—
Sabey & Son	16,451	20
F. G. Minter	16,360	—
A. W. Spencer	16,175	23
W. H. Lorden & Son	16,000	—
J. Simpson & Son	15,977	23
H. L. Holloway	15,800	30
Hobbs Bros.	15,680	35
Campbell, Smith & Co., Ltd.	13,287	100
Braid, Pater & Co.	12,737	180

A. Old materials.

**NANTWICH.**

For works, appliances and materials incidental to the public water-supply of the township of Ridley, Nantwich. Mr. J. A. DAVENPORT, engineer, 152 Hospital Street, Nantwich.

*Accepted tenders.*

Cochrane &amp; Co., Woodside Ironworks, near Dudley, iron pipes and specials, per schedule of prices.

J. Blakeborough &amp; Son, Brighthouse, hydrants, valves and fittings, per schedule of prices.

*Laying mains.*

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J. Dyson	320	0	0
D. Young	299	14	0
J. Balmforth	280	0	0
T. Rowland	242	6	3
J. Dodd	103	10	0
S. Wood, Calveley, near Tarporley (accepted)	99	15	0

**MARKET HARBOROUGH.**

For levelling about six acres of ground for the new cattle market, forming road foundations, laying sewers, water and gas mains, and widening the river. Mr. HERBERT G. COALES, surveyor.

*Contract No. 1.*

G. H. Eastwood	£3,635	0	0
T. Hickman	3,420	0	0
W. Moss & Sons, Ltd.	3,315	15	0
C. Ford	3,289	0	0
Haycock & Sons	3,081	2	0
S. E. Lucas	2,992	0	0
Johnson & Langley	2,966	2	1
F. Barlow	2,873	0	0
A. Jewell	2,846	10	0
A. Wright	2,803	9	7
G. L. Martin	2,790	0	0
J. C. Wingrove	2,631	0	0
G. F. Tomlinson	2,579	0	0
T. PHILBRICK, Leicester (accepted)	2,540	17	0

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F. & H. F. Higgs	25,700	0	0
Martin, Wells & Co., Ltd.	25,687	0	0
F. G. Minter	25,450	0	0
A. N. Coles	25,310	15	3
Collier & Catley	24,322	0	0
W. Pattison & Sons	23,975	0	0
T. H. Kingerlee & Sons	23,727	0	10
Patman & Fotheringham, Ltd.	23,456	0	0
McCarthy E. Fitt	22,695	0	0
A. J. Colborne	22,213	10	11
A. FAULKES, Loughborough (accepted)	21,541	0	0

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PENGE.

For alterations and additions at Ashburton House, Beckenham Road, and erecting billiard saloon and lecture hall in rear.			
W. Wallis	£1,560	0	0
Turtle & Appleton	1,548	0	0
Coffin & Son	1,447	0	0
W. Keys	1,322	0	0
HEATHFIELD, Beckenham (amended) (accepted)	1,211	5	0
W. Pearce (amended)	1,156	10	0

ST. BUDEAUX.

For erection of a school and boundary walls on the site between Honicknowle and Crownhill, St. Budeaux, Cornwall. Mr. T. R. KITSELL, architect, 1 George Street, Plymouth.			
Roach & Lovell	£5,388	0	0
W. T. Stevenson	4,650	0	0
J. Paynter	4,545	0	0
W. J. Goad	4,477	0	0
W. E. Blake	4,373	0	0
F. C. Ambrose	4,311	0	0
A. N. Coles	4,176	0	0
G. Hoskin	4,100	0	0
Bennett & Quick	3,836	0	0
Allen & Tozer	3,731	0	0
A. Andrews	3,610	0	0
A. J. Jewell	3,535	0	0
J. DAVY, Plymouth (conditionally accepted)	3,450	0	0

SCOTLAND.

For bank and agent's house in Banchory, for the Town and County Bank, Limited, Aberdeen. Mr. ROBERT G. WILSON, architect. Quantities by architect.			
G. Wilson, Banchory, masonwork.			
G. Merson, Banchory, slaterwork.			
G. Chrystal, Banchory, painterwork.			
J. Henderson, Aberdeen, carpenterwork.			
J. Bannochie & Sons, Aberdeen, plasterwork.			
Thorn & Strachan, Aberdeen, plumberwork.			
Amount of tender, £1,500.			

SHEPTON MALLET.

For works connected with the new water supply, Shepton Mallet, Somerset. Mr. WILLIAM PHELPS, engineer.			
S. Dodimead	£5,572	17	9
R. A. Crowe	5,548	14	5
Wilkins & Son	4,624	2	3
H. Sparrow	4,449	6	5
S. Ambrose	4,427	7	6
Guppy & Chant	4,234	2	0
Wright & Son	4,138	10	7
Wills & Son	4,089	13	8
O. J. Allen	4,058	1	10
H. C. Brixey	3,864	16	7
SMITH & MARCHANT, Shepton Mallet (accepted)	3,781	2	0

SOUTHMINSTER.

For laying about 160 yards of 3-inch water-main at Pantile Hill, Southminster, Essex. Mr. H. G. KEYWOOD, engineer, Maldon.			
T. Smithdale & Son	£77	0	0
F. Stammers	37	12	0
A. DOWNING, Southminster (accepted)	33	10	0
Harris & Rowe	32	0	0

WALES.

For seating, pulpit, choir stalls, reading-desk at Bryn Church, near Port Talbot. Mr. FRANK B. SMITH, architect, Port Talbot.			
R. Bridgeman	£587	5	0
Lattey & Co.	385	0	0
Stephens, Bastow & Co.	369	0	0
Parkstone Steam Joinery Co.	296	0	0
Parker's Steam Joinery and Cabinet Co., Ltd.	268	0	0
J. PHILLIPS, Altrincham (accepted)	265	0	0

For erection of an infant school at Kingsland, Holyhead.			
E. R. & J. OWEN, London House, Holyhead (accepted)	£1,074	0	0
For street works in Duffryn Street and Campbell Terrace, Mountain Ash.			
J. John, Cliff Cottage, Mountain Ash	£218	17	6

WINNINGTON.

For erection of a caretaker's house at the sewage outfall works at Winnington, Northwich.			
S. APPLETON, Northwich (accepted)	£340	0	0

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#### SCOTLAND.

For erection of the new offices at the Craigs school, Dundee.

#### Accepted tenders.

J. & M. Fotheringham, mason.

Wm. McDougall & Son, joiner.

T. Blair, slater.

J. & J. Duff, plumber.

R. Foster, plasterer.

The estimates amount to £257 3s. 6d.

#### ELECTRIC NOTES.

THE promoters of the London and Brighton Electric Railway have deposited the sum of 370,000*l.* as a guarantee that the Bill will be proceeded with in the ensuing session. The Examiner of Petitions (Mr. Campion) will hear the parties or memorials in opposition to private Bills on Saturday next. It is expected that the opposition of the Brighton Railway Company and the landowners on the route of the proposed railway will occupy a considerable time. Probably the hearing will take place on the 24th inst.

IN connection with the celebrations on the occasion of M. Waldeck Rousseau's visit to St. Etienne on the 12th inst. and the opening of the new prefecture buildings, the French representatives of Electric Lighting Boards, Ltd., received from the Government the order for the electrical illuminations, the extent of the contract being 1,250*l.*, and including as many as 4,000 lamps. A further important contract has also been obtained by the French representatives of Electric Lighting Boards, Ltd., from the Paris Illumination Company, comprising no less than 30,000 feet of flexible cable, 1,000 superficial feet of boards and 15,000 lamps.

THE Leicestershire and Warwickshire Electric Power Bill, which is to be proceeded with in the coming session of Parliament, provides for the erection of generating stations in the counties of Warwick and Leicester for the supply of electrical energy to authorised undertakers, but the promoters of the company have also inserted a clause in the Bill to the effect that nothing in the Act shall prevent them from applying for provisional orders to supply electricity for domestic and lighting purposes. The proposed measure has already been

mentioned at the meetings of several of the local governing bodies of Warwickshire comprised in the area to be covered by the Bill, and one of these—the Leamington Town Council—has appointed a committee to consider the matter. The generating stations are proposed to be erected at Newbold-on-Avon, near Rugby; at Whitacre Station, near Shustoke; and at Leek Wootton, near Warwick. The area is an extensive one, the unions it comprises including Stratford-on-Avon, Southam, Rugby, Meriden, Coventry, Foleshill, Lutterworth, Nuneaton, Atherstone, Tamworth and that portion of the Aston Union not comprised in the county borough of Birmingham. The capital of the company is to be 750,000*l.* in 75,000 shares of 10*l.* each.

WITH admirable foresight the Corporation of Wrexham acquired some few years since suitable property on which to establish a dépôt providing for, among other things, the supply of electricity for lighting and other purposes. This property, the Willow Brewery to wit, has cost comparatively very little in its conversion, and the Corporation have now a very complete installation, including an electric station, for which a destructor supplies the power required, baths, stables, and accommodation for all the rolling stock. The destructor consists of four grates, combustion-chamber, boiler, regenerator and hot-air conduit. The furnaces are fed by hand. The regenerator is constructed of cast-iron tubes, arranged to heat the primary air of combustion to a temperature of about 350 degs. Fahrenheit, by means of the waste gases passing through them. The furnace-chamber is common to all four grates. The ash-pit is divided into four parts by brick division-walls. Each ash-pit division is enclosed and has a separate steam jet-blower fixed to internal cast-iron up-takes and pipe connections, enabling the working of each single grate to be regulated to suit the varying quality of the refuse and the thickness of the flues, without in any way impeding or affecting that of the other grates. The boiler up-takes are connected with the hot-air conduit of the regenerator. One grate is cleaned and charged while the other is in a state of incandescence, and the gases from the fresh charge mingle with those from the incandescent flues and become innocuous. The gases from each furnace pass through an opening at the back into the combustion-chamber, where dust is disposed of, through and round the boiler in the usual way, and finally through the regenerator tubes and main flues. The cold air enters at the back of the regenerator, circulates round the tubes, where it becomes

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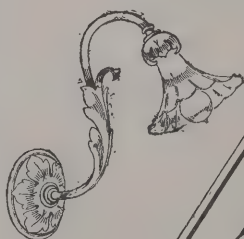
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## ILLUSTRATIONS.

CATHEDRAL SERIES.—RIPON: THE CHOIR TO EAST WINDOW.

THE DAVID LEWIS HOSPITAL, LIVERPOOL.

T. MARY'S CHURCH, ECCLESTON, FROM EAST END OF SOUTH AISLE, LOOKING INTO CHANCEL.

COTTAGE HOMES, DRYMEN, N.B.

eated, and passes along the conduit to the furnace. The consumption of refuse is at the average rate of forty tons in twenty-four hours, and the heat generated passes to a steel wo-flued Lancashire boiler, which works at a pressure of 60 lbs. Throughout last month, except on Sundays and during the Christmas holidays, the whole of the steam for running the station by electricity was generated exclusively from the refuse of the town, coal being used only on holidays, when the dustmen are not working. The units of electricity generated daily ranged from about 400 to over 900, and the units generated per ton of refuse averaged nearly 38.

## TRADE NOTES.

MACKAY'S patent direct-acting ventilators, of an ornamental design, supplied by Messrs Cousland & Mackay, ventilating engineers, Glasgow and Manchester, have been used for the ventilation of the new Board schools, Glyn Neath, Wales.

THE Corporation Temporary Hospital, Southport, is being warmed and ventilated by means of Shorland's patent double-fronted Manchester stoves with descending smoke flues by Messrs. E. H. Shorland and Brother, of Manchester.

MESSRS. D. WITT & CO., of Drummond Street, N.W., draw our attention to the fact that they have just imported a very large parcel of knife-cut and sawn-cut Rio rosewood veneers of exceptionally fine colour and figure, and some very fine parcels of knife-cut Bombay rosewood, of which they are the sole importers, and claim to be the largest holders in the world. They also tell us that they have some good lines in plank walnut and Burr walnut veneer, very reasonable in price, and excellent in figure and colour.

## BUILDING AND BUILDERS.

MR. G. T. HINE'S plans have been accepted for the erection, at a cost of 39,600*l.*, of the proposed extensions to the Dorset County Asylum.

MR. A. A. G. MALET, A.M.I.C.E., inspector of the Local Government Board, held an inquiry at Forest House, Chester, regarding an application of the Chester Rural District Council for sanction to borrow 26,000*l.* for the purpose of sewerage and sewage disposals for the townships of Bache, Christleton, Great Boughton, Newton-by-Chester and Upton (including the construction of works in the city of Chester), and for sanction to the communication of the sewers of the Rural District Council with those belonging to the city of Chester. The estimated cost was 12,027*l.* 16*s.*, and the loans to be asked for were as follows:—Bache, 450*l.*; Newton, 6,800*l.*, and Upton, 6,192*l.* There was practically no opposition to the scheme.

THE annual meeting of the York Master-builders and Contractors' Association was held on the 10th inst. at the Old George Hotel, Pavement, the president (Councillor G. Mansfield) in the chair. The annual report, which showed a very satisfactory year's working, was read and adopted. Councillor Mansfield was unanimously re-elected president, and Mr. C. Prudames was re-elected vice-president. The Association has been honoured by the election of the president (Councillor Mansfield) to the position of President of the Yorkshire Federation of Building Trades Employers. The thanks of the Association were accorded to the president, vice-president and treasurer for their services during the past year.

A BRICKLAYER named Alfred Ashton, of Frederick Street, Walsall, has had a remarkable escape from death. He was working on the erection of a new chimney stack at the works of Messrs. Beebee, curriers, Green Lane, and when being drawn up he by some means lost his hold and fell a distance variously estimated at from 50 to 70 feet. His fellow workmen expected the consequences to be very serious, but they found the man alive, and at once took him to the hospital. He did not stay there, the statement of his friends being that after waiting for an hour and a half he had not been seen by a doctor, and they decided to obtain aid elsewhere. They accordingly removed him home, and called in Dr. Martland, who found that although he was suffering severely from shock no bones appeared to be broken. The circumstances generally were subsequently a theme of much comment.

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It is proposed to erect a new block of buildings, to be called the "King Edward VII. Home for Nurses," adjoining the main building of the North Staffordshire Infirmary, at Stoke-on-Trent. The building is to accommodate fifty nurses, and is to be joined to the infirmary by a covered way. It is intended as a memorial of the Coronation year of the King, who, with his Consort, as Prince and Princess of Wales, laid the foundation-stone of the main building of the infirmary in 1866. The cost is estimated at 10,000*l*.

An alarming accident occurred about noon on Wednesday in Liverpool. An iron girder about 20 feet in length was being hoisted by a crane into position at a new building being erected at the corner of Dale Street and North John Street when it slipped from the chains and dropped a distance of nearly 50 feet on to the roadway in Dale Street. In falling the beam dropped across the electric tram wire, snapping it and causing a flash of great brilliancy. At the time of the occurrence the street was crowded with pedestrian and vehicular traffic, but fortunately no one was injured. For some time traffic was entirely stopped.

### VARIETIES.

A SCHOOL, erected by the Dunfermline Burgh School Board at a cost of between 7,000*l*. and 8,000*l*., has just been opened.

At Birmingham on Monday evening Sir John Holder, Bart., gave a banquet at the Grand Hotel in celebration of the completion of the work of the general and building committees of the new General Hospital.

At a meeting of the Harrogate Town Council on Monday evening it was resolved to invite competitive designs for a new town hall, the cost of the building not to exceed 40,000*l*., and it was decided to offer prizes of 150*l*., 100*l*. and 75*l*.

THE Duke of Norfolk has offered to pay the local Town Council a sum of 31,000*l*., and to present them with 48 acres of land in an adjoining parish, in order to secure possession of a portion of the corporate property of Arundel, so as to preserve the view from Arundel Castle. The offer has been accepted.

SCHOOLS have been opened at Sutton Coldfield in connection with the Congregational church. They have been erected by Messrs. W. Lee & Son, of Aston, from the plans of Mr. Harry H. Reynolds, architect, Birmingham and Sutton

Coldfield, at a cost of 2,500*l*., and will afford accommodation for 350 scholars.

WITH the sale by Messrs. Douglas Young & Co. on the 22nd inst. of the corner site adjoining the "Old Bell" in Fleet Street, the important improvement at this end of the thoroughfare will be completed. The erection of modern buildings on these sites is removing all traces of the past in this most interesting part of Old London.

THE sexton of Holy Trinity Church, St. Anne Street, Liverpool, was passing the building on Wednesday morning when he heard a tremendous crash, and, rushing into the church, found that a portion of the roof had fallen in as the result of a fire. The edifice, which was built in 1792, was most substantially constructed, the walls being of great thickness. Unfortunately one of the principals was built nearly into the flue, and this became overheated. The woodwork at the top of the wall caught fire, and the end of the fallen principal and other portions of the woodwork were gradually charred, and smouldered away until there was no support left. The damage is estimated at 500*l*.

AT Barnsley Town Council on the 14th inst., Ald. Raley, chairman of the water committee, made an important statement on the position of the Midhope water scheme. The amount the Council were authorised to borrow under their Act was 185,657*l*., which included 15,657*l*. for Parliamentary expenses. Up to last September they had expended 164,934*l*., leaving 20,723*l*. still unexpended; and at that time it was estimated that the total amount required to finish the work was 122,360*l*. Towards that sum they had certain sums in hand, &c., which brought the amount actually required for waterworks to 85,637*l*.; but by their agreement with Sheffield they had to pay 25,837*l*., so that the total amount now required was 111,474*l*. This increased expenditure, Mr. Raley remarked, was due to a variety of causes—rise in prices since 1894, enlargement of puddle-trench, &c. Notwithstanding the largely increased cost, he was very hopeful that the reservoir would be provided without having cost the ratepayers a single penny. Mr. Foulstone said the Council's water estimates were like the Government's war estimates.

At a special meeting on Tuesday evening the Colwyn Bay Urban Council unanimously resolved to promote in the ensuing session of Parliament a Bill empowering them to spend 135,000*l*. on sea defences, promenade works and a scheme of sewerage, this sum being exclusive of the 54,000*l*. due in respect of the gasworks purchase. The proposed Bill con-

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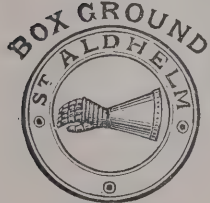
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emplates giving the Council control over advertisement  
ardings, which threaten to become an eyesore to visitors,  
d also to give them power to advertise the attractions of  
olwyn Bay.

A LANDSLIP, apparently the result of the recent flooding,  
as occurred at Roslin Castle. The castle, as numberless  
ourists are aware, is built on a knoll, the east side of which  
neers down in a precipitous escarpment to the river, whilst  
the western side slopes down at what engineers would consider  
an angle of safety. The numerous large stones brought to  
ght by the slip would appear to have been placed in the  
ground to give it solidity, and the trees which grew upon the  
surface testified to a security which had not been disturbed for  
considerable period. At the foot of the slope is a bridge  
which connects the path from Roslin Bleachfield with that of  
the castle and to the village itself. Commencing at the walls  
of the castle and extending down the slope in a V form, the  
lip was stayed by a fence at the foot, but not before it had cut  
off communication at the bridge, altered the appearance of the  
landscape, and left the ground in a ragged and unsightly con-  
dition. The trees shared the fate of the moving earth, and  
they have been utilised as a stockade to prevent further slip-  
ping. A temporary bridge has also been joined to the existing  
bridge, but much requires to be done before the former amenity  
of the castle environment is restored.

AT Birkenhead on Saturday afternoon the effective and  
spacious drill hall, which has been erected in Grange Road  
West for the accommodation of the 1st V. B. the Cheshire  
Regiment, was opened with considerable ceremony. It is built  
of grey stock bricks, with red-faced bricks and stone dressings.  
The site has a frontage to Grange Road West of 168 feet,  
and extends backwards a distance of 240 feet. The axis of the  
drill-hall lies north and south, the front being kept close  
up to the road, so as to leave as large an open space  
as possible at the rear for parade and drill purposes.  
A wide central porch gives access to the drill-hall, which  
measures 153 feet long by 75 feet wide. The floor is paved  
with wood, which is a distinct and most important improve-  
ment upon the stone floor of the old drill-hall. The place will  
be well lighted from the roof by electric arc lamps. On the  
west side of the hall are arranged rooms for commanding  
officer and adjutant (with separate entrances), officers' room,  
cloak and dressing-room, orderly-room, also large recreation-  
rooms, with store and kitchen adjoining. On the east side is

the armoury, lavatory accommodation for men, and cottage for  
permanent staff-sergeant. The hall is almost double the size  
of the old drill-shed in Park Road South, and will permit the  
drilling of a small battalion of five or six hundred men within  
its walls. The place is heated by hot air, and everything has  
been done to make it as comfortable as possible. The build-  
ing has been erected by Mr. Richard Allen, Birkenhead, from  
the design of Messrs. Morter & Dobie, architects, Liverpool.

WHILE a workman employed at St. Thomas's Mill, near  
Stafford, was engaged in digging a grave for a heifer which  
had died he came across two large stone coffins containing  
skeletons, which were lying face downwards, and which were  
in a fairly good state of preservation. Formerly a priory of  
Black Canons existed at the place, it having been built in  
honour of Thomas à Becket, the martyred Archbishop of  
Canterbury. The fabric of the priory has long since disap-  
peared, and only fragments of the ancient building are now  
to be seen. The priory was founded by Richard Peche, Bishop  
of Lichfield, whose remains are said to have been buried there.  
It is conjectured that the place where the stone coffins were  
found, at the rear of the present house, was the priory  
cemetery. The priory was dissolved in the reign of  
Henry VIII, when its gross revenues were estimated at 198*l*.  
per annum. The priory was dismantled and given away by the  
king, and in later years the premises as they now exist have  
been used as a cotton mill and now as a corn mill, power for  
driving the machinery being supplied by water drawn from  
the river Sow. The coffins, which have since been covered  
up, were about 2 feet below the surface of the ground.

THE new Council-house and public offices at Sparkhill, for  
the parish of Yardley, were formally opened on Wednesday.  
The building, including site and equipment, which has been  
erected at a cost of 16,000*l*., adjoins the Sparkhill police station.  
It is in the modern Renaissance style, with the introduc-  
tion of a slight Tudor feeling. It is of brick, with stone  
dressings, stone mullion windows, stone cornices and  
Cotswold stone tiled roof. There is a gable at each end,  
whilst the central portion is relieved by a circular bay  
running up to the roof. At the north end is a well-designed  
clock tower, about 80 feet high, in which, by the generosity of  
Mr. W. H. Barber (who, it will be remembered, was the donor  
of the Queen's statue in Victoria Square, Birmingham), a clock  
has been placed. This links the police station, as it were, with  
the new offices, making one compact block of public buildings.

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There are two entrances at the front. One communicates with the main staircase leading to the council chamber, and the other is conveniently adapted for visitors to the surveyor's department. On the ground-floor there are eight well-appointed offices. The rate collectors will be accommodated in two offices. A stone staircase leads to the first floor, and opens on to a long corridor, broken into bays by piers and pannelled ceiling, and running the whole length of the council chamber and committee-rooms. The chamber, which measures 50 feet by 27 feet, has the appearance of a baronial hall. The roof is open-timbered, and the apartment is well lighted by stone mullioned windows and leaded lights facing Stratford Road, and a line of clerestory windows, filled with stained glass, on the opposite side. The thoroughness with which all departments are to be centralised is emphasised by the extensive buildings at the rear of the main block. Entering from Court Road is the dépôt comprising fire station, mortuary, stabling, workshops, mess-room for the firemen, &c. The fire station, the caretaker's house, and all the other buildings are well-appointed and thoroughly equipped. The buildings are heated on the low-pressure system, and by radiants. Provision has been made for electric lighting, but for the present gas will be used.

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A NEW catalogue and price lists have reached us from Berkefeld Filter Company, Oxford Street, to whose improved germproof filter they have given the distinguishing name "The Tubor." Of the great purifying qualities of this extremely simple filter we have had occasion several times to speak.

THE Thornton-Pickard Manufacturing Company, Ltd. announce that their new abridged catalogue is now ready. It contains brief particulars of many novelties which they are introducing for the coming season and a complete list of the reduced prices of shutters.

### NEW CATALOGUES.

THE larger portion of the comprehensive volume issued by the St. Pancras Iron Work Company, Ltd., is devoted to the illustrated description of their well-known stable fittings and appliances, particulars of every variety of which for stable, harness-room, loft or yard, are fully given, including paving, drainage, furniture, heating and ventilation. Although, however, stable fittings have gained for this company a world-wide reputation, they do not by any means exhaust the list of their productions, which embrace most ingenious iron staircases for interior and exterior use, wrought-iron doors and roofs, plain and highly ornamental gates, grilles and balusters, horticultural buildings, porches and awning, pavement-lights, and in fact everything into the manufacture of which iron enters as an element. In all cases the design is skilful, and consequently the approval of many architects has been secured by the St. Pancras Iron Work Company.

THE General Electric Company, Limited, have sent us their illustrated price list of telephones for electric traction

### SOUTHAMPTON DOCKS IMPROVEMENTS.

WORKS of considerable extent, for some time in progress, are now approaching completion at Southampton Docks, to the accommodation of which they will form a large and much needed addition. They are being carried out by Messrs. John Aird & Co., and are destined to be used as cattle wharves and cold storage accommodation. At almost the extreme end of the docks—on the south-west, or Test, quay—a huge building is in course of erection, and is rapidly approaching completion which must be a most important factor in connection with the meat trade of the country in view of the decision of the Board of Agriculture that they are prepared to approve of the establishment of a foreign animals' wharf at Southampton, and that they will issue an order to that effect so soon as arrangements have been made to the satisfaction for landing and slaughtering, &c., foreign animals. This great building will provide an immense amount of accommodation for the cold storage of the carcasses of the animals slaughtered near there on landing. Of somewhat

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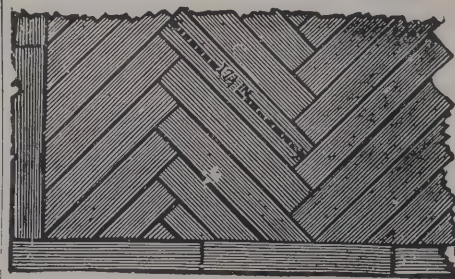
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On the exterior, the building is 400 feet by 120 feet, with a cubic contents of 2,500,000 cubic feet. The whole construction is of Hennebique patent ferro-concrete, and is founded on 1,347 ferro-concrete piles of a length of 100 feet. There are four floors, each of an area of one acre and a quarter, all being calculated to carry a weight of 100 tons, and when completed there will be about 64 cold rooms or chambers arranged on the latest insulating principle for high and low temperature. The height of the rooms is 10 feet and 14 feet respectively in the clear. There is a receiving-room on the roof, 325 feet by 52 feet, where everything will be handled, and surrounding this receiving-room is a water tank for a depth of 3 feet of water to be used for condensing purposes. There are to be four good's electrical lifts, capable of lifting two tons at the rate of 100 feet per minute. Cattle will be kept alive at the lairage, which is to be erected near, and which has been started so far as preparing the ground is concerned, and large vessels will be able to come alongside the quay, where there will be ample depth of water for them. There will be a conveyer from the lairage to the cold storage, by means of two or more electric cranes on the roof and other appliances the carcasses will be speedily distributed to the different cold chambers. The lairage will probably be 400 feet by 150 feet, with the different necessary departments for the ready handling and dealing with the animals landed there. In the engine-house, adjoining the cold store, there is, or will be, four Stern's refrigerating machines, three large Siemens' dynamos of 220 volts, three Worthington pumps and two condensing machines, three of which are Cock & Wilcox's multi-tubular boilers, and Messrs. Men's economiser for surplus gases after passing through the engines; while outside is a brick shaft 100 feet high. Mr. F. Foxlee, M.Inst.C.E., engineer for the South-Western Railway Company, was responsible for the designs, and the great building has been erected by Messrs. John Aird & Co., under the superintendence of Mr. Landrey, their agent at Southampton. On the east side of the docks Messrs. Aird & Co.'s workmen are also busily engaged with pile driving and other appliances for the construction of another unloading jetty for coal, with a full dock inside for barges. This will extend from the existing jetty, northwards, a distance of 350 feet, and it will be, though on similar lines, to the existing one adjoining the property of the Southampton and Itchen Floating Bridge Company, and familiar to the numerous passengers on the

steam-ferry bridges which cross the river Itchen. There will be deep water outside for colliers to lay alongside, and a sufficient depth for barges to lay always inside. The work is well under way, and practically all the piles are driven.

Progress is likewise being made with the new graving dock, which will be on the reclaimed mudlands, running almost parallel with the town quay, on the west side of the docks. The excavations are being got on with, and large quantities of chalk from Micheldever are daily taken into the docks, but it will be some time yet before the work begins to assume practical shape. The operations now in progress must mean a vast expenditure in wages for others than those concerned in different ways with the many vessels coming into and leaving the Docks, and engaged in loading and unloading the same, and when completed should result in great benefit to the town and port.

### HOLY TRINITY CHURCH, NEW BROMPTON.

AN inquiry was held at Chatham on the 10th inst. by Mr Alfred Hands, F.R.Met.Soc., in reference to a claim by the churchwardens of Holy Trinity Church, New Brompton, against the insurance company for damage alleged to have been caused to the spire of that church by lightning on some date unknown. Some stones having fallen in July last an examination was made, and cracks being found of such a nature as to render immediate repairs necessary, the work was carried out and compensation was claimed under the fire policy, which, as usual, contained a clause including lightning risks. The company having disputed the claim, Mr. Hands was appointed arbitrator, and after hearing expert evidence on both sides, and examining the broken stones which had been preserved for the purpose of the inquiry, decided that the damage was not caused by lightning, but was due entirely to the rusting of the vane-rod which passed through the stones, and therefore that the insurance company was not liable.

### DURBAN TOWN HALL.

At the last meeting of the Durban Town Council, Mr. F. Masey, architect, Cape Town, wrote with reference to the decision of the Council to invite designs for the new town hall in England. He was sure that this course would end in dis-

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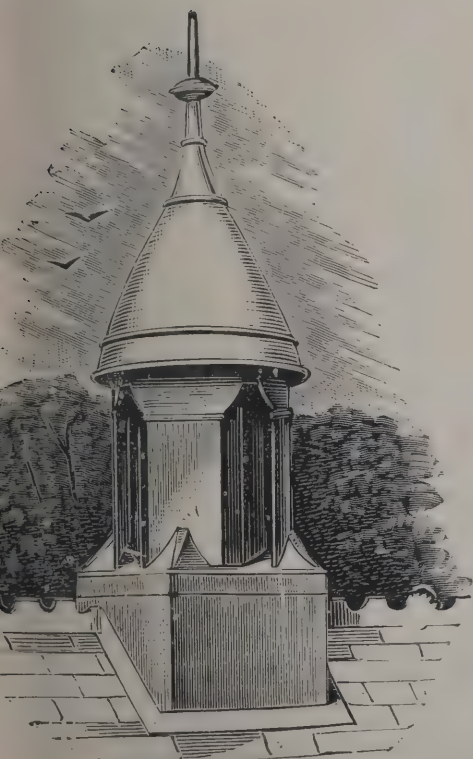
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appointment and spell disaster to all concerned. The conditions and limitations with respect to material and labour which existed in the colony were so tyrannical that it would be absolutely a practical impossibility for an architect to design a building which would conform to such conditions without possessing such intimate and practical knowledge as could only be obtained in South Africa. There were in England a large number of clever draughtsmen turned out by the art schools who would eagerly embrace an opportunity for an architectural gamble of this description. The conditions would attract a crowd of designs cleverly drawn and coloured, and which, although possessing no practical merit by so brilliant draughtsmen, would divert awards from painstaking and more experienced South African architects.

The Deputy Mayor said that Mr. Masey himself was not a competitor. He thought that there was a great deal in what Mr. Masey advanced.

Mr. Ellis Brown said that local architects had spoken to him on this matter, and they remarked that they would be glad to compete with architects from home. This was a piece of work that would be something new for the local architects. It was only right that designs should be asked for at home and comparisons got from people who had experience in buildings of this description.

Mr. Pickering moved that the letter be received.

Mr. Ellis Brown seconded, and the report was adopted.

### THE REEVE COLLECTION FOR THE BRITISH MUSEUM.

THE British Museum has now had in its possession close on three weeks its selection from Mr. James Reeve's collection of works in water-colour by representatives of the Norwich School. With these, says the *Norwich Mercury*, is a unique collection of letters, catalogues, price-lists and criticisms in the newspapers when the Norwich artists held their annual exhibitions in the city, which will enable the art world—professional and amateur—to estimate more accurately the value of that early school of which they have heard much, but have been able to learn but little by reason of the lack of genuine work and accurate knowledge available in London.

"Old" Crome, the father of the Norwich School, more than

holds his own among the landscape painters in the National Gallery. Some critics claim for his "Mousehold Heath" it has no superior in the national collection. A very few comparatively minor examples of work in water-colour can be seen in the British Museum and the South Kensington collections. His art companions in Norwich, of whom John Sell Cotman ranks first, both in water-colours and in black and white drawing, have in comparatively recent times been also recognised as artists whom it is as necessary to know intimately. John Sell Cotman has, in fact, now fairly won his place among the few great workers in water-colour. The nation which has a fine illustrative collection of such work by Turner, and has been accumulating examples of the other most famous early English workers in water-colour—De Wint, Girtin and David Colnaghi, has, however, till now had little to show that did any approaching justice to John Sell Cotman, their friend and fellow artist from the beginning of the nineteenth century. Those who had come to Norwich in the summer of 1897 to see the fine collection, then worthily displayed by the Norwich Art Circle, realised that here was a man who, as Mr. Fred Wedmore put it, "Through good reason and evil report an artist only," while "the heavens so willed it that his work—so sterling, so sober, so pure—should evade popularity." What Norwich had displayed to a smaller but not the less typical display in London. The *Architect* was permitted by Mr. Reeve to reproduce a photo-process, a selection from his exhibits, and the reproductions, in sepia tint, were so attractive that there was a demand for an issue on plate paper. This wider, fuller knowledge of John Sell Cotman was accompanied, in the *Architect*, by a well-written appreciation of the work of an artist. Thus, without any effort on the part of the Norwich or Norfolk man, the art-world came to feel that the nation could no longer afford to be without a recognition of John Sell Cotman's style, characteristics, and modes of working. It may be concluded that the knowledge which Mr. James Reeve enthusiastically gave in the preparation of the Art Circle catalogue, and especially his accurate records of Cotman's labours and of the want of recognition at the time by his own townsmen, led to his being put into communication with water-colour lovers in all parts, as the Norwich man who knew details. Hence followed many visits to the city to see his collection and that at Carrow Abbey, where these have made well known in the United Kingdom and

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United States the wealth of John Sell Cotman's genuine work which was yet available in the city.

Soon after Mr. Laurence Binyon, of the British Museum, had written, for the *Portfolio* of April 1897, his admirable monograph on John Crome and John Sell Cotman, it became known to a few of the citizens that the British Museum authorities in charge of the print rooms, where is a wonderful gathering together of art work, as evidenced by drawings, engravings and engravings, had expressed their desire to acquire Mr. Reeve's collection. He recognised the spirit which led to this desire, and after a time intimated his willingness to dispose of the whole, and that at a price which fell far short of the sum that would willingly be given by an American millionaire, or that would be realised at Messrs. Christie's, if the collection were broken up for purposes of sale. The Museum authorities naturally enough wanted to have so complete a record of the artist's work as Mr. Reeve offered. He believed, however, the heads of the Museum found that money was just then not available. But the matter was not upon dropped. Certain works were sent up for inspection by the Trustees, and as the result the larger part of the Reeve collection is now at the British Museum, where probably for long the world will be invited to inspect this new bit of the nation's wealth.

This collection, illustrative, as it is, of John Sell Cotman, includes among the more famous water-colours "Greta Bridge," "The Draining Mill, Lincolnshire," "The Wold Coat," "Norwich Cathedral," "Mousehold Heath," most of the Normandy and Welsh drawings. Then there are his many beautiful compositions in chalk and water-colour, some of which have been photo-processed, and have thus helped to make Cotman his later renown. In all there are scores of drawings and etchings. Added to these is the unique collection of photographs, letters and other documents, which will enable one to write a good story of the Norwich School.

Mr. Reeve had, as is well known, excellent works by other artists of the school. Most of these are works scarcely known in London. The two Girtins of Yarmouth, Miles E. Cotman, John Cotman, Ninham, Lound and Thirtle are thus now to be fully represented, while there are also half a dozen prime works of the late Mr. J. W. Walker also included.

Mr. Reeve retains the well-known "Twickenham," the interior of Trentham Church, "Byland Abbey," and that curious study in colour which Cotman dedicated to Sir Henry Englefield—"The Presentation of the Rose and Sword

to the Lady of the Manor of Flixton"; besides the water-colour of the Italian composition which in oils is the fine painting at Carrow Abbey, commonly spoken of as "The Falls of Tivoli," and various other interesting works—"Postwick Grove," "On the Greta, Clifton," two of the Normandy drawings, and one of the Welsh series. It will be seen that there is yet, when the opportunity is afforded, good material available here in Norwich for the lover of John Sell Cotman to study him, at Mr. Reeve's, as also at Carrow Abbey, at the Castle Museum, and at the dwellings of some of the citizens. The nation, however, it is well to know, has put beyond all hazard such a selection of work by the Norwich School as was desirable, seeing how ready wealthy America is to buy of the best that the old land has produced.

### AN AMERICAN WAREHOUSE.

A 166 BY 62 feet five-storey and basement slow-burning warehouse building at the corner of Gay and Front Streets, Columbus, Ohio, was designed by Mr. Frank L. Packard to meet the special requirements of the Eldridge & Higgins Company, wholesale grocers and jobbers, to whom the building has been leased for a long term. As the owner wished a building of exceptional durability the structure contains many interesting features.

The footings of the walls and columns, says the *Engineering Record*, are carried down through gravel and quicksand to solid blue clay, and so much water was encountered that the construction of the foundations was difficult. Atlas Portland cement concrete, made 1 : 2 : 5, was mixed in a rotary machine and poured, with a fall of 10 feet, into the trenches and spread there in 1-foot layers, which were allowed to set under water. Large flat-bed limestone blocks 10 inches thick were laid on top of the concrete footings and the brick walls, from 25 to 30 inches thick at the bottom, were started on them. All masonry to a height of 1 foot above the basement floor is of vitrified paving brick  $3\frac{1}{2}$  inches thick,  $4\frac{1}{2}$  inches wide and 9 inches long, which will not absorb more than 2 per cent. of water and are laid header and stretcher, Flemish bond, with  $\frac{3}{4}$ -inch joints. The upper parts of the walls are offset to reduced thicknesses and are faced with paving brick and backed with wire-cut tunnel brick, all laid in 1 : 2 Portland cement mortar.

The walls are self-supporting, and, with two longitudinal

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rows of interior columns, carry the floors and roof. The columns are  $12\frac{1}{2}$  feet apart, in rows 20 feet apart, and about 20 feet from the side walls on centres. They have offset concrete footings  $7\frac{1}{2}$  feet square, with 4 by 4-foot brick piers, which directly carry the first-floor girders. As the street grade slopes down 7 feet from front to rear on the long side of the building, and the basement is made with a level floor throughout, it is over 14 feet high in front, under the office rooms, which are  $13\frac{1}{2}$  feet high to the top of the second-floor beams. In the rear part of the building the first floor is 5 feet below that of the offices, making the basement ceiling there correspondingly lower. In the rear of the basement the column piers are 7 feet high, with one stone bonding course and a cap stone; in the front part they are 12 feet high, with three stone bonding courses and stone caps.

The columns are made in five sections each, reducing in size from the bottom upwards, and have projecting flanged cast-iron caps supporting the floor girders at every storey. In the first storey the columns are 16 by 16 inches, in the second 12 by 12, in the third 10 by 10, in the fourth 8 by 8, and in the fifth 6 by 6 inches. The ends of the columns are seated on the webs of the cast-iron caps, which project beyond them far enough to receive the longitudinal floor girders, which are 16 by 16 inches for the second floor, 14 by 16 for the third floor, 12 by 14 for the fourth and fifth floors, and 6 by 14 for the roof. The first-floor girders, resting on the piers, have clear spans of only  $8\frac{1}{2}$  feet and are 14 by 16 inch-beams. The transverse beams are 10 by 14-inch for the first and third floors, 12 by 14 for the second floor, 6 by 14 for the fourth and fifth floors, and 4 by 14 for the roof. They are spaced about 3 feet apart on centres, and are carried on top of the girders, to which they are anchored by angles spiked to the tops of the girders, with their vertical flanges engaging notches cut across the bottoms of the beams.

The outer ends of the roof beams rest on the tops of the walls; all other beams supported by the brickwork are carried in iron stirrups. Where the longitudinal girders are supported by the brick walls they are encased in Goetz-Mitchell wall boxes, and where they are supported by lintels they are hung in stirrups. All exposed beams and girders in the office portion of the building are dressed and shellaced, and as soon as set were wrapped with heavy building paper and had boards nailed on top projecting  $\frac{1}{2}$  inch past the edges to protect them during the construction of the building.

As soon as the brickwork was finished the 2 by 4-inch

matched roof sheeting was laid, and then the sub-floors laid with diagonal  $\frac{3}{4}$  by  $2\frac{1}{2}$ -inch oak strips laid on edge spiked together every foot. On top of this was laid asbestosea-grass quilting and then  $\frac{3}{4}$  by  $2\frac{1}{2}$ -inch finished tongue-and-groove beech flooring, matched sides and ends, laid longitudinally and secretly nailed to the sub-flooring. The basement floor was levelled and covered with a thin, tamped cold-dry cinders, on which was laid 4 inches of 1 : 2 : 5 Atlas Portland cement concrete, finished, before it had thoroughly set, with an inch of 1 : 1 cement mortar, trowelled and graded cesspools.

The roof sheathing is covered with one thickness of ne resin-coated building paper and four thicknesses of 50-pound wool roofing felt, mopped solid between laps with Eagle brand asphalt cement, then flooded with 125 pounds of the same cement to each square of the roof and sprinkled while hot, with clean-washed gravel. The roofing paper felt were flashed 12 inches up the walls, cemented to the brickwork with asphalt, and counter-flashed with No. 26 gauge galvanised iron let  $\frac{3}{4}$  inch into the brick joint, secured with metallic plugs and pointed with cement mortar. The roof was made with a guarantee to be storm-proof for ten years.

In one corner of the building, adjacent to a stair-well, there is in every storey a brick vault and a fireproof room, 18 by 34 feet inside. These rooms are used for the storage of sy matches, tobacco and fruits. They have brick walls and brick arch floors grouted, keyed with slate and supported by 12-inch transverse I-beams 4 feet apart. The floors are concrete and asphalted and the rooms have automatic fireproof doors.

The jambs of all doorways are faced 7 feet high with  $\frac{1}{4}$ -boiler iron rivetted to angles, and the windows which are exposed to other buildings have metal frames glazed with glass. Kinnear steel rolling doors are used for the shipping room and elevator shaft. The doors to the fireproof room and to all stairways are made with a well braced  $2\frac{1}{4}$  by 6-foot wooden frame covered with 3-16 inch asbestos cardboard tacked in place and sheathed with No. 22 gauge galvanised iron, with double interlocking joints covering all nail heads. They are hung on rollers on overhead tracks, inclined so as to keep the doors always closed.

Stock is carried down from the upper storeys to the first storey shipping-room and thence to the basement on 45-degree chutes with reversed curves at the bottom, which enable the goods to be handled rapidly for outgoing orders. Where the ch

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through the floors the openings are provided with fireproof doors held open by fusible links which, in case of fire, melt and allow the doors to close by gravity. Should any storey be flooded with water the chute would carry it off and save the goods on the lower floors from damage by it. The two Otis elevators have a carrying capacity of 2,000 lbs. each, a speed of 100 feet per minute, and are enclosed in brick walls with fireproof doors and Richmond safety gates.

The offices are finished in white oak, and are plastered and heated; the broken package room on the third floor is the other part of the building which is heated, and no other parts are plastered. The capacities per square foot of distributed load on the different floors are as follows:—First, 100 lbs.; second, 450 lbs.; third, fourth and fifth, 250 lbs. each, with a factor of safety of four, and the columns calculated to carry the same full loads on all floors simultaneously.

The hot-water heating system in the basement is guaranteed to maintain a temperature of 70 degs. when the outside temperature is 10 degs. below zero. The plumbing includes a floor iron sink, men's and women's toilet-rooms and a separate office toilet-room on the office floor. The sink and all basins are supplied with hot water furnished by a Rundell boiler in the basement, which is operated by gas. The elevators are run by electricity, with which, as well as by gas, the building is lighted. Switches and fuse block controlling lights on each floor are set on slate backs in asbestos-lined wooden cabinets at the heads of the stairs in each storey. There is a system of ventilating flues connected with electric fans discharging above the roof.

The total cost of the building was about 85,000 dols., and when it was inspected by the Ohio building inspector for the record of Underwriters it was pronounced the best fire risk for a class of building which they had ever taken, and the minimum rate was allowed for the insurance premium.

## THE FRONTAGE LINE IN NEW YORK.

Experienced architects will be interested in the story of a portico in front of the Pabst Hotel, at the corner of Broadway and Forty-second Street, New York, which was cut out over the sidewalk in front of the hotel some years ago, which its owners have now, says the *American Architect*, by decree of the Supreme Court, been ordered to take down

and remove at their own expense on the petition of the city authorities. It was proved by the defence, and admitted by the representatives of the city, that other buildings in the neighbourhood projected over the sidewalk, but the Court naturally declined to consider this fact a justification for the acts of the defendants. As a matter of fact, however, a very large number of buildings in all parts of New York have projections of some sort extending into the public street, and the history of these projections would form a very curious chapter in the account of municipal government in the metropolis. In most parts of the city there are really two street lines, one known as the house line, beyond which the main front walls of buildings can extend only by special permission of the City Council, and the other, parallel with the first and about 5 feet from it, called the area line. Owners may construct within the space comprised between the house line and the area line the basement entrances which, in New York, are almost always in front of the house, and in the mercantile districts this privilege usually includes the maintenance of sidewalk elevators in the area space. On the streets in the newer parts of the city, where high basements prevail, a third line is usually recognised, known as the "stoop line," which is laid out 2 or 3 feet, or sometimes more, beyond the area line, so that the flights of stone steps leading to the front door, extending to the "stoop line," may give room under them for a convenient basement entrance, reached from the area space. Although architects in New York have always been obliged to consider in their plans the exact location of these various lines, the restrictions implied by them have been made known to the general public mainly by the controversies incident to their violation. It used to be said, we do not know with how much truth, that the front steps of the great majority of the houses on the principal "up-town" streets projected a foot or more beyond the "stoop line," and that the city officials, after winking at this infraction of the law, derived a handsome income from changing their minds, and giving at intervals to the owners a hint that nothing but a substantial sum in cash would prevent them from making a complaint, the result of which would be an order requiring the removal of all steps projecting over the line. As the art of domestic architecture advanced in the city, the inducements for a liberal construction of the restrictions were multiplied. At one time, a fashion set in for copying the Boston device of "swell fronts," and polygonal projections the whole height of the house began, at first timidly, but afterwards more boldly to advance into the area

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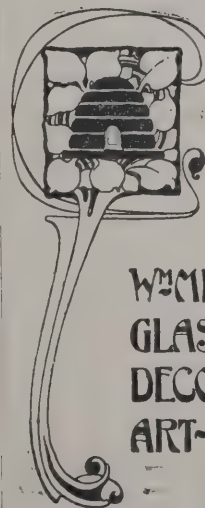
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## A SPLENDID RECORD.

### Two Great Newspapers.

Recently the owner of a foundry saved by the May-Oatway Fire Alarm wrote:—"It is the best," and now the *New Zealand Star*, referring to a big gas explosion in its own premises, says:—"A satisfactory feature is the test it gave to the efficiency of the May-Oatway Fire Alarm apparatus. Though only a little heat was generated the apparatus promptly signalled the alarm, and the fire brigade arrived." The *Otago Daily Times*, whose premises are also protected by this system, in referring to the *Star* explosion, says:—"It would thus appear that the May-Oatway Alarm is as efficacious in the case of an explosion as it has already proved itself to be on an outbreak of fire." This confirmation of its high reputation gave great satisfaction to the Brigade and Insurance authorities, the two great organisations of which have unanimously recommended this system.

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space. The "stoop," too, which at first meant simply a flight of steps such as the people of Amsterdam and those of the older portions of Philadelphia and New York still find such delight in scrubbing, was assumed to include also some sort of shelter at the top, in the form of an iron porch, or of the richly-carved brown-stone porticos which still lend dignity to the mansions of Fifth Avenue. As this innovation was received without opposition, the "stoop" portico ventured farther, sometimes extending to the limit intended for steps alone. Naturally, such obvious violations of the intent of the law attracted attention, but, by keeping on good terms with the officials, no harm usually came of them beyond an occasional unimportant fine. In the mercantile districts, where sidewalk room was scanty, the construction of "porticos" was more hazardous; but even there a night or two of rapid work, favoured by the amiable absence on important duty of the patrolmen from that portion of their beat, would generally put the structure beyond the reach of injunctions from neighbouring owners. In this way and in others a large number of technical obstructions and nuisances have been created in New York, which will form one of the most difficult subjects with which an honest administration will have to deal. To allow them by formal permission to stand as they are will be to condone in most cases impudent violations of the law, while to order their removal will be to cause a very large amount of annoyance and expense to people who in most cases are quite innocent of any complicity in the original misdemeanour; and the third alternative of leaving things as they are would be the worst of all, as it would afford the politicians of the defeated party an opportunity for extracting from people afraid of the enforcement of the law a large campaign fund, as well as influential support, by promises of immunity in case of their success two years hence.

### THE TRAINING OF WORKMEN.

THE annual meeting of the Manchester Association of Engineers was held in the Grand Hotel, Manchester, on Saturday, Mr. E. G. Constantine, president, in the chair. From the annual report it appeared that the number of members on the roll was 500, as against 470 in the previous year. The balance standing to the credit of the Association after payment of all accounts amounted to 5,102 $\frac{1}{2}$ ., and showed a surplus on the year's working of 312 $\frac{1}{2}$ ..

In his presidential address the Chairman said that by no means admitting that England had lost her supremacy as engineering producers, as was too glibly asserted, there was no denying the fact that the methods of working would have to be looked to. Many reasons had been put forward to account for the ability of our trade rivals to compete so fully with us in the production of locomotives, electrical appliances, bridgework, &c. Amongst these were natural advantages in procuring ores and fuels, lower rates of protective tariffs, the fostering of export trade at the expense of the domestic consumer, better commercial and technical organisation, more highly educated workmen, greater attention to workshop arrangement, the use of superior tools, and the working of longer hours. The countries in the western hemisphere which had benefited to the greatest extent by the introduction of British skill and brains, and which were now our severe competitors, were peopled by men possessing the characteristics of pluck, energy, perseverance and tenacity of qualities stimulated in their case by the necessity of providing work and outlets for rapidly increasing populations, and by a pronounced success already resulting from their enterprise. Among the factors essential to successful manufacture it was more potent than the quality of the labour employed, it was to the workmen that we must chiefly look to answer the question of whether Britain was to maintain her position on the ground or sink to a second place as a producer of engineering work. Capital, commercial acumen, scientific and technical staffs, mechanical genius, the ingenious and expensive machines, although highly important elements, were all powerless without the workman, and it was he who principally controlled our future destiny as a manufacturing nation. Employers were themselves to blame for the shortcomings of the workmen, for had they taken a proper view of their responsibilities and displayed a greater interest in the welfare of their men, the gulf which existed between capital and labour would have been less wide. An alteration of the unsatisfactory conditions existing between employers and employes could only be effected by employers more recognising that greater attention must be paid to the training of workmen, and that the haphazard fashion of leaving them to grow up anyhow must be abandoned. To enable us to hold our own in the world's progress it was essential to seriously grapple with this problem of skilled labour, for the measure of our future prosperity would be directly proportionate to the thought and care expended in the selection and training of

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entice. No boy should be allowed to start work before  
ained as to his educational attainments and his general  
ss for the trade. With the educational facilities within the  
n of even the poorest there was no excuse for ignorance,  
any lad who through indolence or lack of brains or appli-  
n had failed to acquire a fair educational groundwork was  
outside an engineering works. In his opinion boys should  
commence work till they were about sixteen years of age.  
re-years' apprenticeship under proper conditions would then  
ng enough to enable an intelligent and industrious lad to  
how to become a good workman. The technical educa-  
of an apprentice should begin the day he entered the work-  
It could not be too strongly emphasised that technical  
ation was not merely the learning to be obtained outside the  
shop, but it included the extremely important training of the  
d and eye, the development of the sense of proportion, and  
those qualities of self-reliance, pluck and determination to  
ount difficulties, the offspring of constant attempts,  
res and successes, which it was almost impossible to  
ire except from practical work, and without which the  
men and those who had to deal with practical engineering  
at a terrible disadvantage. The danger that education  
better training of apprentices would unfit them to become  
men was imaginary. Sound education never yet spoiled  
made any one lazy; it was the little learning which was  
gerous. With an extension as to commencing age and  
er conditions of work, there need be no apprehension of a  
th of well-educated boys eager to work and learn; as it  
progressive firms had vacancies bespoken, in some instances  
y months ahead. He thought that if some enlightened policy of  
ing young workmen, and dealing in a fair-minded spirit with  
n when they became journeymen, were adopted we should  
see important results. Amongst them were the following:—  
great majority of workmen would be thoroughly efficient,  
put forth their best mental and physical efforts; we should  
free trade in labour, the abolition of vexatious restrictions  
e conduct of workshops, increased production at reduced  
although on higher wages, stimulus to invention, trade  
ns fulfilling their legitimate function of looking after their  
bers' best interests by co-operating with employers for the  
fit of all, the exclusion as far as possible of other than  
petent and industrious workmen, the settlement of labour  
tions without the disastrous consequences inseparable from  
most barbarous of all methods, strikes, and the ability of  
country to hold her own against all comers. These were

only some of the results which would accrue from a whole-  
hearted effort to train our workmen better; whilst the general  
effects would be incalculable, by no means the least being the  
elevation of the national character.

### THE HOUSING PROBLEM.

In a letter to the *Glasgow Herald* Professor Smart writes:—  
On the housing question everybody is agreed that "something  
must be done." In the present temper of the municipality it is  
evident that something will be done. Meanwhile no one is quite  
convinced as to what should be done. The crowded and  
representative audience last night at the Civic Society—a rare  
phenomenon at an adjourned meeting—shows that the citizens  
are at last roused to the urgency of the problem. The discus-  
sion, however, only accentuated the feeling that what we  
need is more discussion, not the endless wrangling where  
people try to score off one another, but systematic, continuous,  
round-table discussion. There is, I believe, only one way  
in which we can get this.

I am one of those perhaps exceptional persons who believe  
in Royal Commissions. The evidence laid before such bodies  
is the chief store-house from which I get the materials of my  
teaching. I have, accordingly, in my time read many of these  
great blue-books, which are so unattractive outside and such  
fascinating reading inside; and I say, without hesitation, that  
when a Royal Commission devotes itself to the investigation of  
any subject, if the commissioners and the witnesses are well  
chosen, there is scarcely one aspect of fact connected with the  
subject but is illumined and scarcely one point of theory but is  
tested. Nothing escapes the search-light thrown by a dozen  
cross-examiners of different interests. Anyone who looks back  
on the industrial commissions of the last few years knows that  
a Royal Commission has sounded the knell of many a fad.

Why, sir, should we leave this most valuable instrument of  
investigation to the central Government when a municipality  
is such a great part of the total government? Why should  
we not have a Municipal Commission, with a remit from the  
town council, to consider the question of housing in our own  
city?

This is not a proper subject for a Parliamentary inquiry.  
Every growing town has a housing problem—if it had not it  
would not be a growing town; but in many towns the problem  
is so complicated by circumstances peculiar to themselves that

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a general investigation into housing would require another special investigation to supplement it. As we get more light on our own problem it is seen to be so peculiar and so difficult that what we want is to concentrate our investigation on Glasgow.

The idea of a Municipal Commission is, I think, a new one. We had something like it before in the Presbytery of Glasgow Commission of 1891, on which I had the honour of serving. Edinburgh has, I think, had commissions of joint-boards on several subjects, and no one doubts the value of the work done by them. But we want something larger and something more authoritative now. What draws out the best expert evidence on a Royal Commission is the knowledge that the work and thought of the witnesses will not be wasted, but applied to the public use; every conscientious man who has something to say on the matter takes it as an honour to be asked to appear before it, and considers it a public duty to give it of his best. And to be a commissioner carries no small honour with it. Am I wrong in thinking that a Commission, instituted by the great Municipality of Glasgow, and dealing with a problem peculiarly its own, would carry as much weight as any Royal Commission?

If I am asked whether, after all these months of discussion, we are likely to get any new light on the subject, I say unhesitatingly yes, and particularly in one direction. No one is yet able to explain satisfactorily the failure of private enterprise in Glasgow to provide a needed article. It is in despair of private supply that the Corporation is almost being forced to build, although anyone who considers the figures must see that all the Corporation can do will give only the merest fraction of the necessary supply. But even if such a Commission gave no new light, what it would certainly do is to concentrate the light we have. It would at least bring together and make accessible the facts which even I—whose business it is—possess only in newspaper cuttings, pamphlets and records of private conversations, and it would put before the citizens those theories of municipal action and expenditure which alone can draw practical conclusions from the facts. To despair of a great Commission recommending some solution is to despair of human reason.

The Commission, however, should not be rashly undertaken, or undertaken by people who will not accept it as for the time being the work of their life. A great deal will depend on the commissioners, for in their hands is the guidance of the evidence led. They should be picked men, of

various interests and various classes, so that no aspect of the question is kept in the background, and they should be intellectually honest men, who will give their final report in the matter of public conscience and public duty. At the head of the Commission should be some statesman—not necessarily belonging to the city; indeed, preferably not belonging to the city—whose very name would be a guarantee of fairness and impartiality. The ideal chairman for such a Commission I am pretty sure, suggest itself to everyone. A very great deal also will depend on the terms of the remit. It is too often the case that Commissions find themselves vexatiously and necessarily hampered by the terms of their remit, and its working should accordingly be the subject of the most anxious thought.

As to the expense, let me say at once that it will be considerable. Printing is a very large item in all Commission. A good-paid secretary is indispensable; probably two or three paid special commissioners would be required to make special reports on other cities. One special feature should be introduced by the Local Taxation Commission, of getting memoranda from economic and financial experts in answer to a list of questions scheduled, but this would not cost much. I am not sure that the Council should be asked to bear all the expense. It is certainly a municipal matter, but the expense should not be allowed to provoke the hostility of those who conscientiously believe that the Corporation has already all the light it needs. This, however, need not stand in the way. I have such faith in the necessity of such a Commission and such confidence that the citizens are in earnest on the matter, that I should gladly burden myself with the duty of securing an ample guarantee fund.

This proposal is, I think, as much in the interests of the ruling body as in the interests of the citizens. It is, unhappily true that all the guidance we give in most municipal matters is to vote—when we do vote—for a representative to leave him to think for us, and then grumble at the bill. For this reason that conscientious councillors, becoming convinced from the special knowledge they acquire in the Council of the necessity of some particular measure, are apt to keep as quiet as possible till the measure is fairly entered on. If this Commission were finally to report on any scheme, however large and expensive, I venture to think that the Corporation would be able to do what it seldom has the pleasure of doing—carrying out a mandate endorsed most amply by ratepayers.

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# The Architect.

## THE WEEK.

THE terrible accident in Belfast which occurred on Monday must create doubts about the sufficiency of the new Factory and Workshop Act. A day or two after it came into operation we endeavoured to point out its weakness. We explained that practically what was mainly required was whitewashing with appliances for ventilation and drainage. The part of the Act relating to safety comprised only the fencing of machinery, occasional examination of steam boilers, the position of self-acting machines, the cleaning of machinery when in motion, and provision of means of escape in case of fire, but whether the factory or workshop was of adequate strength the framers of the Act did not think it necessary to determine. Now everybody who is acquainted with factories is aware that additions are made to the machinery, or new machinery is introduced without the least regard as to whether the floor is capable of sustaining an increased load. In saying this we do not wish to anticipate the conclusions which will be arrived at in connection with the investigation of the Belfast case. We speak of factories in general, which it is notorious do not come under the eyes of men who are skilled in determining the strength of floors, columns and walls. No doubt the factory owners as a body possess great influence, and they are opposed to periodical examinations by officials who are skilled in construction. But, regardless of interests of the kind, the Government should insist on regulations which would prevent collapses in the whitened sepulchres which become equivalent to earthquakes on a small scale.

THE following roundabout resolution was adopted at the meeting of the London County Council on Tuesday last:—"That, in consequence of the growing evil, resulting in loss of life and injuries to persons, damage to business and danger and delay to vehicular traffic, caused by the frequent and continuous opening of roads, it be referred to the highways committee to consider and report as to the best means for the Council to procure such statutory powers as to secure that all persons or companies having Parliamentary powers to open the roads shall be compelled to give adequate notice to the Council before exercising such powers, and that the Council shall have the power to make such regulations and have such supervision as will insure such work being done expeditiously and with full regard to the public safety and business interests." If the obnoxious interference with the traffic of London could have been prevented by the passing of a resolution and some exertion on the part of the highways committee, it is culpable that so long a delay has taken place. We are glad to see the County Council showing signs of repentance for so long neglecting some of their duties. But the gas and water companies have to be reckoned with, and they are sure to plead that an evil which has long been tolerated, if not approved, by the County Council cannot be of much magnitude.

M. BOUGUEREAU has again been elected as President of the Society of French Artists. The sub-committee for architecture consists of MM. NORMAND and BÆSWILLWALD. There have been also officers appointed as usual for the other sections. To outward appearance, therefore, the Society is following its regular course, but it is well known that grave disunions exist among the members. France is Republican, in theory at least, but nowhere is equality more insisted on than in the Society of French Artists. Although it is manifest to outsiders that there are varieties of skill, and that visitors to the Salon make no secret of their preference for certain artists, all this does not affect the opinion of the humblest sociétaire. Committees are chosen by the general body, and it matters not what changes may be made, it is found that year after year there is a tendency to prefer attractive to unattractive works. The committee, in fact, in virtue of their office become showmen, and endeavour to get together a collection of pictures which will bring paying crowds to the galleries. That arrangement cannot be accomplished without the rejection of a great many works. The authors

of them are disappointed, and they find many sympathisers. "It's heavy odds against the gods when they are matched with myrmidons," says BÉRANGER, and the majority of the Society are now in conflict with the committee. They wish to reclaim the power entrusted to their representatives and to exercise it. They assume that by weakening the authority of the committee the general body would gain in strength; but this can only be done by a revision of the whole body of statutes which form the constitution of the Society. At the last distribution of the honours obtained at the Salon, the Minister of Fine Arts said it was the duty of the committee to discourage false vocations. The committee appear to have taken the words to heart, and in consequence have created a host of enemies among their fellow artists by admitting only 1,600 paintings instead of 2,500.

IT is satisfactory to learn that the Court of Appeal has confirmed the judgment already given that a building owner is responsible for the payment of provisional sums for work performed by special artists or tradesmen, or for other works or fittings to the building whenever the architect shall so direct. Building owners sometimes imagine that when a tender is accepted they have no liabilities except to the contractor, and in such cases it is difficult to explain to them that there are sub-contractors who have also claims, the payment of which does not necessarily increase the total amount they had undertaken to pay. In the case in question, *HOBBS v. TURNER*, the contract form of the Institute of British Architects was employed. Clause 28, relating to the payment of provisional sums, was therefore accepted by both parties. It was mentioned in the specification that railings of the value of 20%, exclusive of carriage, fixing and profit, were to be provided for, and they were supplied by the plaintiff. A certificate certifying that plaintiff was entitled to 27% 10s. was sent to the defendant, the building owner, by the architect. The defendant declined to pay, repudiating his liability, and alleging that he had a claim against the builder for bad work. The Master of the Rolls interpreted clause 28 as meaning that the building owner and not the builder should be considered as the principal in regard to it. In such matters the builder was only the agent of the building owner. But his Lordship declined to decide whether under clause 28 the architect had authority to determine who was to pay, as well as to whom payment should be made. Apparently it was the intention of those who drew up the form of contract that the architect was to have the power of choice, for the sums are to be paid at such times and in such amounts as the architect shall direct, and sums so expended shall be payable by the contractor or by the employer. The only directing power is the architect, and it is not suggested that it is optional on the part of the employer to pay or decline to pay. It is to be regretted that the Court was not more decisive in dealing with this part of the question, although it may hereafter be accepted that the initial liability in respect of this class of work was established.

THE Saxon city of Meissen is believed to date from the beginning of the tenth century, when a bishopric was founded by OTHO I. The cathedral has been long accepted as an excellent example of German Gothic. The open work of the spire was at one time much admired. The original building was almost annihilated at the beginning of the thirteenth century, and the existing cathedral was commenced on the site about 1372. The works lasted about a century. In 1547 two of the towers were destroyed and no effort was made to restore them. The condition of the building caused much dissatisfaction. A society was formed to raise funds for completing the building, and over 40,000*l.* have been collected. The question next arose what plans were to be followed. A competition was arranged, and during the past five years there has been much discussion about the design that was best suited. Herr SCHÄFFER, of Karlsruhe, who was entrusted with the restoration of Heidelberg Castle, prepared a design in which two towers were shown. Herr LINNEMANN, of Frankfurt, introduced three towers in his design, and it was by many considered the more picturesque. In the most generous and self-sacrificing manner he gave the preference to the design of his rival, and it has been decided by the society that Herr SCHÄFFER is to carry out the restoration.



## RIVER PURIFICATION AND WATER-SUPPLY.

WHEN JAMES BRINDLEY was asked by the Parliamentary committee for what objects rivers were created, he is said to have replied, "to feed navigable canals." It has been doubted whether the words were correctly reported, but they were characteristic of the rough and ready creator of the Bridgewater Canal. Unfortunately, they express the general opinion in England concerning rivers. Individuals as well as corporate bodies are constantly striving to employ them for particular interests, and regardless of the detriment which may be caused to others. The long time which was allowed to elapse before any restrictive measures against the monopoly were adopted by Parliament also indicates the inability to realise that the rivers throughout the country form a possession which could be utilised for other than local objects. It cannot be said we have yet attained the power of considering the watercourses of Great Britain in their importance to the nation, and on that account various public conferences have been held during late years, the last being one in October, which was organised by the Sanitary Institute. A report has appeared in the "Transactions."

The first paper read was by Mr. J. PARRY, and treated of "The Protection of Watersheds." It was explained that the Legislature's interest in rivers dates from 1847. The Health of Towns Commission had revealed the deficiencies of water-supply in this country. New works were constructed, but they were of little avail so long as the supplies could be contaminated. It became necessary to enact that whoever might cause water to become less pure was liable to be fined. But the landowners were able to prevent the application of the clauses, and for a long time the Act was inoperative. The comparative failure of the attempt was taken as a warning, for "since 1847 there has been no general legislation for the protection of the gathering grounds of waterworks as distinguished from other watersheds." The Rivers Pollution Act of 1876 is not sufficiently effective. The only way in which fouling of water can be prevented now appears to be by compulsory purchase of the watersheds by local authorities. Manchester succeeded in acquiring the area drained by Thirlmere, "but the amount paid as compensation was so excessive as to seriously alarm and discourage intending purchasers." In America it is not required to pay large sums of money for protecting water for domestic use. Regulations are made which are so comprehensive as to make a water-supply be guarded as if it were sacred; but it is doubtful whether we are likely to attain to a state of public opinion which will make purchase unnecessary.

There are other sources of supply besides rivers and streams. A paper on "The Protection of Underground Sources of Water-Supply" was read by Dr. E. C. SEATON. He also bewailed the absence of a central authority to watch over the interests of local communities. In the county of Surrey much has been done to secure an equitable arrangement. The Sutton district, for example, seemed likely to be deprived of much of its water-supply, for a deep well was proposed to be constructed in order to have the water conveyed to another county. Then there is the risk of the contamination of underground sources. The instances at Maidstone and Worthing are sufficient to show what dangers can arise when the water is not properly filtered. Dr. SEATON is of opinion that one way to obtain security would be by including as nuisances dangerous or injurious to the public health all wasting cesspits and other unsafe methods of sewage disposal close to sources of public water-supply.

A paper on the effects of pumping on the river Cray, read by Mr. C. BEADLE, F.C.S., exemplifies the difficulties which often have to be encountered. The Kent Waterworks, it is stated, are depriving the river, the wells and the ponds in the district of their water. It is true the floods are reduced, but the flow in dry seasons is also diminished. The water is no doubt abstracted from the Cray by a private company for the benefit of the public in the Metropolis and elsewhere, but local interests have to suffer.

The Kent case is only one out of several which suggest the difficulty of balancing various claims. There is no supreme controlling authority over water-supply. It is therefore possible for a town or a company having sufficient means to obtain an Act and secure possession of a source

which, if properly treated, would also serve for several other places. It is possible that districts that from their position might be considered as having the first right to a supply are indifferent. They should not be allowed to follow a dog-in-the-manger policy, and monopolise what they cannot use. But in all such cases it is absurd to believe that out of the clashing of rival interests fair play will be eventually secured. If general control were exercised it would be easy not only to provide water at a cheaper rate, but there would be a more equable proportion in the supplies throughout the country.

In all attempts to deal with water-supply as a whole it is necessary, however, to reckon the one source from which all supplies above and below ground are derived, and that is rainfall. Dr. H. R. MILL rightly described rain as the life-blood of every country, and yet Great Britain is unique among all the great nations of the earth in having no public department to cope with the subject. What is known as the British Rainfall Organisation originated with a private individual, the late G. J. SYMONS. He was able to find many observers like himself, and during nearly forty years he carried on the important work of recording observations without any recognition from the Government. This fact alone testifies to the indifference which has been shown towards water. What are the consequences? People know so little about the facts that in many places the use of water approaches the limits of the supply, and it is difficult to see how the larger demands which are sure to arise with a more numerous population and more improved sanitation can be met. Then there is the continual changing of population, and the concentration in large towns creates problems which are not easily solved. It is evident that increased attention must be given to the direct utilisation of rainfall as a source of supply. But the projects which have appeared for such a purpose cannot be looked upon as practical, for the outlay would be so large, the water would become as costly as *vin ordinaire* in France.

Ignorance is the cause of the present disorganisation in regard to water. Dr. ALFRED GREENWOOD, one of the medical officers of health, was therefore right in advocating "the desirability of reports for the water-supply of each county." He would have information produced about the characteristics of existing water-supplies and their future requirements, which would enable those taking an interest in the subject to obtain clear indications of the places in which the water-supply is deficient. Those districts would be known in which there is a liability to contamination through using drinking water from shallow wells, ponds, &c. The available supply, and the sources from which additional water could be obtained in the different parts of each county would also be ascertained. But it could not be expected that the Local Government Board or any existing Government department would give any attention to the reports; and as long as official indifference exists we cannot expect that people would undertake a laborious investigation for the sake of adding to the archives of a county council. There is at present no probability that the statistics would be turned to account, and we are afraid things will long remain as they are.

Many of our readers will find the paper by Dr. J. C. THRESH, the medical officer of health for Essex, on "Water-Supply to Isolated Cottages and small Groups of Cottages," as coming more within their province. He affirms it is the general opinion among medical officers of health that the Public Health Water Act has been a failure; there are still large numbers of cottages without any proper supply of water. As he says, all the sympathies of the framers of the Act appear to have been on the side of the owners of existing property. For new houses certificates of supplies are necessary, but the supply is sometimes a privilege of which the tenant can be deprived without any notice. Wells are often inefficient, and the following instructions on the subject issued by the Chelmsford Rural Council are recommended for more general adoption:—

The water which enters a well at a depth of 6 to 12 feet, depending upon the porosity of the soil, is usually efficiently filtered and purified. Water entering at a less depth is nearly always liable to be imperfectly purified and unsatisfactory in quality. The nearer the ground surface at which water can enter, the greater the danger of pollution.

It follows, therefore, that the upper 6 to 12 feet of the well



should be water-tight, and that the top should be so finished off that no surface water can possibly gain access. It is also very desirable that the top of the well should be brought up 6 to 12 inches above the ground surface and covered with a proper flagstone or wood or iron cover. (Plans showing two of the simplest methods of well construction are appended). As no new house can be occupied without a certificate from the sanitary authority to the effect that the house has a sufficient supply of wholesome water, it is important that builders and others should pay particular attention to the above suggestions and so avoid the risk of a certificate being refused.

Dr. THRESH points out the need for a simplification both of law and procedure. It is not sufficient to prove that the water is dangerous to health in order to have a well closed; it must be proved to be injurious to health.

The subjects of water supply and river pollution, especially with respect to the Thames, and the standard of water, were also considered, and the papers and discussions are worth careful reading by all who take an interest in public health. It is evident that we are far from making our rivers and other sources of supply what they ought to be. It is supposed that a great work is accomplished when a Royal Commission prepares a report on any of the various questions relating to water. But as it is not the business of any public department to have the recommendations realised, the labours which have been undertaken seem to be useless. At the present time local authorities are not entrusted with all the powers which are demanded. It seems absurd that a rural sanitary authority must invoke the cumbrous aid of a Government department in order to define what is a reasonable cost for works. According to one of the text-books, "If the absence of a proper water-supply creates so great a nuisance that the house is unfit for habitation, proceedings should be taken for obtaining a justice's order prohibiting its being used for human habitation." Dr. THRESH says he has never heard of such an order being applied for, and he doubts very much whether any justice could be found in England who would grant one. While such anomalies exist without any effort on the part of the Government to remove them, we must expect that water can only be properly supplied and controlled in places like Manchester, Liverpool, Birmingham and Glasgow, where the local authority is too powerful to be disregarded.

### FORMAL GARDENS.\*

AN expression by a great writer on the relation between art and nature, or, in other words, between the ideal and the real, is sure to be prized. Hence it is that the lines in "The Winter's Tale," which are supposed to have been spoken by King POLIXENES, are so often repeated:—

Nature is made better by no mean  
But nature makes that mean: so over that art  
Which you say adds to nature, is an art  
That nature makes.

It is remarkable that the conversation should arise out of an experiment in gardening; and that it should be composed by a poet who was so long regarded as a representative of nature because of his indifference to art. In the Elizabethan time gardens were becoming more formal, and then as now there were probably many people who considered it was wrong to appear to control nature. In all such cases it is overlooked that a garden and formalism are inevitably allied. Cultivation is really interference with nature, compelling it to exert its force in one way rather than in another. Enclosures have to be of regular forms, and the simplest garden bed is evidence of the influence of geometry. In the arrangement of flowers a gardener is making a living bouquet which will exemplify his individual preference for colours or forms. It is always absurd to depart from what good sense dictates in order to seek after the creation of landscapes on a petty scale. Nature can do that much better than man. What has therefore been recognised as the most

fitting course to follow is to accept our limitations and to make the best of them. We thus bring gardening into harmony with other arts in which materials furnished by nature are turned to account. There is a passage in one of REYNOLDS'S "Discourses" which has not received sufficient attention, but which contains an epitome of the philosophy of the subject, and as such should be remembered by those who would prefer to see a garden recall a landscape of a wilderness rather than a work of design. He says:—

Gardening, as far as gardening is an art or entitled to that appellation, is a deviation from nature; for if the true taste consists, as many hold, in banishing every appearance of art or any traces of the footsteps of man, it would then be no longer a garden. Even though we define it, "nature to advantage dress'd," and in some sense it is such, and much more beautiful and commodious for the recreation of man; it is, however, when so dressed, no longer a subject for the pencil of a landscape-painter, as all landscape-painters know who love to have recourse to nature herself, and to dress her according to the principles of their own art, which are far different from those of gardening, even when conducted according to the most approved principles, and such as a landscape-painter himself would adopt in the disposition of his own grounds for his own private satisfaction.

REYNOLDS, although he was no landscapist, knew that painters when seeking landscape subjects would never have recourse to gardens in the natural style unless, like GAINSBOROUGH when he employed lumps of coal from the cellar to suggest rocks and pieces of firewood to suggest the trees of the woodcutter, they wished to utilise the littleness of the artificial landscape in order to recall its opposite. The advocates of "nature" also fail to remember that all the ancient accounts of gardening refer to the combination with plant forms of architectural structures. Indeed, it would seem as if BACON considered that a love of building culminated in gardening, for, as he wrote, "when ages do grow to civility and elegancy men come to build stately sooner than to garden finely, as if gardening were the greater perfection." It seems absurd that an application of geometry should be permissible in horizontal forms but prohibited in those which are to be vertical. Paths and beds can be laid out as circles, polygons, triangles, but, according to the professional gardener's theory, arches are assuredly out of place, and plain walls alone are fitting boundaries for the most elaborate garden, while a wall with balustrading is unsuitable. Artificiality is allowable in every form so long as it does not become architectural.

Fortunately the modern rule did not prevail at all times in England. A garden was recognised as a work of art which could be enjoyed on fine days. EPICURUS, says Sir WILLIAM TEMPLE, "passed his life wholly in his garden: there he studied, there he exercised, there he taught his philosophy; and, indeed, no other sort of abode seems to contribute so much both to the tranquillity of mind and indolence of body which he made his chief ends." The words express an older belief in England, and in consequence men made the garden a substitute for a picture gallery or a supplement to one. They introduced figures which could sustain the vicissitudes of the English climate, and they employed temples, vases, fountains and obelisks in order to impart variety and to afford a contrast by their permanence to the living but fleeting beauties provided by nature.

The new work on formal gardens, by Mr. INIGO TRIGGS, represents many pleasing examples which have survived. His plans and geometrical drawings will enable those who may be allowed opportunities to repeat the admired forms of old times. But the excellent photographs by Mr. LATHAM appeal to all who love beauty, for they show that in the garden, as in all other forms, it becomes a joy for ever. Indeed, the photographs constitute by themselves a collection of plates that would be competent, if hung on the walls of rooms of those who are in city pent, to give continual gratification, for they combine nature, art and antiquity.

From Montacute, in Somersetshire, we have the garden, house and pavilion, as well as a view across the pond. Here the enclosures are formed by balustrading, with obelisks at intervals. Although they are worn, the parts still retain gracefulness, and they are preferable to solid stone walls which some lovers of nature would substitute for them. Canons Ashby is another fine example with

\* *Formal Gardens in England and Scotland, their Planning and Arrangement, Architectural and Ornamental Features.* A series of illustrations mainly from old examples, with an introduction and descriptive accounts by H. Inigo Triggs. Part I. London: B. T. Batsford.



lion-guarded gate piers and yew boundary hedges over 250 feet in length, with arched openings. Longford Castle, Wiltshire, has a noble garden, and with great skill it is made to form a junction between the house and a wood. At one end is a temple with Ionic columns, containing a statue and making an admirable termination for a view. St. Catherine's Court, Somersetshire, is another terraced garden, in which the treatment bears a relationship with what is seen of the house. Penshurst, in Kent, has renown, and although less elaborately treated than some of the gardens, still retains much of its beauty. In Chastaton Manor House there is a circular garden surrounded by a yew hedge. In this place imagination was allowed to run riot, and it might be fancied at the first glance that some primitive forms of the time when dragons tore each other in the slime had been covered with verdure in the course of ages. Architecture did not count for much, for the gardeners, rather than the masons and the sculptors, were given unlimited powers, and it must be confessed there is not undisputed success. Another example of what is called topiary work (the word has many meanings) is from Heslington Hall, Yorkshire. Here vegetation appears shaped as cylinders, pyramids, and nondescripts which are similar to the capped granite forms we see in front of St. Paul's Churchyard. They are not models for imitation, nor are the stiff alleys of trees and the solidly built walls from King's Weston worth much notice except as records of laying-out grounds. All the old formal gardens were not necessarily perfect, and two or three other views are introduced which are curiosities more than models. In Belcaskie, Fifeshire, the terrace wall is supported by sloping buttresses. Each is surmounted by an immense bust, and the first thought of the spectator must be how they are prevented from slipping. Originally the arrangement was likely to have been different. Some plates are given of garden-houses, dove-cots, garden gates, lead figures, lead vases, stone vases and sundials.

The charm of the photographs, which have all been taken at a time when the gardens were looking their best, is enough to convert those obdurate upholders of the natural or pure landscape system who object to any intrusion by architects and their followers into their domain. It cannot be maintained that vegetation suffers in any way in a formal garden. It is easy to provide shelter or to allow an abundance of light in any position with constructional work in stone that will even in winter give pleasure to the spectator. But gardeners wish to claim all the credit for themselves and their plantings. They have a jealousy of balustrading, arching, and indeed of architectural forms in general and of sculpture in every form. It might be supposed that flowers must fade amidst those surroundings. It is of course possible to have an excess of artificiality in a garden, but that arises from a neglect to exercise sufficient judgment in the preliminary planning. The object of a garden is to exhibit vegetation under its most beautiful conditions, and an architect who would seek to make his work obtrusive by sacrificing flowers and shrubs is offending against the logic of his art. Mr. TRIGGS's work reveals how successfully the gardener and the architect have co-operated in the past, and with such examples before their eyes their modern successors should attain still greater victories, and bring about a closer relationship between art and nature.

#### WINDSOR CASTLE.

THE renovation of the Royal apartments at Windsor Castle undertaken by Messrs. Waring is near completion. As now treated, the rooms suggest a new note of refinement and delicacy of ornament which augurs well for the interior decorative art of the new century. It has not been an easy task to deal with a Gothic building already decorated in the early Victorian style. Messrs. Waring and their artists have grappled with the difficulties in a spirit of thoroughness, and with gratifying results. A brilliant effect has been obtained by employing large surfaces of cream-white as a background for the superb works of art in which these apartments abound. The rooms reserved for the Princesses are marked by a homely comfort and a total absence of everything in the way of regal splendour. They exemplify the tastes of occupants whose wishes have suggested simple wall-coverings of exquisite

design, comfortable nooks and corners made out of otherwise void spaces, a cosiness imparted to lofty rooms, and a distinct individuality indicated by the employment of deep white friezes.

In the King's bedroom, a splendidly-proportioned apartment, the colour predominating is an Irish green; at least the heavily-woven carpet from the Sister Isle, which gives the keynote of the colour scheme, is made by Irish labour, the silk panels and window draperies taking up the same colour in a softer tone.

The King's sitting-room is the one in which the late Prince Consort passed his last hours, and during Queen Victoria's lifetime the bed in the alcove and every other article were left in exactly the same position as on that memorable morning in December, 1861. The whole of the interesting features which identify the room with the close of an illustrious career have been preserved with reverent care. The ceiling has been slightly reduced in height, an eighteenth-century raised moulding in flowers and fruits of a simple form occupying the centre with a handsome console cornice. The whole is left a perfectly plain white. Below is a deep frieze or band of self-coloured soft green. The room has a high wooden dado, with bevelled panels and pilasters, forming an excellent background for the favourite family portraits which adorn the walls. A striking effect is obtained by the manner in which the woodwork has been finished off. It is made of solid mahogany, and painted in an ivory white, quite remarkable in its finish. This effect is obtained by a process of rubbing down or felting between each successive coat, the gloss which is apparent being obtained not by any form of varnishing, but by painstaking labour. An agreeable sense of warmth is, however, secured by means of a brilliant red Oriental carpet and softer toned red silk curtains. The furniture, it is interesting to note, dates from the end of the eighteenth century, and is, therefore, just 100 years old. The much-needed reparation of the coverings has been treated in such a way that it seems to enter completely into the decorative scheme.

Her Majesty's bedroom is panelled in a soft rose silk and the windows are hung with a pure white soft satin which hangs in ample folds and gives the necessary cool effect. The whole of the furniture is of the Empire period in design, and the bed draperies surmounted by the Imperial Crown make quite an imposing feature. The bathroom adjoining is panelled with a soft marble on one side and Sheraton wood on the other. The marble employed both in the King's and Queen's bathrooms is of Greek origin, from the quarries which have been reopened within the last year after having been lost sight of for over 1,000 years.

By general opinion the palm must be awarded to the scheme executed in the royal boudoir. Old Louis XVI. furniture has been transferred from another part of the Castle and covered in a soft-coloured Beauvais tapestry, and the carpet, manufactured in France at the State factories, is remarkably tender in colour, taking up the mother-of-pearl tints of old rose, green, blue, cream, &c. The broad old-fashioned gilt moulding round the panels has been retained and the centre filled in by one of the most beautiful silks which could possibly be designed for this type of Marie Antoinette room. Strained on the walls it has the appearance of a delicate ivory with hand-painted medallions suspended from floral wreaths. Similar silk is utilised for the draperies and palmettes. The graceful folds of the curtains produce all the effect and lustre of rich silk, which is moreover helped by a velvet border of soft heliotrope. The old satinwood doors have been replaced by beautiful Spanish mahogany with bronze ornaments in keeping with the general character of the room, which is certainly one of the daintiest conceptions of a ladies' apartment that the artist could produce.

#### ARCHITECTURAL ASSOCIATION OF IRELAND.

A MEETING of the members of the Architectural Association of Ireland was held in the rooms of the Institute, Lincoln Place, on the 7th inst., Mr. A. Scott presiding.

Mr. P. J. Lynch, of Limerick, read a very interesting paper on the "Early Christian Architecture of Ireland." The paper, which was illustrated by numerous lantern views, treated of the architecture of Ireland from the earliest Christian times to the period of the Norman invasion. Much of the paper was devoted to establishing the claim for a style of ornamental architecture in Ireland anterior to the Norman invasion, which was advanced by Petrie, yet not completely proved; but which recent research on the Continent and among pre-Norman remains in Great Britain goes far to remove all doubts. The resemblance between the round towers and the continental church towers at Ravenna, illustrated by views of both, was demonstrated, and the likeness between Lombardic and Irish architecture pointed out. Yet the essential points of difference were dwelt on as



sufficient to establish a truly national style of architecture. The direct influence of the Lombard or Comacine masters on early Irish architecture has yet to be proved, though in later years it is evident from the memorial slab of the master in Christ Church Cathedral. A strong plea was advanced for inquiry as to whether any portions of Cormac's Chapel, Cashel, might not be tenth-century work, as was generally supposed, until Petrie advanced it to the twelfth century, Petrie admitting at the same time that the records might mean a restoration. If it was a restoration, how far it extended is an interesting inquiry for the student of architecture, as it is now universally admitted that such a style of architecture was possible in the tenth century. Views of other specimens of Irish architecture from the tenth to twelfth centuries were shown, concluding with the nuns' church, Clonmacnoise, which Miss Stokes described as "lifting its mute form in silent witness to the life, as well as to the death, of native art."

Mr. G. P. Sheridan, vice-president, proposed a vote of thanks to Mr. Lynch for his excellent lecture. He said it occurred to him that the members of the Association might make measured drawings of the works shown on the slides by Mr. Lynch, to be reproduced in book form later. Such a book would meet with the ready approbation of architects and the public at large. All were deeply indebted to Mr. Lynch for sustaining, if not vivifying, their interest in their own architectural work here.

Mr. H. Allberry seconded the motion.

The Chairman, in putting the motion, expressed his thanks to Mr. Lynch for having come there and the research he had made and the study he must have given the subject.

Mr. Lynch having replied, the meeting adjourned.

### IDEAL BEAUTY.

A LECTURE was delivered to the Royal Academy students by Mr. Val Prinsep on "Ideal Beauty and Sentiment." He showed the impossibility of defining in what beauty consisted, lexicographers, philosophers, Emerson and others putting each a different interpretation on the word. One considered that beauty was perfection, but then arose the question, What was perfection? for what was so in execution might be deficient in beauty of sentiment. Beauty was an intangible thing, and, to him, abstract beauty did not exist. No published definition of the word satisfied artists. Each would form a conception of it for himself, though this ideal would result from tradition and from the quite unconscious education which began early from surrounding influence, and from which no one ever quite shook himself free, for perceptive qualities were evolved from reflective. Were beauty definable by rule the ideal woman of Chinese art would be ours also; but this was not so, although he acknowledged the ascination of that severely traditional school. Japan, the most artistic of all nations, desiring to acquire European education, sent delegates, who reported that in art there was nothing for their country to learn, as the Impressionist school was the only one worth study. It was essentially the same as their own, for the Japs. possessed marvellous power in expressing what they wished. Physical beauty was indescribable, partly because it was matter of personal preference, and partly in consequence of its being the puppet of fashion. Emerson declared it to be dependent on simplicity; but this would not do in face of the fact that elaborate headdresses, in themselves ugly, had been rendered beautiful by the art of Gainsborough and of Reynolds. An artist must find his own canons, but he must keep his culture, and to do so be ideal, though what he imagined must ways be more beautiful than what his hands could realise. The Greek ideal was lost when religion dictated that beauty was sinful, because it was connected with pagan deities. The Church allowed pictures of Madonnas and Crucifixions, not because they were things of beauty, but because they concentrated the mind on religious observances, just as Benares women made images from Ganges mud, on the spur of the moment, to pray to, and then threw them away. Gradually the Church tolerated a love of beauty, and it became a necessity. But the virgins of Botticelli or Lippo Lippi were not Greek, and the beauty of Raphael or of Titian's women was not human. Michel Angelo was inspired by the Classics, but was not Greek. He made a new ideal. So should artists of today, and they should always endeavour to reach the unattainable—perfection. Beauty was created by working on the emotions through the senses. Thus Raphael's cripple and Rembrandt's Jews gave pleasure by beauty which was not inherent, but by treatment. Sentiment, Mr. Prinsep averred, covered a multitude of sins, and he cited Reynolds, whose oftenilly drawing was redeemed by keen sense of grace and sentiment. Angelo's sentiment was conveyed by noblest form, and sentiment had its quintessence in J. F. Millet, who realised his ideal through figures and "effect," albeit of

commonplace scenes which Walker would have refined away, and lost the grim sentiment of Millet. It was the artist's investiture which improved nature.

### ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.

THE report just issued by the Society is a satisfactory one from all points. It indicates a spirit of activity among its members that augurs well for the prosperity of the institution, and proves, besides, what a real benefit to the country at large such a Society confers. The total number belonging to it, including fellows and members, comes to 1,267, and as these are drawn from all quarters of the island, it can be seen what a store of information is obtainable, and what a diversity of subjects can be included in the purposes it was founded for. His Majesty the King was elected a member in 1864, and a life Fellow in 1870, and he has now intimated his pleasure to continue his patronage to it. There is a long list of new candidates to be recommended for election by the Council, and among those proposed as Fellow is the name of Lord Iveagh. The different excursions and meetings arranged for and carried out during 1901 were most successful and enjoyable. Hospitality was liberally extended by prominent residents in the distant places visited. Pleasant remembrances are entertained of the kindness everywhere experienced. This year the province of Ulster has been selected, and if all goes well the ancient and historic city of Londonderry will be the headquarters of the Society for a few days during the summer. Dublin naturally is the *locale* for the larger number of meetings, and several dates have been fixed for the popular evening gatherings, the first of which is announced for the 28th inst., being the evening of the day on which the annual general meeting of the Society will be held, at St. Stephen's Green. Some papers will be read, with lantern-slide illustrations of the subjects. The three papers that are promised are "Archbishop King's Diary, kept during his imprisonment in Dublin Castle, 1689, which has been edited with notes by the Rev. Professor Lawlor, D.D.," while Canon French will read some "Notes on Three Bone Pins found in Ballinderry Lake, co. Westmeath," and Mrs. Shackleton will show an exhibition of lantern-slides illustrating the scenes visited by members in the cos. Clare and Galway. There are other matters of interest mentioned in the report, notably that regarding treasure trove and the necessity for altering the present law about its recovery and purchase. The Society is to be congratulated on the marked prosperity it evidences and on the general character of the useful and important work it carries out and the excellent good feeling that is maintained among all its members of every class and creed.

### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. John Slater, vice-president, in the chair.

The Hon. Secretary announced the decease of Mr. J. Lee Hodgson, elected associate 1892.

#### The Prizes and Studentships, 1902.

##### THE ROYAL INSTITUTE SILVER MEDALS.

##### (i.) *The Essay Medal and Twenty-five Guineas.*

Four essays on the "Employment of the Order in Renaissance and Modern Architecture" were received for the silver medal. The Council did not award the medal, but they voted the sum of ten guineas to Mr. John Jeffrey Waddell, of Drumoyne, Uddingston, N.B.

##### (ii.) *The Measured Drawings Medal and Ten Guineas.*

Twelve sets of drawings were sent in. The silver medal and ten guineas were awarded to the delineator of Bolsover Castle, Mr. F. W. C. Gregory, of Nottingham; and prizes of five guineas each to the delineators of Lindisfarne Priory, Houghton Hall, and Aston Hall, Warwickshire, Messrs. R. Wynn Owen, of Liverpool, Stanley Towse, of Catford, Edwin Francis Reynolds, of Notting Hill Gate.

##### THE TRAVELLING STUDENTSHIPS.

##### (i.) *The Soane Medallion and 100l.*

Sixteen designs for a swimming-bath for men were submitted. The medallion and (subject to conditions) the sum of 100l. were awarded to Mr. James B. Fulton, of Glasgow; medals of merit to Messrs. Lionel Gordon Detmar, Sutton, Surrey, and Thomas Anderson Moodie, of Bayswater; and a certificate of hon. mention to Mr. E. Vincent Harris, of Regent's Park.



(ii.) *The Owen Jones Studentship and 100l.*

Seven applications were received. The certificate and (subject to the conditions, among others, that the candidate devote a tour of not less than six months' duration to the improvement and cultivation of his knowledge of the application of colour as a means of architectural expression, and furnish the Council with an original design in coloured decoration of a prescribed subject) the sum of 100l. were awarded to Mr. Edward H. Bennett, of Paris; a prize of 10l. 10s. to Mr. Percy Erskine Nobbs, M.A. Edin., of Chelsea; and a prize of 5l. 5s. to Mr. James McLachlan, of Edinburgh.

(iii.) *The Pugin Studentship and 40l.*

Twelve applications were received. The medal and (subject to the condition, among others, that the candidate devote a tour of not less than eight weeks' duration in some part of the United Kingdom to the study of Mediæval architecture) a sum of 40l. were awarded to Mr. Cyril Wontner Smith, of Finchley; prizes of five guineas each to Mr. Andrew Muir, of Hammersmith, and Mr. J. Myrtle Smith, of New Bond Street; and a certificate of honourable mention to Mr. John Harold Gibbons, of Manchester.

(iv.) *The Godwin Medal and 40l.*

Two applications were received. The Council awarded the medal and (subject to the condition, among others, that the candidate devote a tour of not less than five weeks' duration in some part of Europe other than Great Britain and Ireland, or America, for the purpose of studying and reporting on works of modern architecture) the sum of 40l. to Mr. Charles Archibald Daubney, of Peckham.

(v.) *The Tite Certificate and 30l.*

Twenty-four designs for a Royal Memorial Chapel in the Italian style were submitted. The certificate and (subject to the condition, among others, that the competitor, after an absence of not less than four weeks, shall submit satisfactory evidence of his studies in Italy) a sum of 30l. were awarded to Mr. Charles Gascoigne, of Sherwood, Nottingham; a medal of merit to Mr. Andrew Hutton, of Dundee; and a certificate of honourable mention to Messrs. W. Curtis Green, of Campden Hill; Arthur R. Gough, of Bristol; and Cyril Edward Power, of Bedford Row, respectively.

## PRIZE FOR DESIGN AND CONSTRUCTION.

*The Grissell Medal and £10 10s.*

Six designs for a timber footbridge across a stream were submitted. The medal and 10l. 10s. were awarded to Mr. Lionel Upperton Grace, Regent's Park.

## THE ASHPITEL PRIZE 1901.

The Council, on the recommendation of the Board of Examiners (architecture), awarded the Ashpitol prize (which is a prize of books value 10l., awarded to the candidate who has most highly distinguished himself among the candidates in the final examinations of the year) to Mr. Charles Thomas Adshead, of Liverpool. Mr. Adshead was registered probationer in 1894, student in 1897, and passed the final examination in November 1901.

A prize of books to the value of 10l. was awarded to Mr. Frederick Dare Clapham in recognition of the merit displayed by him in his work at the special examination, June 1901.

## THE TRAVELLING STUDENTS' WORK.

*Owen Jones Studentship, 1900.*—The drawings and design executed by Mr. George Andrew Paterson, who was awarded the Owen Jones Studentship for 1900, and who travelled in France, Italy and Spain, were approved.

*Godwin Bursary, 1900.*—The report of Mr. Sidney Kyffin Greenslade, who was awarded the Godwin Bursary in 1900, and who visited the United States of America to study the planning and construction of public libraries, was approved.

Mr. Greenslade was granted an extra sum of 20l. to enable him to continue his studies.

*Pugin Studentship, 1901.*—The Council approved the work of Mr. Henry William Cotman, who was elected Pugin Student for 1901, and who travelled in Wiltshire, Somersetshire, Dorsetshire, Gloucestershire, Warwickshire and Oxfordshire.

Mr. DETMAR J. BLOW read a paper, illustrated by lantern views, entitled

**The Architectural Discoveries of 1901 at Stonehenge.**

The lecture commenced with a reference to the archaeological investigations at Stonehenge in 1630 by Inigo Jones. The discourse on "Stonehenge Restored" was drawn up by Inigo Jones under the direction of James I. in the year 1620. After much reasoning and quoting a long series of authorities, Inigo Jones concludes at last that the ancient and stupendous pile must have been originally a Roman temple inscribed to Coelus, the senior of the heathen gods, and built after the Tuscan order. This notion was attacked by Dr. Walter Charleton in a treatise called "Chorea Gigantum," and the doctor was positive that this extraordinary monument was

erected by the Danes. The world did not generally accept this conclusion. Mr. Blow then described the recent investigation carried out under the superintendence of Dr. Gowland. He pointed out the archaeological value of the flint implements and stone mauls and hammers which were found in the excavations. The great monolith, he said, called the leaning-stone was the largest in England, Cleopatra's Needle excepted. It was one of the pillars of the highest trilithon, and stood behind the altar-stone near which it leaned at an angle of 65 degs. Half-way up it had a fracture on third across it, and the weight of stone above that fracture was a dangerous strain on it. It had now been brought to a vertical position. One Roman coin and one George III. penny were found quite near the surface. Numerous chippings of the sarsen and blue stone of which Stonehenge was built were discovered. The flints found were used for the softer sarsen and blue stones, and the hand-hammers and mauls for rough dressing. From this the deduction had been made that the building belonged to the Palæolithic period. All authorities agreed that it was the work of a highly civilised people. The construction was one of a stone development, and the surface of the stone was finished much like that of granite. The design of the pillars was in his opinion evolved from the shapes of the flint instruments used by the workmen, to which their hands had grown accustomed. Each pillar had a bold entasis in its elevation, and in its plan foreshadowed the column. With the aid of the illustrations he described the method of raising the leaning stone and the sifting process, the articles found being afterwards shown to the audience. Stonehenge having been generally supposed to be of the Bronze Age, it was with great joy that he lighted upon the stone implements. It was, he believed, the only occasion on which the implements were found actually next to the stone building where they were used.

Sir NORMAN LOCKYER, in opening a discussion on the paper, said he believed archaeologists had come to the conclusion that from the evidence which had been obtained they were justified in assuming that the sarsen stones were erected in the Palæolithic times—that was to say, before the age of bronze or at all events before bronze had been used for any ordinary kind of work in that part of England. Before the excavations were commenced Mr. Penrose and himself had been occupying themselves with Stonehenge from a slightly different point of view. They were very anxious to determine its age, and it was found much easier to get certain astronomical data from Stonehenge owing to its position than from other ancient monuments. He gave a number of astronomical data in support of his assumption that Stonehenge was a solar temple and one used for observation in the height of summer. From their observations they came to the conclusion that the avenue which was associated with the sarsen stones was laid down about the year 1680 B.C. Such temples as Stonehenge were erected in the very first blush of civilisation in order that the people should be able to fix the time for performing agricultural operations. He thought that Mr. Penrose and himself had been able to show beyond all doubt that we had in Stonehenge a temple for observing the length of the year by observing the rising of the sun on the longest day of the year, although in other parts of England there were temples for observing the sun not on June 21 but early in May and early in August.

Mr. F. C. PENROSE, who followed, said he rejoiced at the fact that so much attention was now being paid to Stonehenge and that the repair of the temple had begun in a safe and legitimate sense by raising the leaning-stone out of a position of danger. He asked whether the chippings of the sarsen were found in much greater abundance than the blue stones, as it was possible that the blue stones might have been altered in their position to suit the sarsens when they were put up.

Mr. BLOW replied in the affirmative.

Mr. EMANUEL GREEN expressed the hope that the authorities would not prevent further investigations on the subject. There were various arguments relative to the probable history and origin of Stonehenge. The conclusions from different theories seemed reasonable and clear, but by continuing the investigations they might hope by degrees to get rid of what was not true and in the end attain exactness.

Mr. W. H. ST. JOHN HOPE also joined in the discussion.

A vote of thanks proposed by the chairman and passed with acclamation terminated the meeting.

**The Sanitary Institute** have issued diagrams and descriptions of three terminals which appeared to give the most favourable results in the experiments conducted by the committee. They can be copied or imitated, for, although application for provisional protection for the three forms of terminals referred to was made by the Institute, it was in order to prevent any monopoly being established. The Council do not wish to put any restriction on the use or manufacture of any of the terminals patented, or other new forms represented in the report.



## TESSERÆ.

## The Pleasures of Painters.

THE pleasure which the generality of mankind receive from any celebrated painting is trifling when compared to that which a painter feels if he is a man of any common degree of candour. What is to them only an accurate representation of nature is to him a beautiful exertion of genius and perfect display of art. The difficulties which occur to his mind in the design and execution of such a performance, and the testimonies of skill, of taste and of invention which the accomplishment of it exhibit, excite a variety of emotions in the breast of which the common spectator is altogether unperceptive; and the admiration with which he thus contemplates the genius and art of the painter, blends itself with the peculiar emotions which the picture itself can produce, and chances to him every beauty that it may possess. The beauty of any scene in nature is seldom so striking to others as it is to a landscape-painter, or to those who profess the beautiful art of laying out grounds. The difficulties both of invention and execution, which from their professions are familiar to them, render the profusion with which nature often attatters the most picturesque beauties little less than miraculous. Every little circumstance of form and perspective, and light and shade, which are unnoticed by a common eye, are important in theirs, and, mingling in their minds the ideas of difficulty and facility in overcoming it, produce altogether an emotion of delight incomparably more animated than any that the generality of mankind usually derive from it.

## The Medicean Venus.

The question whether the Venus de Medicis was a copy from the Cnidian Venus of Praxiteles has often been discussed. The affirmative generally prevailed, till Heyne, in his dissertation on the different manners of representing Venus, and Montfaucon in his disquisition on the two statues of Venus in the Vatican Museum, adduced such plausible arguments on the negative side as were generally deemed conclusive. Niebuhr, professor of antiquities at the Royal Academy of the Fine Arts of Berlin, when discussing the problem, began with inquiring, What are the ideas we can form of the Cnidian Venus from ancient authors? All that is said by those who refer to her into some detail respecting it, among whom Pliny and Lucian are particularly to be noticed, may be reduced to five points. (1) The Cnidian Venus, the masterpiece of Praxiteles, was naked, and covered herself with one of her hands—it is not said with which. (2) It was finished all over with equal perfection. (3) All the parts were in exquisite proportion. (4) Particularly the hair, forehead, eyebrows, hips and thighs. The expression of the countenance was languishing, but mixed with modesty; a smile was produced by a slight opening of the mouth. (5) The statue was considered as the most perfect of the works of Praxiteles. How far does the Venus de Medicis agree with these characteristics? In the first place she is naked, like that of Cnidus, and covers herself with her hand; but the other hand is applied to the bosom, which Lucian does not mention. (2) The statue is equally finished all over. (3) All the parts of the body are in perfect proportion except the head, which is rather small. (4) The expression of the countenance, eyes and mouth has nothing repugnant to the account of the ancients. (5) The Venus de Medicis occupies the same rank among the ancient statues now existing as that of Cnidus held in ancient times. To this may be added, that the Venus de Medicis was no doubt a work much esteemed by the ancients, since it is said that its hair was gilt, its ears adorned with very valuable drops and its arms with golden bracelets, and that the goddess has by her side a dolphin, springing on its back amorini or genii, which may be supposed to have given rise to the epithet of "euploia," "pleasantly sailing," given to the statue of Praxiteles, as Pausanias informs us. Hence we might conclude that this was at least a copy of the statue of Praxiteles, if not the original itself, were there not sufficient reasons to believe that the Cnidian Venus differed essentially in form and attitude from the Medicean. But this is actually the fact, for medals of the isle of Cnidus have been discovered, on which the goddess is represented very differently from the Venus de Medicis. On these medals the goddess appears naked, covering herself with the right hand, and with the other lifting a garment from a vase by her side. She holds a garment at a distance from her body, with her head inclining to the left; her hair is not tied on the top of her head, as in other representations of Venus. The legend around has the word "Knidion," and on some medals this figure is accompanied with one of Esculapius. Now it is highly probable that these medals represent the statue of Venus by Praxiteles, which was the chief glory of Cnidus, because the inscription refers them to that city; they agree with the ideas of the statue given by the ancients. A similar figure of the goddess appears on the medals of no other city; and what is a still more striking circumstance, and almost unique in the history of medals, there is at present in existence at least four antique statues which

have exactly the form and character of the goddess represented on the Cnidian coins.

## Greek Shields.

Dr. Meyrick, speaking of the shields of the Mycenæans, which were made in the shape of an ivy-leaf, composed of the hides of white oxen, with the hair on, says, "In ancient times the shape of the shield had much to do with the mythology of the people, and therefore were circular to represent the sun, crescent-like to imitate the moon, &c." The ivy-leaf was sacred to Bacchus, and it might be from this people that the Greeks derived the *pelta*, which Xenophon describes as of the same form. The first shields were made of basketwork, to which succeeded light wood. The most usual material was, however, ox leather, covered with metal plates. The middle had a plate of metal, the Latin *umbo*, often furnished with a thread of metal, turned in a circle or spirally. At first there was no other mode of carrying and managing the shield but by a piece of leather, suspended from the neck over the left shoulder; Eustathius says a leathern thong, or a brass plate. This apparatus often appears upon the Etruscan monuments. These handles, says Herodotus, were inventions of the Carians. The arm-ring was independent of two smaller, placed upon the edges of the buckler to be laid hold of by the hand. This mode appears very distinctly upon the shield of Diomedes in the Monumenti Antichi. When, after war, the shields were suspended in the temples, the handles were taken away, to prevent their being of service in sedition. Æschylus says that bells were sometimes added to shields to affright enemies by the sudden sound, but Dr. Meyrick could not find a specimen. The Carians also introduced the ornaments of symbolic or allegorical figures, attesting the antiquity of their origin and the valour of their ancestors. The Peloponnesians engraved their initials upon their shields in order to distinguish themselves in battle. Thus upon their coins often occurs only a monogram of the two first letters of their names. The Greeks carried the shield upon either arm, as do some gladiators in Stosch, the paintings of the Villa Albani and other monuments.

## The Colossal In Architecture.

The emotions which church architecture should naturally inspire—if it should inspire any—are those of veneration, humility and awe, and no species of architecture will so certainly inspire these emotions as that which deals in stupendous representations of living beings. This the ancient Egyptians well understood, and we can scarcely conceive anything better calculated than the architecture of some of their temples for quelling the spirit of the worshipper and banishing the arrogance and pride of heart which stand in the way of devotional feeling. Among their avenues of sphinxes and halls supported by images of human beings 100 feet high the spectator collapsed to the dimensions of an insect, and acquired a lesson more powerful than a thousand homilies of his own frailty and insignificance. There may be much in the Egyptian architecture that naturally excites rather ridicule and disgust than solemnity and veneration. The anatomical imperfection of the different representations of living objects—for example, the grotesque hieroglyphics and many other peculiarities—are all far from pleasing, and we are perfectly confident that any attempt to revive the true Egyptian architecture in the present day could not succeed. But we think the employment of similar instruments of emotion without any more regard to those details which more particularly give the Egyptian complexion than if they had never existed could not fail under judicious treatment to be eminently popular and successful. It would, of course, be applicable only to particular kinds of edifices, chiefly churches, and should neither imitate ancient peculiarities nor neglect any of the aids afforded by the skill and science of the present time. The sculptures should be as true representations of natural objects as the present state of skill can produce, and those objects should be such as are agreeable in themselves, and as at the same time are possessed of sensation.

## Hypæthral Fenestration.

Among the many advantages attending hypæthral fenestration we may enumerate these:—It admits of greater diversity of design than what is of necessity the usual mode; it enables the architect to bring in one of the principal rooms where it would otherwise be impossible; it shuts out from view what, if seen, would be unsightly; it conduces to regularity and balance by allowing design to be kept up and decoration carried on continuously, whereas the effect is marred when one side of a room is cut up by being nearly all window in the daytime and nearly all drapery of an evening; it produces variety by the contrast between the sky-lighted and window-lighted rooms; and it admits of still further contrast at night by burning the gas externally—a mode that has already been practised in one or two instances, and is capable of being made particularly striking.



## NOTES AND COMMENTS.

PEOPLE who insist on the necessity of a transformation of London streets would often do well if they calculated the probable cost of their projects. The proceedings at the last meeting of the Westminster City Council reveal the outlay that is necessary for widening the Strand for a short stretch, and in a position which cannot be regarded as the most important part of the thoroughfare. The improvements committee presented a report which showed that it would require at least 92,590*l.* in order to alter the Strand between Nos. 89 and 104. The London County Council in July last resolved to contribute 50,000*l.* towards the cost, but the setting back of three other houses was found to be necessary, and the estimated cost of this portion of the improvement is 31,787*l.* The committee consider that a further contribution of 20,000*l.* should be made by the London County Council. The net estimated cost to the city of Westminster would therefore be 22,590*l.* Subject to the Worcester Buildings Company's acquiring, with the assistance of the Council, all interests in 91, 92 and 93 Strand, and surrendering the land necessary for a uniform widening of the Strand between the Hôtel Cecil and Terry's Theatre, and subject also to the making of a further contribution of 20,000*l.* by the London County Council, the committee advised the Westminster Council to offer 90,000*l.* for the land to be surrendered for the widening (such land being estimated to measure 4,374 superficial feet or thereabouts), exclusive of the land to be surrendered without payment by the company under their agreement with the late Strand District Board of Works. The expenditure is so large, an effort was made to delay the decision until more consideration was given to the subject, but eventually the recommendation was adopted.

IN the Farnesina of Rome, which PERUZZI erected for AGOSTINO CHIGI, the banker, RAPHAEL was employed as the chief decorator. For it he produced his *Galatea*, in which he rivalled the Greek masters. Another commission he received was to paint the lower hall, and he selected the legend of PSYCHE as best adapted to supply the desired subjects. The ceiling was flat, but connected with pendentives, and in the spandrels he introduced a series of scenes. It is maintained by some authorities that he only prepared the beautiful designs and left the execution to his pupils. He is believed to have relied on APULIUS for the incidents. A paper was read at the last meeting of the German Archæological Institute at Rome by Dr. STEINMANN, in which he held that RAPHAEL contemplated the representation of the earthly incidents relating to PSYCHE on the walls of the hall, whilst the roof was assigned to those which took place above the earth. Hence such subjects as the Introduction of Psyche to the three goddesses, Mercury bearing Psyche and the Feast of the Gods. Dr. STEINMANN is of opinion that RAPHAEL prepared the designs for the wall-paintings, and although he was not able to direct their execution, they were utilised by PIERIN DEL VAGA when he adorned the walls of the Papal apartment in the castle of St. Angelo. They have been neglected by amateurs, but they display a spirit which justifies the declaration of VASARI that DEL VAGA was the ablest of all RAPHAEL'S scholars.

WE hope the negotiations for transferring Leighton House to the Kensington Council have been only temporarily suspended. Evidently there has been a misunderstanding on both sides. Mr. RUSSELL BARRINGTON, who is the representative of the owners, announced he could only agree to a transferring of the property "on such conditions as will satisfy me personally that the objects for which the sisters of Lord LEIGHTON offered the house as a gift to the public, and for which the promoters of the scheme have worked so assiduously for so long, will be loyally carried out." Apparently he feared that the house would not "be maintained in a manner worthy of the dignity of its associations." The sisters of the late artist also said:—"When we expressed our willingness to give the house to the nation it was under a fixed impression that the recipients, whoever they might be, would welcome our gift, even at the cost of maintaining it, and that it would be maintained for purposes in which parish 'business' could have no part. Failing this, we would

personally far rather see it destroyed, or, since that out of the question, sold to some decent individual who might value it for what it is, and would at all events secure for it the dignity of private possession." The interpretation which can be placed upon these words is that the owners were afraid the house would not be respected as a sacred possession which should be entered only by those who were in a state of awe, and who would not criticise whatever was exhibited. On the other hand there were people in Kensington who were apprehensive that the house would be kept up for the benefit of a select few instead of being considered as a public museum. It is not compulsory on those who walk about Kensington Palace that they should be reverential, and so long as there is no interference with the objects displayed there is perfect liberty. The Kensington Council might be trusted to show common sense in their arrangements, and Leighton House would become an aid in educating popular taste. But if visits can only be made in fear and trembling it is better to allow the building to remain as it is in all the dignity of private possession, and to spend the 500*l.* per annum which would be necessary for its conservation in some other way.

## ILLUSTRATIONS.

MARQUETRY PANELS FOR THE "ORONTES."

THE illustrations are reproduced from the designs for the decoration of the drawing-room of the *Orontes*, a new ship now being built by the Fairfield Shipbuilding Company for the Orient and Pacific Company's line. There are about thirty panels, which are cut in holly and satinwood. Almost every panel differs in design. In addition to the panels is a frieze 130 feet long and 9½ inches deep, which is also in satinwood and holly. The frieze varies in design throughout its entire length, and is, perhaps, the most important and interesting decoration in the room. In the design of this work the general idea is based on forms belonging to the sea—shells, more or less modified, and various kinds of seaweed, so far as they can be treated decoratively, have been used in the design. The only exceptions are the children and naiads, who are, however, draped in seaweed. The designs were prepared and the engraving executed by Mr. STEPHEN WEBB, the architects being Messrs. J. J. STEVENSON and H. REDFERN.

ST. MARY'S CHURCH, ECCLESTON, FROM SOUTH AISLE, LOOKING NORTH-EAST.

NEW LIBRARY, PATENT OFFICE.

AMONG all varieties of record offices there is not one which attracts so many investigators as that connected with the Patent Office in Southampton Buildings and Staple Inn. Indeed, to many people the *raison d'être* of such an establishment is the preservation of specifications and other documents relating to inventions. Everyone knows how easily an invention can lose its value should there be any anticipation of it, and it is accordingly needed to make certain that a claim cannot be raised on account of priority. Hence the necessity of a storehouse which will contain all information that is attainable about British and foreign inventions. The new library which was opened a fortnight ago is strictly utilitarian in character. Those who make use of its contents are too engrossed with their investigations to bestow attention on the qualities of the architecture, for it is of more importance to have accessible information and to be spared loss of time in researches. It will be seen from the illustration that accommodation is provided for a large number of inventors, specialists, agents and students. The bookshelves for their use are estimated to measure about three miles in length. Care has been taken in the classification of the works, and information of any branch of technology is to be obtained without delay. Once upon a time inventors made use of anagrams and cyphers in order that their knowledge might be confined to themselves, but in our time there can be little concealment. A patent office, with its specifications and books of reference, is therefore a realisation of BACON'S great desire "to draw the sciences out of their hiding-places into the light."

The new buildings were designed by Sir JOHN TAYLOR and were carried out by Messrs. PERRY & CO. under the direction of his successor, Mr. HENRY TANNER.



## THE ARCHITECTURAL ASSOCIATION.

A MEETING of the Association was held on Friday evening last, Mr. W. H. Seth-Smith, president, in the chair.

Messrs. E. J. Harbottle, R. Hebert, J. R. Hobson, L. de B. Celsey, E. P. Lee, A. G. MacNaughtan, H. A. Porter and W. S. Read were elected members.

The amount subscribed towards the new premises fund was published as 3,567*l.* 12*s.*, inclusive of the following donations:—Messrs. Robert L. Curtis, 105*l.*; R. A. Briggs, 2*l.* 12*s.*; John Leaning, 10*l.* 10*s.*; H. J. Leaning, 5*l.* 5*s.*; H. Cassmore, 5*l.* 5*s.*; E. Boehmer, 2*l.* 2*s.*; M. F. W. Bunney, 2*l.* 2*s.*; Guy M. Nicholson, 2*l.* 2*s.*; C. E. Simmons, 2*l.* 2*s.*; D. Stewart, 2*l.* 1*s.*; G. H. Smith, 1*l.* 1*s.*; P. Rider Smith, 1*l.* 1*s.*; F. J. Potter, 1*l.* 1*s.*; W. B. Dukes, 1*l.* 1*s.*; C. M. C. Armstrong, 1*l.* 1*s.*; P. R. Smith, 1*l.* 1*s.*

Mr. T. C. CUNNINGHAM read the following paper on

## Architectural and Constructional Engineering.

Mr. President and Gentlemen,—When promising to read a paper upon "Architectural and Constructional Engineering" the paramount idea was to endeavour to interest the members in the subject, whatever may be the diversity of opinion in regard to what I may have to say relative thereto. Nevertheless, it is a subject I would suggest it is desirable and advisable that every architect or member of the Association, particularly the younger ones, should seriously consider, having regard to its increasing importance. To lay the subject before you in as concise a form as possible I will describe a series of steel-framed structures that have been erected recently. In the first place, I propose to deal with American tall structures, and then give some examples of roofs executed to fulfil specific requirements.

In designing tall business buildings on the American principle, the initial inception and purport of their being are business propositions, erected for the advancement of business interests and enlargement of the income of the owner of the estate. In buildings so designed many of the engineering problems are shorn of difficulties, and their solution becomes simply the working out of the inevitable and logical trend of the underlying idea of the general plan. The disposition and subdivision of an enclosed space is the foremost problem, and the first element in its solution is the use and occupation proposed for the building by its owners. This may require few rooms or many, large rooms or small, or a combination of both. Under all conditions which may govern the subdivision of space it is possible, no matter how small or how irregular the necessary dimensions of the proposed rooms may have to be, to so adjust and group their spacings that there will be a regularity and symmetry which permits the introduction of a unit of subdivision. In determining this unit of subdivision the directing factors will be: (a) the necessary dimensions of the rooms resulting from the proposed occupation; (b) the requirements of the framing of the skeleton of the building; and (c) the exigencies of the artistic expression of the proposed external presentation. The unit of subdivision will also be the unit of construction and the unit of design. If the individual rooms are quite small it may be well to combine two or even more to one unit. Within certain limits, the economy of metal in the construction of the skeleton leads to the adoption of a large unit. The greater relative strength of the deeper beams, the smaller number of connections, the smaller number of pieces to be handled, all favour the large unit; and the reduction in number of pillars, affording greater freedom in subdivision and utilisation of space, will enhance the commercial availability and value of the building. Again, the greater depth of beams and increased dimensions of pillars afford large contact areas and rivetting surfaces at junction points, and thus give better opportunity for attaining a rigidity of connections which is in itself a long step toward efficient wind-bracing. On the other hand, greater beam depths increase the height of each storey, which, where there are legal limitations of height of buildings, may cause the loss of a storey, and therefore of its possible rental. Increased span and consequent greater height of beams may involve additional cost of floor arches, perhaps counterbalancing, or even exceeding, the saving in cost of beams and pillars. Whether the unit of subdivision be larger or smaller is undoubtedly an important factor in the artistic success of the external treatment of the building, but the personal equation of the designer and so many other varying conditions influence and affect artistic results that each case must be decided on its own merits. However, the gain in wall surface incident to the use of larger, and therefore deeper, beams is unquestionably also an aid to the artistic development of the design. Thus far, what has been stated relates to the adaptation of the building to existing conditions and wants. So much capital is invested in a modern high building that its design should embody certain general preparations for possible future changes of use and occupation, so far as these can be made without impairing present usefulness,

and, above all things, its design should embody all that is necessary for insuring permanence and comparative indestructibility of structure. This at once draws the attention of the engineer to the character of the foundations, unless these should fortunately happen to rest upon a uniformly and permanently incompressible soil. With all the ingenuity and the economy of time and money incident to its application, it must be admitted that the so-called Chicago raft foundation cannot be recommended for use upon compressible soil by reason of its liability to serious disturbance by future underground works in adjacent or neighbouring streets; but that the footings should be carried through the compressible strata to the underlying rock, and for this purpose timber piling cannot be trusted as affording a guarantee of safety for many years, unless there is absolute certainty of maintenance of water-level in the underlying soil. This will in many cases make concrete piles, or caissons containing masonry or concrete piers, the only scheme of foundation construction which warrants the permanence of the supports of the structure.

The first building I propose to describe will be—

The Park Row building, New York, Mr. R. H. Robertson being the architect, and whose name is known in connection with the American Trust Society's building, the Corn Exchange Bank, &c., and Mr. Nathaniel Roberts, the engineer, the latter being responsible for the whole of the structural steelwork, and it is this portion of the building that I wish more particularly to describe as typical of American high-building construction. The building belongs to the Park Row Construction Company, and occupies the site of the old International Hotel, opposite the post office. It is twenty-six storeys high in the middle part, while the two towers are each four storeys higher, making in all thirty storeys. The total height of the building from the level of the kerb in Park Row to the top of the cupolas is 386 feet. The building frontage is 103 feet 11 inches in Park Row, 20 feet in Ann Street and 47 feet 10 inches in Theatre Alley, while the depth from Park Row to the Alley is 153 feet 7 inches and the area covered is 15,000 square feet. The structure is carried entirely on piles driven into a sand foundation to a depth of about 20 feet. There are about 3,500 piles used in the construction. They are of round American spruce, free from knots, with the bark left on. They are from 10 inches to 14 inches in diameter at the head, and the load on each does not exceed 16 tons. They are driven at from 16 inches to 18 inches apart, centre to centre, commencing at the centre of each group and working outwards, while the rows are about 24 inches apart, centre to centre. The heads are cut off below the level of ground water, or at 34 feet 4 inches below the level of the kerb in Park Row. From 12 inches to 16 inches is excavated out around the head of each pile, which space is filled in with concrete composed of 1 part Portland cement, 2 parts sand and 5 parts broken stone not more than 2½ inches cube. The concrete is levelled up flush with the heads of the piles. Upon the top of the concrete are laid granite blocks to receive the brick piers which carry the grillage beams to be described later.

The column loads carried by the foundations of this building are very high, some of them exceptionally so. It was therefore necessary to distribute the pressure on the grillage beams as evenly as possible. The need for great care in this matter will be evident when we say that the weight of the steelwork alone is 9,000 tons, while Mr. Roberts estimates that the weight of the building is 56,200 tons, or a total of 65,200 tons.

Most of the columns rest on distributing girders, each girder carrying, as a rule, two columns, though in one case there are as many as four columns on one girder. The interior columns have no distributing girders but rest directly on the grillage beams, and have each an independent foundation. Each foundation was separately designed for the load it had to carry, and the size of the girders and the grillage beams vary accordingly.

A typical distributing girder was shown in detail together with the grillage beams and granite coping blocks underneath them. This girder supports columns each of which carries about 1,100 tons, so that the girder itself sustains a load of about 2,200 tons. It is 26 feet long and 8 feet deep, and has four web plates, each ¾ inch thick. There are four angles, 6 inches by 6 inches by ¾ inch, in each flange, together with three plates, each 2 feet 8 inches wide by ¾ inch thick. The girder is carried on thirty-five joist beams 12 inches deep and 5 feet long, which are separated by distance pieces. In the foundation in question there are four of these distance pieces between every two beams, but in some of the foundations, where the length of the beam is 6 feet, there are six distance pieces between every two beams. The distance pieces are box-shaped, and have milled surfaces which bear evenly on the top and bottom flange of the beams. The grillage beams rest on the top of the granite caps and are bedded on cement.

The largest distributing girder is that carrying the four columns facing Theatre Alley. It carries a load of about 2,930 tons and weighs 47 tons. In the manufacture of all the



distributing girders it was particularly specified that the vertical angle iron stiffeners should have a good bearing against the top and bottom flanges.

This girder for Theatre Alley front is carried on sixty-one joist-beams 12 inches deep and 4 feet long, these being placed on the top of the granite caps, as described, for the girder-carrying columns. All the columns which do not rest on distributing girders are carried on short independent girders which rest on joist-beams supported by the grillage-beams so as to distribute the weight evenly over the granite caps of the piers.

The floor-beams are generally composed of the joist-beams bolted together with  $\frac{3}{4}$ -inch bolts, and have cast-iron distance-pieces between them. There are three or four distance-pieces to each span, and they are so made that the flanges of the joist-beams will not be less than  $1\frac{1}{2}$  inch apart. The beams which carry the fireproof flooring are all tied together with  $\frac{3}{4}$ -inch bolts to take the thrust of the flat arches. The floor-beams are framed so that the bottom presents two different levels, one 5 inches above the other. In the area, where 15-inch beams are used, the beams and girders are framed flush, the 10-inch and 12-inch beams being framed flush at the bottom, which is 5 inches above the bottom of the 15-inch beams.

Box and lattice girders are used for connecting the columns at the walls, and they are attached to the columns in such a way as to make the connections as stiff as possible, in order that it may do service as vertical wind-bracing. Great lateral stiffness is given to the building in this way.

The typical lattice girders have all the flange angles so far apart as to allow an easy means of attaching the cast-iron lintels and sills. These girders are connected at the top and bottom flanges to angle pieces on the columns, which also give great lateral stiffness to the building.

As stated, some of the main columns each carry about 1,100 tons on the lower length, which rests on the distributing girder, and though this load is not quite the heaviest carried by any individual column, it is not far short of the maximum, and as these columns are in the Park Row front and are typical of most of the others in the building, I have taken them as an example.

The bottom length of the column, where it rests on the distributing girder, has a flange plate at right angles to its axis, which plate is securely rivetted to the body of the column with angles by means of a double line of rivets, while at its upper end, where the next column length rests, it has angles forming a flange but no plate. The ends of the two lengths of columns are faced so as to bear very truly one on the other, and are rivetted together through each angle. In addition to this there are two splice plates, one on each side of the column. These plates are firmly rivetted to the lower length in the shops, but the part projecting above the top is rivetted to the next length of column above when they are erected on the site of the building. These rivets pass through the splice plates and the sides of the column. This forms a very strong joint, and is preferable to the method of fixing by means of angles alone, as it makes the whole column much stiffer and better able to resist the side stresses due to wind. This way of jointing the different lengths of the column is adopted from the bottom to the top, so that the combined lengths are formed into one united whole, which extends from the cellar to the roof.

The method of carrying and fixing the box and lattice girders which carry the walls, and also the floor girders:—Angle brackets are rivetted to the body of the column in order to support the ends of the girder where they abut against the plates. These brackets are stiffened by vertical angles which bear up against their underside, and thus form a very strong support. There is also an angle bracket rivetted to the side of the column some distance above the lower one, and in an inverted position in regard to the latter. The distance between these angles is equal to the depth of the girder which abuts against the column at this point, and when the girder is in place its upper flange is rivetted to the upper angle in such a way as to add lateral stiffness to the building, for it has been found absolutely necessary in these high buildings, which are subject to great wind pressure, and where it is often very difficult, and sometimes impossible, to put in diagonal wind-bracing, that either the method adopted in the present case or the use of knee-brace or portal bracing becomes necessary in order that the building may have the lateral stiffness which is required for its safety. This method of stiffening by rigidly fixing the girders to the columns is employed in this, the Park Row building, in conjunction with diagonal bracing. In some of the other lengths of columns, the brackets which carry the girders are formed of plates as well as angles, but in almost every case the girders are rivetted through the upper flange to angle brackets on the columns. All the abutting surfaces of the columns are planed to an even bearing. All the columns in the walls are carried up 3 feet above the roof-beam, and are there connected with a line of 8-inch channel under the coping.

The Montgomery Ward & Co.'s building at Madison Street and Michigan Avenue, in the heart of the Chicago business district, is a twelve-storey commercial and office building with 86 feet frontage, 159 feet high, on Michigan Avenue. For business reasons it was specially designed to be conspicuous, and on this account a tower 390 feet high and 40 feet square at the base was made the central feature of the Michigan Avenue front, and which contains thirteen additional storeys above the main roof.

The lower three storeys of the main building are treated a base, 45 $\frac{1}{2}$  feet high, and are faced with rusticated courses. The twelfth storey is treated as an entablature, and has a deep roof cornice. The main entrance is through a two-storey pedimented portico, embellished with marble sculpture, the tower forming a central feature, rising from the entrance with unbroken shaft lines continuous through the interrupted roof cornice to the top of the eighteenth storey, where there is a cornice course, and above it the nineteenth-storey balcony, with arched windows surmounted by a deep moulding which forms a capital at the twentieth storey. Above this the sides of the tower are narrowed to about 30 feet, and at the twenty-second floor begin to converge for the pyramidal roof.

The concrete foundation piers are set on steel grillages on about 1,200 15-inch piles. These are 52 feet long, driven to 68 feet below grade, and are calculated for maximum loads of 25 tons each. The steel columns are of closed rectangular cross-section, made up of pairs of channels and flange cover plates, the largest having an area of about 180 square inches of steel. The tower is calculated for a wind pressure of 30 lbs. per square foot on its vertical projections above the main roof, and the remainder of the building is calculated for the same wind pressure on all exposed vertical surfaces of the two ends of each elevation. The wind stresses parallel to Madison Street are assumed to be resisted by the rigidity of the walls, floors and partitions, and by the strength of the beam and column connections. In the direction parallel to Michigan Avenue there is special wind-bracing, consisting of solid plate stiffened knee-braces at the top and bottom of each end of the wall girders, and of horizontal plate girders, 30 inches deep, with 6-inch by 4-inch flange angles, at every storey between the corner column and the one adjacent to it. A similar construction on all sides of the tower is carried up to the twentieth storey, where the knee-brace brackets are replaced by longer and heavier knee brace struts connecting the tops of the corner columns to the system of plate girders which forms a rigid horizontal frame work supporting the overhanging twentieth floor. There are twelve outside columns and no interior ones in the tower. Up to the eighteenth storey its floor framing consists of two 24-inch transverse joint-beams supported on the two pairs of intermediate columns, and of seven longitudinal lines of 8-inch joist-beams which are supported by these girders and by the pairs of 15-inch wall-girder channels which connect the columns, and in four places by direct connection to the intermediate columns. A 9-feet by 10-feet panel in the middle of the floor has additional framing for the circular elevator shaft. At the eighteenth storey light channels, beams and angles are bracketed out a short distance from the columns just above the floor line to carry a projecting terra-cotta belt course.

The Electric Tower of the Pan-American Exposition was temporary structure, its framework being of steel members with rivetted connections, and is covered with wooden lath and studs to support the surface of the walls. All the floors are steel beams and girders filled in solid with concrete slabs. The column foundations are at an elevation of 23 feet, and the floor 234 feet above foundations; the tower is made of vertical panels of from 15 feet to 24 feet high.

The total dead load is assumed at 1,649 tons, and the total live load at 600 tons. The maximum unit strain from live and dead loads is 16,000 lbs. per square inch, and the columns are proportioned accordingly. Where wind strains are added the unit strains are increased 25 per cent. The piers for the corner columns are made with 9 feet by 12 feet concrete footings 2 feet thick, with two 8 feet square crossed layers of 12 inch by 12-inch timbers, and another layer 5 feet square on top, to which the pedestals are secured by bolts. The pedestals have gusset plates, stiffened by vertical and inclined angles, rivetted to both flanges of the column, and to double 30-inch by 48-inch base plates  $1\frac{1}{2}$  inch thick. At the third floor level there are four plate girders each 5 feet deep and 34 feet long, which form a square connecting the tops of the lower sections of the four inside columns. Opposite the girders in the middle panels of the outer faces of the tower are four similar plate girders, each of which is connected with the inside girder by two plate girders 3 feet deep, which carry one column each of the upper framework of the tower. The other columns of the upper section which start at this level are carried directly by the columns or by the main girders of the tier. All beams and girders are web-connected; all diagonals are rivetted at intersections, and their end connections are rivetted to pairs of gusset plates which are attached to the plates on the horizontal members or are rivetted to the



umn flanges. The columns are spliced with web and flange ties as before described.

#### *Wind-bracing.*

In arranging a building for wind-brace sections, sometimes the floor plans will permit a symmetrical arrangement of the cross-section in which the wind-bracing is to be applied. Frequently, however, no such desirable arrangement is possible, and only certain sections can be utilised. This complicates matters somewhat, but careful study will usually permit a satisfactory solution of the problem. Wind-bracing in a high building performs, during and after erection, the very practical office of facilitating erection by enabling the columns to be maintained in their correct vertical position. The play of the temporary bolts in the holes is sufficient to allow a serious deviation from the vertical to occur, and with the temporary bracing of wood ties this can rarely be prevented. Departure from the vertical of 2 inches in a height of 100 feet can readily occur, and is not noticeable except when compared with a plumb-line. Wind-bracing can be made of certain lengths to fit between the columns, and requires that each column shall be in its proper place before the bracing will fit, so that no great error can accumulate.

A careful comparison of the treatment of wind forces as applied to tall buildings of to-day leads one to the conclusion that the designers differ very materially in regard to the forces to be resisted, the strength of material employed and the most efficient details of construction. A building constructed with a well-proportioned iron frame should be safe, if provided with check partitions, or if the base is a large proportion of or equal to the height, or if the exterior of the iron framework is covered with well-built masonry walls of sufficient thickness, for the rigidity of the solid walls would exceed that of a solid frame to such an extent that, were the building to sway sufficiently to bring the bracing into play, the walls would be damaged before the rods could be brought into action. Hence the stability must depend entirely either upon the masonry or on the iron framing, and in veneer buildings, which are being particularly considered, the latter system of bracing the metalwork must be used, with the walls as light as possible, simply enclosing the building against climatic and injurious forces. Each building offers its own peculiar conditions to the carrying out of efficient wind-bracing, and many factors must be considered in a judicious solution.

The height, width, shape and exposure of the structure, as well as the character of the enclosing walls, will determine the amount of wind pressure to be provided for, while the details of construction, the internal appearance and the planning of the various floors will largely influence the manner in which the bracing is to be treated.

Wind-bracing must reach some solid connection at the ground. It should also be arranged in some symmetrical relation to the building outlines.

The shears are undoubtedly reduced to some considerable extent through many practical considerations, having regard to the dead weight of the structure itself, the resistance to lateral strains offered in the stiff lateral rivetted connections between the floor system and the columns; the stiffening effects of partitions (if continuously and strongly built) and linings, coverings, &c., all tend to decrease the distorting effects of the wind pressure.

Assuming that stiffness against side yielding alone is necessary, place floor girders as struts with the columns as chords. 30 lbs. per square foot wind pressure the panel load equals 300 lbs. Considering the protection afforded by neighbouring buildings, the point of application of the resultant wind pressure will be taken at say two-thirds of the height of the structure above ground. The total shear will then equal about 6,000 lbs., or 30 tons.

The moment of the resultant wind pressure  $= 30 \times 118 = 3,540$  foot-tons, and this divided by 24 gives  $147\frac{1}{2}$  tons tension in the windward foundation. The vertical component of the resultant diagonal  $= 16.8$  tons, leaving a compression of, say, 11 tons on the leeward column. The dead weight, including masonry, walls, floors, filling, &c., will equal about 250 tons for one building, while even for a building with no filling or partitions completed, the dead weight is still some 200 tons, thus rendering anchorage unnecessary.

#### *Exterior Walls—Piers.*

Exterior piers which carry their tributary floor and roof loads; besides, the weight of walls themselves is capable of at least three separate treatments, each suited to its own peculiar circumstances. 1. Where the outside piers are constructed entirely of masonry carrying all the wall, floor and roof loads, which come upon them by means of masonry alone, such construction is used in buildings of moderate heights, and constitutes the ordinary type of building. The objection to such piers of solid masonry are threefold, where structures are higher than, say, sixteen storeys, viz.:—

(a) The modern requirements of plenty of light and air in all offices demand that the windows be broad and numerous and the piers narrow. In the highest buildings of the present day hardly any masonry construction is strong enough to carry the necessary roof and floor loads besides its own weight for so great a height and with so small a cross section as is desired. (b) The second objection to such large masonry piers is that they take up too much valuable renting space, and where the rent of offices is proportioned at per square foot this becomes a matter of no considerable importance to the owner. Also, the weight of these solid masonry piers would so add to the load per square foot that many of the most remarkable examples of architectural engineering would be well nigh impossible.

2. The second treatment of which the exterior piers are capable is that in which metal columns carrying the tributary floor and roof loads are placed inside the masonry piers, while the latter support themselves and the "spandrels" only. The spandrels constitute those portions of the exterior walls lying between the piers and over and under the window spaces.

3. The third method of constructing the exterior piers is the one more approved at the present stage of architectural engineering; the one which has undoubtedly opened up the means for building the highest structures. In this all the weights are thrown on the metal columns, which, in place of solid piers, are surrounded with a protective shell or covering only, made of ornamental terra-cotta or brickwork securely anchored to and supported by the columns at the various floor levels. This construction undoubtedly gives the minimum weight per foot of height and makes possible such small piers as are indispensable for light and desirable offices.

The increasing value of ground space, the demands for rapid construction and the necessity for the lightest possible loads on the subsoil have all contributed to the success of this type. Architectural effect contemplated by the designer, in his arrangement of the material, and consequently general descriptions of spandrels, can hardly be given as applicable to general practice.

The spandrels are supported by the masonry piers where such wall-bearing piers are used, or in the "veneer construction" by the metal columns in the walls. The face of the spandrels may be "flush" with the piers or "in reveal," that is, set back from the face of the piers.

Whatever be our views with regard to these gigantic structures, whether we look upon them charitably as necessities of the time, or condemn them as hideous and vulgar monstrosities, the fact remains that the number of them increases, and we do not think it possible for any one to help admiring, either from an architectural or an engineering point of view, the skill and ingenuity displayed in their construction and the daring boldness of their conception. They may not be beautiful, but at least we may suppose that they are useful, or hard-headed Americans would not continue to build them. Where every square foot of ground has a very high value they enable a certain available area to be multiplied twenty, thirty or perhaps forty, fifty or even sixty times, thus giving facilities for a like financial increase. If they teach us nothing more, they at least show that the architect and engineer can work together so as to produce results which probably neither of them could achieve alone. This is a lesson which in our country we seem slow to learn, but which, if we could but take to heart and act upon, would probably result in adding beauty and security to our structures, whereas at present some of our engineering works justly merit the architectural "finger of scorn" being turned upon them, while the structural attempts of many architects invite the profane ridicule of engineers. Until this lesson has been learned we cannot achieve that measure of success, either architecturally or from an engineering standpoint, that is possible.

The questions to be decided in these modern structures are so numerous and the difficulties so great, that it has become almost a necessity that the work should be specialised, and so it comes about that an architect is made responsible for the general arrangement of the building and for what we may call the clothing of it, while the steel frame or skeleton is the work of a skilful engineer experienced in such matters. There are few architects capable of undertaking both the architectural and the structural details of these buildings, and in some cases where the experiment has been tried the result has been disastrous, for it is manifestly impossible for one man to be able to properly master both branches of the art sufficiently to enable him to meet and overcome the many difficulties to be faced in a way that is possible when specially trained minds are employed to carry out each section.

The field is surely sufficiently wide to prevent any conflict of interests from being felt, and yet how unwilling is each at times to concede to the other his deserved position. So long as engineers continue to put up structures hideous to a degree in important positions, the necessity for the help of the architect is manifest.

Design and construction are not synonymous terms, as has been proved over and over again; and when we consider the



vast size of some of the high buildings in the States, the amount of capital they represent, and the number of lives depending on their stability, the Americans show their wisdom by bringing to bear in each department the highest specialist knowledge they can command, for by so doing there is no doubt they attain their desired end more quickly, with greater economy, and with an assured safety that would otherwise be lacking. In the old days the architect was sufficient in himself, but now every year he becomes less able to cope with the structural difficulties that enter into modern building work. Therefore the sooner it is recognised that he must obtain help from the engineer, and the engineer from him, the better will it be for all concerned. With all our pride in the achievements of modern architecture and engineering, as exemplified in the construction of the modern high business building, we must not forget that structures equally tall, or even taller, have been reared in former generations, and demonstrate by their continued existence that there were long before our day architects and engineers whose command over the materials and forces which make for stability and permanence of structures was at least equal to our own. Yet these ancient structures are altogether unutilitarian, and could not have been otherwise, by reason of the absence in the day of their erection of means of lifting great loads to great heights in quick time and at small cost.

#### Roofs.

The Buffalo Savings Bank is located at the corner of Main, Huron and Genesee Streets, in the heart of the 'Buffalo' business district, and occupies a rectangle of about 75 feet by 69 feet, with a triangular extension 56 feet long on one side. The building is occupied exclusively by the bank, and consists of a two-storey main rectangular part, about 130 feet high, and a three-storey wing, about 50 feet high, on the triangular extension of the plot. In the main part of the building the banking-room, 65 feet high, occupies most of the floor space. It has an area 59 feet square, unobstructed by columns, and surmounted by a domed ceiling supported on an octagonal steel framework; between same and the outer walls are galleries, stairways and corner rooms. Above the dome there is a steel platform supporting an octagonal office storey, 11 feet high and 70 feet wide, which is surmounted by a domed roof 53 feet 6 inches in diameter and 33 feet high above the horizontal ceiling.

The New York Clearing House on plan is an irregular St. Andrew's cross, inscribed in a trapezoid with sides 80 feet to 93 feet long. The floor-beams and girders are supported by the walls and by thirty interior columns, and the lower six tiers are continuous across the whole area of the building. In the centre of the building six columns are arranged on the side of a 30-feet by 40-feet rectangle, and extend up only to the fourth floor or sixth tier, above which there is a clear space under a dome 60 feet 6 inches in diameter on the outside of the framework.

The dome has a nearly hemispherical exterior surface, and is supported by an octagonal arrangement of web-connected plate girders. It rests on each of these girders, and immediately on 20-inch rolled beams across their angles, which form with them a sixteen-sided polygon. The girders are supported on the tops of the columns at the angles of the octagon except on one side. Here the 16-feet side of the octagon is the middle part of a 47-feet rivetted truss, which carries the ends of the adjacent girders, and is supported on special columns. This truss has a double-triangular web system, with all connections rivetted. The tension diagonals are flat plates; the bottom-chord web-plates are 18 inches deep, and the fourth storey floor beams are connected to the webs.

The end vertical members of the truss are practically continuations of the columns that support it. These columns are spliced at every storey with four web-plates. The bottom of the lower section has eight vertical connecting angles rivetted to the vertical web stiffener plates of the extended base, the base being  $5\frac{1}{2}$  feet square, with eight vertical web stiffener plates and four knee-brace angles on the main diagonals to stiffen the corners. Other columns have bases  $3\frac{1}{2}$  feet square, which are similar to these except that the knee-brace angles are omitted, and some of the lighter columns have 2 by  $5\frac{1}{2}$  feet bases stiffened with a pair of plates, which virtually make them double-web girders.

There are sixteen radial dome trusses, seated on top of the polygonal framing of girders, and having their top and bottom chords rivetted at the centre to a pair of horizontal circular steel plates 6 feet 4 inches in diameter. Each truss is made in two sections, rivetted together through the flanges of web members, which are perpendicular to the dome surface. Trussed purlins 6 feet deep are connected to the trusses in the planes of these members, and support at their centre points intermediate curved rafters extending to the foot of the dome. The trusses are also connected by horizontal circular T-bars rivetted to their top and bottom chords, to support the roof and ceiling respectively. The horizontal reactions at the lower ends of the radial trusses are provided for by a circular vertical

steel plate like a hoop around their feet. Mr. R. W. Gibsc was the architect of the building.

The armoury roof of the Forty-seventh Regiment, Brooklyn is 300 feet by 197 feet on plan, and square-hipped about 32 feet high at the eaves and 90 feet at the ridge. It has four uniform planes, those of the two sides intersecting in a longitudinal ridge line about 104 feet long, which terminates at junction hips. There are four main transverse centre roof trusses of span of 191 feet 4 inches, centre to centre. From the centre of each of the end ones radiate two hip trusses extending to the corners of the building, and one longitudinal truss to the middle of the end wall. Each hip truss also supports two pairs of short trusses parallel to the main trusses. The main trusses are three-hinged arch ribs of 84 feet rise, seated on piers extended from the inside faces of the side walls just below the floor level. Their intrados is a continuous curve from the floor line at the skewback to the crown; the extrados is a curve of larger radius than that of the intrados, so as to give the truss a depth of about 15 feet at the haunches and 5 feet at the crown.

The trusses are built entirely of angles and plates, and have T-shaped top and bottom chords and X-braced web members. The horizontal thrust is taken by a pair of eye-bars connecting the skewback pins under the floors. The hip trusses are similar to the semi-trusses of the main spans, and the short corner trusses conform to the general design of the large ones. The vertical ends of the trusses are connected by horizontal struts at mid height and by light, deep, inclined lattice girders at the haunches. The top chords of the trusses are connected in each roof surface by six trussed purlins of about 34 feet span, each panel of which supports six lines of wooden rafters. The roof is also braced by diagonal rods in alternate panels of the main part, and in the centre panels of the end where most of the rafters are omitted to avoid confusion.

The depths and seats of the purlins are so arranged on the curved top chords as to set the rafters in three straight lines forming successively decreasing angles with the horizontal in the three sections from the eaves up to the ridge. A clerestory is thus formed at the foot of each rafter, and glazed with pivoted sashlights, affording light and ventilation. Horizontal latticed girders, with vertical webs, are built in the lower part of the ends of the trusses and support cantilever brackets, carrying the gallery around both sides and one end of the hall. The arch ribs and bottom chord-bars are pin-connected, and the short trusses are connected to the hips by bent plates and angles. The trusses are seated on massive cast-iron pedestals, each anchored and built into the masonry which react on bottom-bearing plates.

#### Colchester Town Hall Roof.

The roof over the Moot Hall, about 100 feet by 40 feet, constructed with seven principals, the ends of the roof being hipped. The high pitch and the conditions to be complied with necessitated nominally two different systems of trussing. There are two pairs of principals placed 3 feet  $1\frac{1}{2}$  inch centre to centre. This method was adopted to carry the fire and ventilating flues from the lower storeys up to the chimney-stacks that are placed on the front slope and near the ridge line, the flue pipes in same being embedded and surrounded in concrete. Sealing angles and connecting plates are rivetted on the intrados of the principals to receive the wood purlins or framework for the barrel-vaulted ceiling. The principals are made of double angles 4-inch by 3-inch by  $\frac{3}{8}$ -inch and  $\frac{3}{8}$ -inch web plates in the lower part or legs, well stiffened and rivetted together. The hip rafters are also made of plates and double angles, so as to receive the purlins and other framing. These principals bear upon the front wall masonry and in the opposite wall upon specially built steel stanchions to which they are rivetted. These stanchions stand upon steel plate girders at Moot Hall floor level, the girders being supported by compound stanchions made up of joist and plates, and extend to below the lower basement floor level. The purlins are  $3\frac{1}{2}$ -inch by  $3\frac{1}{2}$ -inch  $\frac{3}{8}$ -inch angles, and trussed, to which are bolted the wood purlins that receive the roof boarding.

#### Henley Town Hall Roof.

Henley Town Hall roof is constructed with six steel principals, Mansard-shaped outside of extrados, and semicircular on intrados. Each principal was made in three sections for convenience of transit (the span being 40 feet). They are bolted on the radial line at the junction where the sloping roof meets the horizontal. They are made of tees, angles, bars and plates rivetted together. Angle seatings and cleats are provided on the intrados to receive the purlins or the principal framing.

#### Electra House, Finsbury Pavement.

Reverting to what has been previously said respecting the minimum size of piers and superimposed loads, I may call attention to the conditions that had to be fulfilled in this building. The front walls are carried upon stanchions within the



ite piers, they (the granite piers) not being of sufficient area to support the superincumbent load. These stanchions, together with the loads previously mentioned, also support the divisional walls and chimney-breasts late girders from first-floor level to above roof.

Mr. A. T. WALMISLEY, in a letter which was read, said he regretted he was unable to be in London to attend the meeting. He thought there were many structures where an engineer might profitably engage the services of an architect for the artistic portion and general arrangements of interiors, as well as elevations, but that the structural parts to be designed by an engineer should in every case claim the precedence and control the outline of design. Some of the London bridges are good examples. In the arch of Westminster Bridge an engineer knew that no diagram of stresses in ironwork gave a true curve there adopted for the arch. In the iron parapet of the Victoria Railway Bridge across the Thames an engineer was in admiration, because the design could not be made in any other way.

Mr. W. E. RILEY, superintending architect to the London City Council, sent the following notes on the height of buildings:—Looking recently at some views of Lower New York, they seemed quite unfamiliar to me, although I have been there frequently up to thirteen years ago. The erection of numerous high buildings has brought about this great change. The narrow tongue of land between the East and West Rivers, with the Harlem River on the north, particularly hampers extension laterally, and thus was evolved in the resourceful American mind the expedient of carrying up buildings to great heights. In these buildings the steel skeletons are the only portions of the structure which are attached to the foundations, and they provide the reactionary support for the weights of the building, each storey being carried independently of the one above or below it. The cubical contents of some of the high buildings in New York must necessarily be very considerable, especially in comparison with London buildings, where, as is well known, special permission is necessary to allow buildings of the warehouse class of a greater cubical extent than 250,000 cubic feet, in which cases the buildings must not exceed 60 feet in height nor be of a maximum capacity of more than 450,000 cubic feet. I recently attended a congress at the Paris Exhibition, and noted that some of the continental speakers drew some very forcible conclusions as to the height permitted for buildings in London, but the horror with which he spoke of buildings twenty-two storeys in height in New York was quite indescribable. These are representative of the views, because in Europe buildings are not governed by the geographical conditions which obtain in New York city, although this consideration does not apply to other American cities where similar high buildings are erected. But it must be borne in mind that American cities have been laid out on modern lines, with the special advantage of enjoying a maximum of sunshine, whereas in London the small amount of sunshine must be regarded as a factor in determining the height of buildings in relation to its open spaces. The newest building code of New York city, which came into operation in October 1900, is an interesting document. In its provisions it is noticed that any hotel, lodging-house, school, theatre, goal, police-station, hospital, asylum, or institution for the care or treatment of persons which exceeds a certain height shall be built fireproof, and every other building which exceeds 75 feet shall be similarly constructed.

A recent book on fireproof construction ("How to Build Fireproof Buildings" by Francis C. Moore, New York, 1899) there are recorded some very interesting experiences on the behaviour of buildings in cases of fire. Illustrations are given of the Home Life building. It is 192 feet high, and was intended to be fireproof. A building of five storeys adjoining it took fire, and burned out every floor of the Home Life building above the ground height. The disaster appears to have resulted through a narrow court 20 feet wide, used for lighting the higher building, drawing up the flames and communicating them from one window to another in the progress of the fire in the higher building. The court acted like a chimney, and a poorly constructed chimney in its destructive effect, how a reputed fireproof building burned so freely and so completely is not so apparent. The subject of high buildings is of great interest, and its developments are being carefully studied. Many experts in New York city are bitterly opposed to high buildings, and they freely condemn the result of recent work as a hideous disfigurement of the city. These views find many supporters here, but perhaps a better acquaintance with the conditions which are responsible for the problem would soften the criticisms. American engineers and architects are hampered by no insurmountable traditions. When a city has a necessity it was not put in an underground position as in London, but erected on stilts, and it answers its purpose very well. When a luxurious ship was wanted for the River traffic, the *Pilgrim*, probably out of date by this time, was evolved. Her beam engines and other features

appeared antiquated twelve years ago, but a closer acquaintance with the conditions revealed that the type adopted had much to recommend it. The systematic method of American thinkers has been to first grasp the difficulties to be overcome, and then attempt to solve the problems in the most practical and common sense way, unbiassed by prejudice. If the tall building is not all that can be desired, it is another effort to solve a difficulty, and as experience is gained, it may ultimately lead to some satisfactory result in America, but it does not seem a suitable form of structure for this part of the world.

Mr. LEWIS SOLOMON, who had been invited to attend the meeting, sent a letter regretting his absence. He agreed with Mr. Cunningham that few architects were capable of undertaking both the architectural and structural details of a tall iron building, but the architect should design the system and leave the details to be filled in by the engineer. With regard to roof construction, the paper led one to believe that iron domes were almost a new feature, but they were not so. He wrote, he remembered, over thirty years ago, when he was connected with the design and carrying out of the Ottoman Bank in Throgmorton Street, that there was an iron dome to the board-room, the ironwork of which was designed by Mr. Homan (now of the firm of Messrs. Homan & Rodgers), but the architectural work was not done in any way by the engineer. He did not quite understand why reference was made at the end of the paper to the Electra House, Finsbury Pavement, as there was no special engineering question concerned in a matter where the architect had adopted an ordinary form of construction, viz. bedding stanchions inside masonry.

## THE DESIGNING OF CITIES.\*

(Concluded from last week.)

### Theory of Aspect.

AS stated in a report by Messrs. Mansfield, Vernon, Barlow and the writer to the Commissioner on Sites for the Seat of the Government of the Commonwealth, the most favourable form for picturesque effect in a site would be a gently undulating surface, surrounded by commanding hills, constituting a sort of semi-amphitheatre. The desirable aspect in relation to the cardinal points will depend very much on local peculiarities, such as the climate, the prevailing direction and character of the winds, and similar meteorological factors. Consequently it is hardly possible to generalise in respect thereof. So far as mere sunlight is concerned, eastern slopes are cooler than western, and southern than northern; consequently north-western slopes are to be preferred where heat is desired, and south-eastern when the opposite is the case. These effects may, however, be greatly modified by other factors.

In a city set out on the rectangular-radial system, almost every possible orientation in respect of individual blocks exists, and if the site be also undulating, choice of aspect in such a system can offer no difficulty because of its multitudinous variety. So that whether industrial or other requirements demand the presence or absence of direct sunlight, those requirements are easily met. Buildings in which it is necessary to secure the maximum penetration of solar rays, so as to benefit by their heat in winter, and the minimum penetration so as to avoid the heat in summer, should so far as the geometry of solar shadows is concerned, have their long axes east and west in southern latitudes and their windows on the north face of the building. Since, however, the temperature reaches a maximum after noon through the cumulative effects of the sun's heat rays, the axis should, theoretically, be rotated slightly, so as to turn a little to the north on the east side, therefore a little to the south on the west side. The amount of this rotation can be ascertained by taking account of the difference between the apparent noon and the times of maximum temperature, the differences between the noon and maximum temperatures, and the latitude of the place considered, the discussion extending over the changes for an entire year, so as to properly integrate the effects, and hence deduce their mean. The necessary rotation will, however, not greatly modify the east-west position for the axis. The designer must, it is evident, take account of these necessities, and for buildings of a large size and requiring spacious grounds, where aspect is important, as, for example, hospitals, sanatoria, &c., provide suitable blocks.

### The Aesthetics of Design.

A study of those examples of architecture which impress the human consciousness with a sense of beauty has revealed the fact that their general proportions and the mutual relation-

\* A paper by Mr. G. H. Knibbs, F.R.A.S., read before a joint meeting of the Institute of Architects and the Institution of Surveyors, New South Wales, and published in the *Building, Engineering and Mining Journal*.



ship of their details conform to simple numerical ratios and to an harmonious scheme. These ratios, spatially realised in the cube, square, the plane or circular equilateral triangle, the 3, 4, 5 triangle, the sphere, cube, pyramid, &c., are geometrical forms that constitute, as it were, a skeleton on which architectural features are developed in symmetrical grouping, with, however, such relief in detail as to obviate too cold and severe an effect, or what may perhaps be called an appearance of excessive symmetry. The proper subordination in the various parts of structures of their mass effects is also essential to awaken that impression of stability and repose which, together with grandeur of form and beauty of outline and the grace of harmonious ornament, constitute the ideal of architectural design. These matters require the professional attention not only of those charged with erecting the buildings of a city, but also of those whose function it is to design its streets and general arrangements; the latter can by no means neglect them. Without a knowledge of and attention to æsthetic laws, it is impossible to exhaust the artistic possibilities of a site, and the difficult task which falls to the lot of the designer is to reach a distinct conception of them as he studies the contours on a plan of the site. Direct study of its features on the ground alone is not likely to satisfactorily reach the end in view.

Among the elements the designer has to consider are the picturesque effect of masses of foliage, the perspective appearance of monumental buildings and monuments from the points of view where they will be prominently seen, the grouping of buildings and classes of buildings, the effective position for parks, gardens, &c., the spatial provision necessary for the proper viewing of all features of interest, and so on; for it is by attention to such elements that the possibility of beauty is created and the picturesque capabilities of the site are exploited. Thus eminences and concave surfaces, both of which lend themselves to striking effects, should be exhaustively studied in relation to the general scheme.

#### *Sites for Monumental Buildings and Monuments.*

The two classes of site that give the necessary prominence to monumental buildings are the summits of hills and the centres of amphitheatres—the one bringing a building into relief against the sky, the other showing it in relation to its surroundings. In both cases the preservation of space about the building greatly enhances its effect by insuring for it a sufficient distinctness. Remembering that a considerable time must elapse before any great city can be completed, the reservation of sites for future public buildings and requirements generally and for extension of buildings as the necessity arises, should always be on a most liberal scale, as this not only avoids the need for costly resumptions of land, but also enables the æsthetic effect to receive that adequate consideration which they rarely do if the element of cost is serious.

The spatial provision for monuments intended to be of noble proportions would be appropriately located at prominent radial centres, and for those of lesser size, relegated to more unpretentious positions. It is, of course, important that the magnitude of monuments should harmonise with their surroundings; and as the form they may be expected to take depends very largely upon the contingencies of the future, the spatial provision should be liberal. The essence of the whole matter is that all conspicuous or prominent sites should be appropriated for those great public buildings and monuments upon which a people may be expected to lavish its wealth and artistically express its national feeling. The fact that for a long period we shall be unable to create any great monuments is likely to make us forget the necessity of providing for them; hence the need here for more than ordinary care, for absence of the proper provision is practically irremediable. The scorn which men of large ideas receive at the hands of their contemporaries must not be allowed to wither up our conceptions of the ultimate needs of a great city.

Monuments of all kinds, in order to be effective, must be conspicuous. In order, therefore, that they may be properly seen, an unobstructed area must be preserved immediately round about them. For viewing detail, an onlooker would stand at a distance from the monument about equal to its height; to see it as a whole, at a distance about twice its height; to see it with its background and immediate surroundings, at, say, three times its height; and to see it with its general surroundings at a still greater distance. It is necessary, therefore, that about every monument the unobstructed space should be between a distance equal to its height and that equal to at least three times its height. Similar monumental buildings of noble proportions should stand back a sufficient distance from the street to admit of their being favourably seen.

#### *Treatment of Streets from the Standpoint of Æsthetics.*

Owing to the fact that great lengths of street, especially when unvarying in width, of similar section and fairly level, produce on the beholder a sense of wearisome regularity, the introduction of spaces for monuments, large street fountains,

water-jets, foliage squares, &c., at such points as relieve view, is a desirable corrective. It is hardly possible to lay down any rule as to the length which may be unrelieved because so much depends upon grade, width and general treatment in other respects; a length of from fifteen to twenty-five times the width might be taken as a general indication. Tiresome uniformity can also be avoided by subjecting the street to independent treatment, so that each may possess some characteristic. Even alteration of width is preferable to excessive symmetry, and may be introduced to counteract unæsthetic effect.

The undisguised presence of telegraph wires, telephone cables, &c., besides being unsightly, is a menace to public safety in cases of fire. Overhead electric wires in a system, although perhaps less unsightly, are inconsistent with a fine effect, and might well be transferred to underground conduits, as has already been done in some instances.

It has been said that monuments, so, too, foliage squares may be employed as a relief to street uniformity; they also be introduced to obviate the ugly effect which results from the disappearance of buildings, &c., over the summit of streets crossing a ridge; for in no case should the effect be unrelieved. Their proper situation is, of course, central, the traffic passing on either side on a sufficient width provided therefor.

If monuments be erected in curved streets the concave side of greater radius is the proper side, forasmuch as it gives the greater area of visibility, and moreover forms an effective background, as is evident on viewing figures in niches. A convex background is less effective than even a flat background, to nothing of the reduction of the area of visibility.

Among things susceptible of artistic treatment in the arrangements for lighting may be mentioned. Not only may lamp posts and candelabra be so designed as to enhance the beauty of streets, but permanent installations, such as would admit of more frequent illuminations, of streets and buildings, may well be a feature of any new town. The cost would be but little greater than that of individual illuminations. In streets planted with trees the effect could be made most pleasing, and the wanton injury to their form common on such occasions, would be wholly avoided. These matters are easily dealt with in the development of design, and should not, as is usually the case, be an afterthought. It would not be difficult to improve the character of drinking-stands, pillar-boxes for letters, telephone fire alarms, conveniences and other furniture of modern streets.

Among places admitting of decided improvement as to the usual treatment, may be mentioned street intersections. Where the blocks have acute angles, a sufficient cut-off to a façade or a suitable rounding off greatly enhances appearance, and even the intersections of rectangular blocks may be subjected to similar treatment. The cutting off of corners increases of course the diagonals at the intersections, and since the sidewalks or footpaths follow the outlines of blocks (i.e. are equidistant from the building lines) increased diagonally also the roadway proper. This enlargement of room for street ornamentation at the intersections of the building lines. By making the cut-off of corners adequate, provision may be made for a small square, a monument, cluster of foliage, or small garden. A still greater cut-off will give a central square, circle or ellipse of finer proportions, roadways round it, and which may be utilised for a pretentious central feature, and the independent treatment of every intersection will produce a gratifying result.

In addition to those at street intersections spaces are desirable in front of, and in some cases even on three sides of certain types of public buildings, especially those in which architectural elaboration would not normally be restricted to the front, as, for example, museums, theatres, churches, Arcades and approaches thereto are features which, since they can be made very effective in appearance, ought to be provided for in the design; and further, sites should be indicated for those fine pieces of sculpture or architectural art which are the artistic sentiment of any cultured people will eventually realise. Since all artistic elements must stand in harmonious relationship to one another, and their distribution be such as to give them a maximum efficiency in relation to their influence in beautifying the city, they ought all to be considered in the original design, so that the necessary provision may be made. The usual practice of either entirely neglecting, or inadequately regarding these matters and then doing the best possible with the sites that chance to be available, can never be satisfactory, as is obvious when one contemplates the all too common and less disfigurement of what were originally ideally perfect sites.

#### *Public Parks and Gardens.*

Public parks and gardens are not only an ornament to a city but a necessity to its people, if their health is to be regarded, and considerations of health and beauty may be said to have weight in important cities. Hence we are justified in making liberal provision for public gardens. Irregular sites



be preferred as giving the landscape gardener greater for displaying his art and as possessing intrinsically charm. In selecting areas for public gardens therefore regular tracts would always be chosen, provided other of the design could be made to accord therewith, and pro- also that the positions lent themselves to good effects very point of view. Whole blocks, or even double, or quadruple blocks, containing suitable features might be devoted to the purpose, the distribution over the site being made fairly uniform, and adapted to the character of the surroundings.

ides these gardens and smaller parks, in the city proper, parks also are necessary for its environs. The Bois de ne and the Bois de Vincennes, of Paris, have each an over 2,000 acres, and liberal provision should similarly be in the general arrangement of the Federal capital. Parks would form recreation grounds for the citizens of ital; and their area ought to be ample for the ultimate tion.

ere natural lakes do not exist, it is desirable to create l ones, and if the water supplied to them were, on its e, passed through large fountains of many jets, not only he feature be very attractive, but the water itself would well aerated. By suitably selecting the path for the s conveying this water, it could in some cases be made e either all or most of the fountains of the city, passing itation from one to the other, subject only to the loss by ation at each fountain.

ay be here excused for repeating a suggestion made to onversation by the Commissioner appointed to report on- es for the Federal capital. If the parks were thickly l with trees whose foliage was beautiful, and whose t at the same time was of value, then when the demand fuller use of the parks arose, necessitating clearing, the ould have become a valuable asset, and the income he timber available for removal might be made to ally assist in the more elaborate development of the . Another suggestion made by the same gentleman is e parks might to some extent illustrate the types of to be found scattered over the face of the earth, not by al specimens, but by creating small forests of such

#### Hygienic Elements of the Design.

s not only in the choice of a site that the elements con- to health need to be studied. However wisely the ay have been made in respect of climate, of the nature surface and subsoil, of the condition of the discharge of -waters and the position of the ground-water, of the lities of adequate water-supply and efficient drainage, till remains a need for a hygienic as well as æsthetic of the localisation of settlement. And since this reacts e whole question, it is not possible to omit the hygienic ts in elaborating a design that is to be as perfect as our dge will allow.

e first great requisite to general health is the prevention settlement on those parts of a site where undesirable conditions prevail. For example, neither residences tories should be allowed to be built or established in ions or other places where the moisture is excessive, or water is liable to accumulate in heavy storms. A com- efence against the liability to misapplication of such s the converting of them into parks, and planting with f vegetation that make a maximum demand upon the le moisture. By planting and draining, an area can be ransformed both in character and appearance, as the of the city of Washington, U.S.A., so well demonstrates, unsightly feature may be converted into one of beauty. e second requisite is that so far as possible variations in igh permit, those should have weight which lend them e to convenient and efficient drainage systems, both for waters and domestic, industrial and other polluted e; and the outlines of the scheme for this should there- fully considered when the design is being developed t afterwards.

e third requisite is that the total quantity of breathing- provided in the design should be large, the vegetation abundant, and when the building stage is reached, the ry sanitary provision enforced for every structure, over- ng being prohibited by requiring a sufficient number of etres of space to each inhabitant.

Among the most important of the hygienic elements I place that of ample provision for play or recreation s in connection with every school, college or other onal establishment—i.e. a complete abandonment of the niggardly notion of what is a reasonable provision in spect. That the recreation of a people should be under sit and healthy conditions is always important, and ore so than in the case of the young, so that the grounds of a beautiful city should in themselves be a of attraction, and exhilarant in their reaction upon those e them.

Similarly, hospitals and sanatoria should have bright sur- roundings and pleasant aspects, for the cheery and tonic effect of these is by no means the least potent of the remedies avail- able to those charged with the care of our health.

The suitable location of industrial occupations which are either noxious or unpleasant, even in a minor degree, is a matter of importance in enhancing the merits of a city, and in dealing with those occupations as they arise, all provisions for diminishing their mischief should be enforced. For example, since a smoky cannot be a beautiful city, at any rate in the highest sense, all smoke in factories ought to be consumed. Where industries are such that they cannot be ameliorated, they can be excluded from the city proper. Therefore provision for abattoirs and similar establish- ments are preferably omitted. These and similar malodorous occupations can be concentrated at some convenient but suffi- ciently distant point, for though they may not directly create sanitary mischief, their reaction upon human beings is un- favourable, and they are therefore undesirable.

#### OWNER'S RESPONSIBILITY FOR PAYMENT OF PROVISIONAL SUMS.

IN the Court of Appeal on the 17th inst. the appeal cas<sup>e</sup> Hobbs v. Turner was heard. According to the report in the *Times*, the plaintiff, who was a metalworker, sued the defendant, a building-owner, for 27*l.* 10*s.*, for metalwork supplied for a house which the defendant was having built for him by a builder under the supervision of Mr. J. L. Williams as architect. The contract under which the house was being built was made in September 1898, and was in the form settled and issued by the Royal Institute of British Architects. By the contract the builder, in consideration of a sum of 4,700*l.*, agreed upon and subject to the conditions in the schedule to the contract to execute and complete the works described in the specification. Payment for the work was to be made by instalments as the work progressed, according to the certificate of the architect. Clause 28 of the contract, so far as material, was as follows:—"The provisional sums mentioned in the specification for materials to be supplied or for work to be performed by special artists or tradesmen, or for other works or fittings to the building, shall be paid and expended at such times and in such amounts and to and in favour of such persons as the architect shall direct, and sums so expended shall be payable by the contractor without discount or deduction or . . . by the employer to the said artists or tradesmen. The value of works which are executed by the contractor in respect of provisional sums, or in additional works, shall be ascertained as provided by clause 13. At the settlement of the accounts the amount paid by the contractor to the said artists or tradesmen, and the said value of such works executed by the contractor, shall be set against all such provisional sums or any sum provided for additional works, and the balance shall be added to or deducted from the contract sum." The specification contained this clause:—"Provide and fix iron balcony railings to design (allow 20*l.* for this irrespective of carriage, fixing and profit)." It was not suggested that there was anything in the specifi- cation to alter the legal rights of the parties. The archi- tect selected the plaintiff as the person to supply the ironwork for the balconies, and the builder asked the plaintiff to send designs to the architect, who rejected them, and sent the plaintiff his own designs; and the builder having given measurements and quantities, the ironwork was sent to him (the builder) and the goods were invoiced and debited to him. Later on, in November 1899, the builder wrote to the plaintiff asking him to send him his account, and he did so; but on December 9 the builder wrote saying that the architect would certify the amount direct to the building- owner (the defendant), and on December 14, 1899, the architect sent to the plaintiff a certificate addressed to the defendant certifying that the plaintiff was entitled to be paid 27*l.* 10*s.* for the ironwork. This certificate the plaintiff sent to the defendant, who kept it, making no reply. After this the plaintiff sent two or three times to the defendant for the money, of which the defendant took no notice. In October 1900, when the plaintiff's solicitor wrote for payment, the defendant repudiated liability. The defendant alleged that he had a claim against the builder for bad work. Mr. Justice Kennedy gave judgment in favour of the plaintiff. The defendant appealed.

The Court dismissed the appeal. The Master of the Rolls said that, in his opinion, the appeal should be dismissed. The contract was one which was not an unusual one at the present time, namely, the builder undertook to do certain portions of the work, and as to the other portions of the work provisional sums were specified. The specification contained this clause:—"Provide and fix iron balcony railings to design (allow 20*l.* for this, irrespective of carriage, fixing and profit)." That threw them back upon the



original central undertaking of the builder contained in the contract and the conditions. In consideration of the sum of 4,700*l.* the builder agreed to execute and complete, subject to the conditions in the schedule to the contract, the works described in the specification. In the conditions and specification they found how that lump sum was to be distributed. They found that the builder was not necessarily to execute the whole of the work, but the building-owner might get other persons to do certain parts of the work, and as against the builder certain fixed sums only were to be paid out of the lump sum to those persons for that particular class of work. It was good sense that a sum should be fixed for each class of work which was not to be executed by the builder, but by some tradesman or artist designated by the architect. The building-owner—the defendant—had a discretion as to the person by whom this class of work was to be done, and he might agree to pay him any sum he pleased, but he could only allow as against the builder the fixed sum for each class of work. That being so, clause 28 of the conditions seemed to him to contemplate payment for this class of work being made either by the builder or by the building-owner, and the last part was based on the hypothesis that part of the work might be done by the builder and part not done by him, and where any such work was not done by the builder the building-owner would be entitled to hold back the amount specified for that work. This clause was obviously framed upon the footing that the building-owner was liable for this particular class of work. In his opinion, when one looked at the whole of the contract taken together, and not relying upon any one particular clause, the proper inference as regarded this particular class of work was that it was intended that the building-owner, and not the builder, should be the principal. If the builder entered into a contract for any of this class of work he might make himself liable to the tradesman or artist; but, as he was acting under the general scope of the contract, he would be acting as the agent of the building-owner and would create privity of contract between the building-owner and the tradesman or artist. That could only be got rid of by the tradesman or artist contracting with the builder in such a way as to debar himself from resorting to the building-owner. Nothing of that kind occurred here. What happened was that the plaintiff was put into relation with the defendant through the architect, and, though this was not clear, he understood that the order was given to the plaintiff by the architect. It was true that the invoice was sent to the builder, but the architect gave a certificate against the defendant, and not against the builder, and sent it to the defendant. His lordship did not intend to say anything about the point as to estoppel, nor was it necessary to decide whether, under clause 28 of the conditions, the architect had authority to determine who was to pay as well as to whom payment should be made. It seemed to him, looking at the contract as a whole, that the initial liability of the defendant—the building-owner—in respect of this class of work was established, and that all the parties dealt upon that footing. The judgment was, therefore, right.

Lord Justice Romer agreed.

Lord Justice Mathew was of the same opinion. This was a question of fact which had been properly decided by the learned judge.

### GENERAL.

**A Bronze Statue** of the late Queen-Empress, representing Her Majesty seated on a throne in full regal state, erected at Lahore by public subscription in commemoration of the Diamond Jubilee, has been unveiled. The sculptor was Mr. Bertram Mackerrall. The Punjab Memorial Fund, which is to be devoted to placing a marble canopy over the statue, has reached a total of 3,867*l.*

**The New Opera House** at York, erected on the site of the old Exchange Hall, was opened last Monday. The building, which has cost about 24,000*l.*, was from the designs of Mr. J. P. Briggs.

**The Paintings** bequeathed to the Louvre by the late M. Thiery, of Mauritius, have been valued at over 10,000,000 frs. There are 116 works, representing the greatest French artists of the nineteenth century.

**The Local Government Board** have approved of an application from Blackpool to widen the promenade 100 feet instead of 60 feet, at a cost of about 340,000*l.* The works will shortly commence. An order for 5,000 tons of cement and 10,000 tons of basaltic rock has gone to Germany.

**The Memorial** of the late Ferdinand von Müller will shortly be unveiled in Melbourne. It consists of a column of granite with a bronze medallion portrait. Müller was born in Rostock in 1825. In 1848 he went to Australia, where he was appointed Government botanist, and in 1857 director of the Botanic Gardens.

**A Pair of Drawings** by Mr. Ernest George, belonging to the late Mr. William Lee, were sold on Saturday by auction for 16*l.* 5*s.* 6*d.* The subjects were Haarlem and St. Mark's Place, Venice.

**The Manchester Corporation** have purchased Mr. Thangue's *Gathering Plums* for the Art Gallery. The Mr. S. Pope, the Parliamentary counsel, has bequeathed *The Wreck*, by Mr. William Small, and two marble statues by Mr. J. Swinnerton, entitled *Ganymede* and *Endymion*.

**Mr. H. Bedford Lemere**, architectural photographer, has been elected a member of the Edinburgh Architectural Association.

**A Special Fund** of 1,000*l.* is to be raised in order to incite in the restoration scheme of Chatham parish church Norman arches recently discovered in pulling down a portion of the edifice for the purpose of rebuilding the old Georgian nave.

**The Louisiana Purchase Exhibition** will not be next year owing to the shortness of notice given to foreign countries. It will probably take place in 1904.

**The Freehold Site** occupied by St. Bartholomew's Church, Little Moorfields, City, embracing an area of 6,300 square feet and possessing a frontage to three thoroughfares of 270 feet has been sold for 20,400*l.*, the property being purchased by syndicate.

**Mr. J. G. Jackson, R.A.**, having been called in to examine the chancel of the parish church of Portsmouth, has ordered shoring to be immediately erected in order to prevent catastrophe.

**Mr. G. S. Mathews** will read a paper on Monday before the Surveyors' Institution on "The Final Report of the Local Taxation Committee."

**Mr. C. S. Nelson** has been instructed to prepare plans for public baths for Pudsey.

**The Guardians** of the Fylde Union are about to erect new workhouse at Wesham, Kirkham, which it is expected will require an outlay of about 50,000*l.*

**An Entombment** by Simone Martini, of Siena, has been acquired for the National Gallery at Berlin. The works of master are rare, and hitherto were only to be seen in the Louvre, Liverpool and Antwerp.

**The London County Council** have instructed the improvement committee to consider the possibilities of some "over and under" arrangement, by means of bridges or subways, or about every spot where two large streams of vehicles now perforce to wait to cross each other.

**The Prince of Wales** will open the National Physical Laboratory in Bushey House on March 19. The object of the laboratory is to encourage the application of physical science to manufactures and industry. This it will do by undertaking researches into questions of importance to either, and by the use of apparatus and material used in trade.

**The Yarmouth Port Authorities** are willing to sell cement manufacturers foreshore mud at a farthing a ton.

**The Paris Municipality** have agreed to the project of purchasing from the State the site of the fortifications to be demolished between Auteuil and Neuilly.

**The Congress** of the Sanitary Institute will be held at Manchester from September 9 to 13 next, when Earl Egerton of Tatton will preside. Section I. (Sanitary Science and Preventive Medicine) will be presided over by Sir J. Crooke Browne, F.R.S.; Section II. (Engineering and Architecture) by Sir Alexander Binnie; and Section III. (Physics, Chemistry and Biology) by Professor A. Sheridan Delpéine. Fifteen technical conferences will also be held in connection with the congress.

**Battle Abbey** continues to be open to visitors on Tuesdays and the admission fees are devoted to local charities.

**The Launceston Town Council** have taken a thirty-year lease of the castle from the Duchy of Cornwall at the nominal rent of 5*l.*, the cost of upkeep and of the gardens and pleasure walks attached to the castle being borne by the municipality.

**A Bill** will shortly be introduced by the Treasury for the acquisition of the property required to complete the site of a new college of science in Dublin. In 1899-1900 there was a vote of 13,000*l.* towards the purchase of the first part.

**The Court of Common Council** have resolved to refer the City lands committee to consider the desirability of temporarily arranging for the proper ventilation of the present building during the erection of the new Sessions House.

**The Fifth Ordinary Meeting** of the Liverpool Architectural Society will be held at 6 P.M. on Monday, February 11, in the Law Library, 41 Castle Street, Professor Simon in the chair. A paper will be read by Mr. Robert Cockerell on "The Life and Works of Professor Charles Robert Cockerell, R.A.," illustrated by lantern slides and original drawings.



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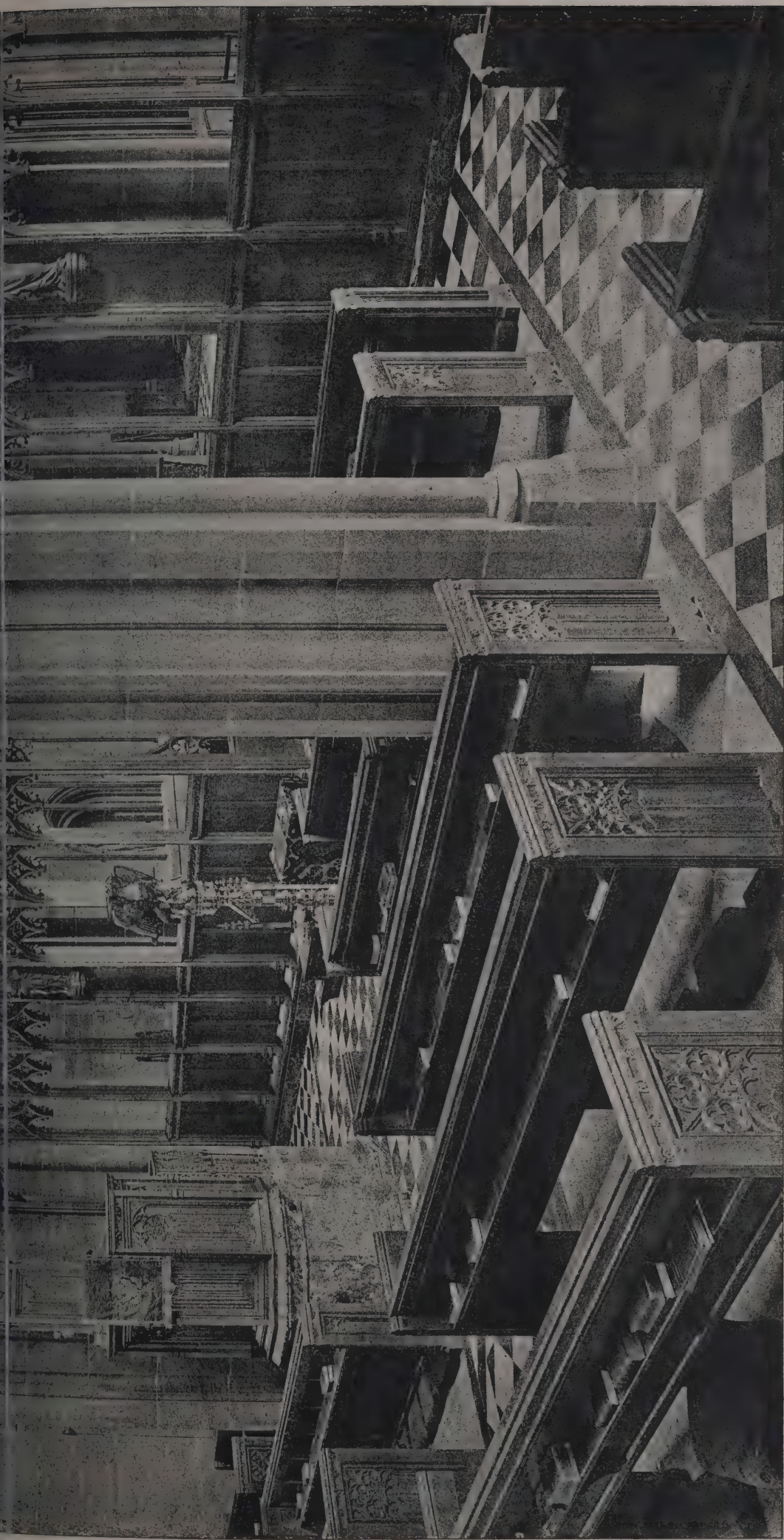
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The Architect, Jan 24<sup>th</sup> 1902.







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THIS

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**ALDERSHOT.**—March 1.—Plans are invited for laying-out as a pleasure ground about 6 acres of land in the centre of Aldershot. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

**ALDERSHOT.**—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for first, second and third best plans. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. All information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, Westminster.

**BATTERSEA.**—Jan. 31.—Premiums of 50%, 25% and 10% respectively are offered for the three best sets of designs, &c., of dwellings, as follows:—(a) A house of two storeys; (b) a house consisting of two self-contained tenements; and (c) a house consisting of three self-contained tenements. Mr. W. Marcus Wilkins, town clerk, Municipal Buildings, Lavender Hill, S.W.

**CARLISLE.**—Plans and specifications, with the cost of erecting suitable grand stand and offices at Blackhall new race-course by competition, are invited. A sum of £10 will be awarded the second and £5 to the third competitor. The Secretary, 15 Howard Place, Carlisle.

**GLASGOW.**—Feb. 1.—Schemes, plans and estimates of cost are invited for erection of dwellings for the poorest classes upon ground at Alexandra Park. Premiums of 100%, 50% and 25% respectively will be awarded to the authors placed first, second and third in order of merit. Sir J. D. Marwick, town clerk, City Chambers, Glasgow.

**HULL.**—Jan. 31.—Designs are invited in competition for the new art school. Premiums will be awarded to the designs placed first, second and third in order of merit (100%, 60% and 40%). The architect whose plans are carried out will be paid the usual 5 per cent. commission, the premium to merge in such commission. Mr. Sidney R. J. Smith, 14 York Buildings, London, W.C.

**ISLE OF WIGHT.**—Jan. 31.—Designs are invited for a suitable monument as a memorial to Her late Majesty, to be erected in St. James's Square, Newport, Isle of Wight. A premium of 25% is offered for the accepted design. The Secretary, Isle of Wight Queen Victoria Memorial Committee, 20 Holyrood Street, Newport, Isle of Wight.

**IRELAND.**—Feb. 26.—A premium of £20 is offered for the best and cheapest report, plans, specification and estimates, &c., for providing the town of Kanturk with a wholesome supply of water. Mr. Mt. Timothy Guiney, clerk to the Kanturk Rural District Council, at the Boardroom of the Workhouse.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200%, 150% and 100% respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Jan. 31.—Applications are invited from architects willing to submit designs in a limited competition for rebuilding the Liverpool Infirmary for Children. Colonel C. Forbes Bell, Eagle Chambers, 17 Fenwick Street, Liverpool.

**WALES.**—Feb. 4.—Competitive designs are invited for municipal offices proposed to be erected by adapting, adding to and rearranging the town hall buildings at Mountain Ash. A premium of 75% will be paid to the author of the design placed first in order of merit. Mr. H. P. Linton, clerk, Town Hall, Mountain Ash.

## CONTRACTS OPEN.

**ASHFORD.**—Jan. 28.—For erection of buildings at the gas-works. Mr. John Creery, clerk, Ashford.

**BEESTON.**—Jan. 28.—For erection of stables and two houses at Millshaw, Beeston, Yorks. Messrs. Buttery & Birds, architects, Queen Street, Morley.

**BISHOP AUCKLAND.**—Jan. 27.—For erection of a Primitive Methodist church, schools and vestries at Cockton Hill. Mr. T. E. Davidson, architect, 14 Neville Street, Newcastle-on-Tyne.

Fig. 5 is an Illustration of "VERITY'S PATENT"

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Fig. 5.



**BLACKBURN.**—Jan. 27.—For supply of incandescent electric lamps. Mr. Alfred S. Giles, general manager, Electricity Works, Blackburn.

**BLACKPOOL.**—Jan. 29.—For erection of a station at South Shore, Blackpool, for the Lancashire and Yorkshire and London and North-Western Joint Railways. Mr. R. C. Irwin, Secretary, Hunt's Bank, Manchester.

**BRADFORD.**—Jan. 27.—For erection of a Primitive Methodist church, Daisy Hill, Bradford. Mr. T. E. Davidson, architect, 14 Neville Street, Newcastle-on-Tyne.

**BRADFORD.**—Jan. 30.—For enlargement of the operation-room at the Bradford Royal Infirmary. Messrs. Milnes & France, architects, Bradford.

**BRADFORD.**—Jan. 31.—For erection of a lych gate at Scholemoor cemetery. Mr. F. E. P. Edwards, city architect, Chapel Lane.

**BRISTOL.**—Jan. 30.—For enlargement of the petty sessional courts and offices, Bridewell Street, Bristol. Mr. Henry Williams, architect, Imperial Chambers, Corn Street, Bristol.

**CARLISLE.**—For erection of a cottage, Brook Street. Mr. W. Pogson, architect, Devonshire Street, Carlisle.

**CHELMSFORD.**—Jan. 31.—For making, erection and setting to work and maintaining for six months of a 15-b.h.p. oil-engine at their waterworks pumping-station, Ingatstone, Essex. Mr. James Dewhirst, engineer, Engineer's Office, Avenue Chambers, Chelmsford.

**CORNWALL.**—Jan. 27.—For erecting a villa residence at Downerry. Mr. John H. Vincent, architect, 74 Old Town Street, Plymouth.

**DARLINGTON.**—Feb. 3.—For erection of a pair of semi-detached cottages at the Corporation farm. Mr. H. G. Steavenson, town clerk, Houndgate, Darlington.

**DUNDEE.**—Jan. 27.—For construction of a main sewer, consisting of about 2,170 yards of 18-inch salt-glazed fireclay or stoneware pipes and about 1,664 yards of 15-inch pipes, with manholes, &c., for the drainage of back-lying portion along the north side of the city, for the Town Council. Mr. Wm. Mackison, engineer, Municipal Offices, Commercial Street, Dundee.

**EASTBOURNE.**—Feb. 10.—For erection of a technical institute, public library, science and art schools, fire-station, &c., in Grove Road, Eastbourne. Mr. H. West Fovargue, town clerk, Town Hall, Eastbourne.

**FULHAM.**—Jan. 27.—For supply of transformers, mains, conduits, lamp-posts and street boxes. Mr. R. M. Prescott, town clerk, Town Hall, Walham Green, S.W.

**GOOLE.**—Jan. 27.—For supply of one or two steel boilers, complete with fittings, &c., at the new waterworks pumping station near Pollington. Mr. J. C. Melliss, engineer, 264 Gresham House, Old Broad Street, E.C.

**GREAT YARMOUTH.**—Jan. 28.—For erection of a bazaar Marine Parade. Mr. Arthur S. Hewitt, architect, Bank Chambers, Great Yarmouth.

**GUILDFORD.**—Jan. 28.—For alterations and repairs to the double tenement and farm buildings and the erection of an outbuilding at Woodlands farm, Slyfield Green, the sewage outfall for the parish of Stoke. Mr. Edward L. Lunn, architect, 36 High Street, Guildford.

**HASTINGS.**—Jan. 27.—For erection of galleries in the electric-light station, Earl Street, Hastings. Mr. P. H. Palmer, borough engineer, Town Hall, Hastings.

**HAVERHILL.**—Jan. 29.—For erection of a house, offices and stores in High Street, Haverhill, Suffolk. Mr. A. Ainsworth Hunt, architect, Sudbury.

**HEXHAM.**—Jan. 27.—For erection of a main road bridge in masonry and brick over the river South Tyne at Warden, Hexham, Northumberland. Mr. J. A. Bean, county surveyor, Moot Hall, Newcastle.

**HULL.**—For erection of a warehouse, offices, stores, workshops, &c., and an ice manufactory, ice store, freezing-room, engine and boiler-rooms, Middlesbrough. Messrs. Freeman, Son & Gaskell, architects, Albert Chambers, 11 Carr Lane, Hull.

**HULL.**—Jan. 29.—For erection of the first portion of new synagogue and schools, Linnæus Street, Hull. Mr. B. S. Jacobs, architect, Bowlalley Lane, Hull.

**HULL.**—Jan. 29.—For erection of waggon repairing shops, messrooms, &c., Hessel Road, Hull, for the North-Eastern Railway Company. Mr. William Bell, architect, York.

**ILFORD.**—Jan. 27.—For supply of copper rail bonds, fixed stoneware cable conduits, laid and jointed; draw-boxes, &c. Mr. John W. Benton, clerk, Council Offices, Ilford.

**IRELAND.**—Jan. 27.—For supplying and fitting-up with machinery, &c., new central laundry at the Belfast workhouse. Messrs Young & Mackenzie, civil engineers, Belfast.

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IRELAND.—Jan. 27.—For building of a pair of semi-detached villas on the Blackrock Road, Cork. Messrs. W. H. Hill & Son, architects, South Mall, Cork.

IRELAND.—Jan. 29.—For erection of a central creamery one mile from Croom railway station. Mr. John Hickey, Croom, co. Limerick.

IRELAND.—Jan. 29.—For alterations and forming business premises at Carlisle Road, Londonderry. Mr. J. P. M'Grath, architect, 28 Carlisle Road, Londonderry.

IRELAND.—Jan. 31.—For heating the new operating-room recently erected in connection with the workhouse infirmary, Celbridge, and the introduction of a hot and cold water-supply. Mr. James Whelan, architect.

IRELAND.—Feb. 8.—For erection of a residence at Lawrence Street, (Foyle College grounds), Londonderry. Mr. J. P. M'Grath, architect, 28 Carlisle Road, Londonderry.

IRELAND.—Feb. 26.—For erection of the technical institute, Belfast. Mr. Samuel Stevenson, architect, 83 Royal Avenue, Belfast.

IRELAND.—Feb. 28.—For erection of new National schools in Windsor Avenue, Lurgan. Mr. H. Hobart, architect, Dro-more.

KINGSTON-UPON-THAMES.—Jan. 30.—For erection of a porter's lodge, receiving wards, stores and new approach road, and alterations and additions to old buildings for use as laundry buildings, &c., at the workhouse. Mr. James Edgell, clerk, Union Offices, Coombe Lane, Kingston-on-Thames.

LEEDS.—Jan. 27.—For erection of a villa in Shaw Lane. Mr. T. H. Rhodes, architect, 17 Hyde Terrace, Leeds.

LEEDS.—Feb. 8.—For erection of the police station and free library in Harrogate Road and Town Street, Chapeltown. Mr. William H. Thorpe, architect, 61 Albion Street, Leeds.

LIMEHOUSE.—Feb. 18.—For erection of a block of artisans' dwellings, Queen Catherine Court area, Dorset Street. Mr. Geo. W. Clarke, town clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

LITTLE ILFORD.—Jan. 28.—For extension of water mains and the supply of new hydrants, &c., at the City of London cemetery. Mr. H. Montague Bates, clerk to the Burial Board, Guildhall, E.C.

LIVERPOOL.—Jan. 27.—For construction of public baths at Lister Drive, West Derby. Mr. W. R. Court, engineer and chief superintendent, Municipal Offices, Liverpool.

LIVERPOOL.—Jan. 29.—For supply of three-phase high-tension motor-generators, positive and negative boosters, battery-charging boosters, &c., and batteries of accumulators with accessories. The Chairman and Directors, South Lancashire Electric Traction and Power Company, Ltd., 12 St. John's Lane, Liverpool.

LONDON.—Jan. 30.—For repairing chimney-stacks at the Eastern Fever Hospital, The Grove, Homerton, N.E., for the Metropolitan Asylums Board. Mr. T. Duncombe Mann, clerk, at the offices of the Board, Embankment, E.C.

LONDON.—March 4.—For supply and delivery into car-sheds in South London of 100 double-decked double-bogie electric trams, for the London County Council. Each car is to be equipped with a plough for working on a conduit system, and to be capable of seating about 68 persons. Particulars at the County Hall, Spring Gardens, S.W.

LONDON BRIDGE.—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

LYTHAM.—Jan. 31.—For erection of engine and destructor-houses and cottage, and the supply of two centrifugal pumping engines, steam dynamo, electric light fittings and travelling crane. Mr. Chas. A. Myers, clerk to Urban District Council, Lytham.

MANCHESTER.—Jan. 28.—For supply, delivery and erection at their Stuart Street generating station of elevators and conveyors for coal and ashes for the electricity committee. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

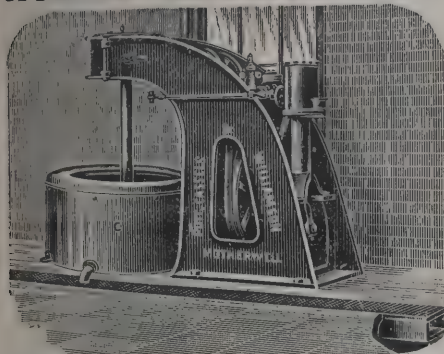
MANCHESTER.—Jan. 30.—For construction of section B C of a subway for electric cables between Gibbon Street and Cavendish Place, Bradford. The City Surveyor, Town Hall, Manchester.

MANCHESTER.—Jan. 30.—For construction of Gaythorn Tunnel, Deansgate, Manchester. The City Surveyor, Town Hall, Manchester.

MANCHESTER.—Feb. 13.—For erection of surface condensers, oil separators and hot well, cooling towers and feed-water heaters, at the Stuart Street generating station. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MELTHAM.—Jan. 30.—For construction of sewage purification works, consisting of bacteria and oxidising beds, aerating

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channels, and other works connected therewith. Mr. William Carter, clerk, Town Hall, Meltham.

**NANTWICH.**—Jan. 28.—For erection of a technical institute in Beam Street, Nantwich. Mr. C. E. Davenport, architect, Nantwich.

**NATLAND.**—Jan. 27.—For supply of 16 tons of cast-iron water-pipes and a few bends; the construction of a 100,000-gallon concrete tank, and laying of half a mile of 3-inch water-pipes in connection at Natland. Mr. Alexander Milne, clerk to rural District Council, Kendal.

**NEWCASTLE-ON-TYNE.**—Feb. 12.—For construction of a railway bridge and approaches over the river Tyne at Newcastle, for the North-Eastern Railway Company. Mr. Charles A. Harrison, Central Station, Newcastle-on-Tyne.

**NEWCASTLE-UNDER-LYME.**—For erection of two houses, London Road, Newcastle-under-Lyme. Mr. Wm. Campbell, architect, 2 Bagnall Street, Hanley.

**NEW MILLS.**—Feb. 1.—For erection of male and female casual wards, infirmary laundry, and other buildings at the workhouse, Low Leighton, New Mills. Messrs. Garlick & Flint, architects, 5 Terrace Road, Buxton.

**NOTTINGHAM.**—For erection of a pair of semi-detached villas on Sherwood Rise. Messrs. Collyer & Slater, architects, 8 Bridlesmith Gate, Nottingham.

**PAIGNTON.**—Jan. 31.—For supply, delivery and laying of about nineteen miles of 15-inch, 9-inch and 6-inch cast-iron water-mains, with sluice valves, air valves, meters, washouts, &c., the erection of a road bridge over the river Dart, and the construction of a covered service reservoir, boundary walls, &c., in connection with the Moorland water-supply contract. Mr. Frederick William Vanstone, engineer, Palace Chambers, Paignton, Devon.

**PEGSWOOD.**—Jan. 29.—For erection of a passenger station and stationmaster's house at Pegswood, Northumberland, for the North-Eastern Railway Company. Mr. William Bell, architect, Central Station, Newcastle-on-Tyne.

**PENZANCE.**—For erection of a villa residence in Alexandra Road, Penzance. Mr. Oliver Caldwell, architect.

**PURLEIGH.**—Jan. 31.—For erection of a small bridge at Purleigh, Essex. Mr. Percy J. Sheldon, chief surveyor to the County Council.

**RADCLIFFE (LANCS).**—Feb. 6.—For erection of an octagonal brick chimney in Dale Street, Radcliffe. Mr. W. L. Rothwell, engineer to the Urban District Council, Radcliffe.

**RETTFORD.**—Feb. 6.—For erection of a new church in the parish of Ordsall, Retford. Mr. C. Hodgson Fowler, architect, Durham.

**ROCHDALE.**—Feb. 2.—For erection of additional panels, instruments and switch-gear, and connections for the extensions to the lighting switchboard. Mr. James Leach, town clerk, Town Hall, Rochdale.

**ST. AGNES.**—Jan. 29.—For taking-down the present cloak-room at the boys' school and erecting a new one, St. Agnes, Cornwall. Messrs. Carder & Carder, 4 Princes Street, Truro.

**SALFORD.**—Jan. 31.—For erection of new central fire station in The Crescent. Mr. Henry Kirkley, architect, 134 Deansgate, Manchester.

**SCOTLAND.**—Jan. 27.—For erection of a new hospital for infectious diseases at Eskdale. Mr. R. M'George, solicitor, Langholm.

**SCOTLAND.**—Jan. 27.—For cutting tracks and laying a supplementary main water-supply pipe from Lochornie reservoir to the burgh of Lochgelly, and other works. Messrs. Buchanan & Bennett, C.E., 12 Hill Street, Edinburgh.

**SCOTLAND.**—Jan. 27.—For erection of a double house at Stotfield Road, Lossiemouth. Messrs. A. & W. Reid & Wittet, architects, Elgin.

**SCOTLAND.**—Feb. 1.—For erection of the Western District Hospital at Oak Bank, Possil Road, Glasgow. Mr. Alexander Cullen, architect, Atlantic Chambers, 45 Hope Street, Glasgow.

**SCOTLAND.**—Feb. 3.—For construction of bacteria beds and relative works at Crossgates, Dunfermline. Mr. David Mackenzie, master of works, County Buildings, Dunfermline.

**SCOTLAND.**—Feb. 3.—For construction of four filters and a service tank, with gauge well, tool-house, &c., an aqueduct of steel girders and concrete piers over the river Carron, Falkirk, and providing, laying and jointing of about 2,840 yards of 14-inch cast-iron pipes, &c. Messrs. Warren & Stuart, civil engineers, 94 Hope Street, Glasgow.

**SCOTLAND.**—Feb. 7.—For erection of a tramcar depôt at Oswald road, Kirkealdy. Mr. Wm. L. Macindoe, town clerk, Kirkcaldy.

**SEDGLEY.**—Feb. 5.—For supply of four gas purifiers (Green's system), 12 feet by 12 feet, with necessary fittings and connections. Mr. Joseph Smith, clerk, Urban District Council, High Holborn, Sedgley.

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**SHEFFIELD.**—Jan. 28.—For erection of stables, engine-house, &c., at Bamford, about twelve miles from Sheffield, for the Derwent Valley Water Board. Mr. Edward Sandeman, engineer, Bamford.

**SHENFIELD.**—Feb. 3.—For erection of cowbyre and farm-house at Sawyers Hall Farm, Shenfield, Essex. Mr. Lionel H. Marshall, surveyor, Chippenham.

**SHOREDITCH.**—Feb. 4.—For extensions of the works and offices at the electric light station, Coronet Street, N. Mr. H. Mansfield Robinson, town clerk, Town Hall, Old Street, E.C.

**SHREWSBURY.**—Feb. 8.—For erection of headquarters police offices in Shrewsbury. Mr. A. T. Davis, county surveyor, Shire Hall, Shrewsbury.

**SOUTHEND-ON-SEA.**—Feb. 4.—For erection of a boundary wall at the sanatorium. Mr. Alfred Fidler, borough surveyor, Southend.

**SOUTHEND-ON-SEA.**—Feb. 5.—For providing and fixing wooden piles and construction of steps at Southend pier head. Mr. Alfred Fidler, borough surveyor, Southend.

**STAMFORD.**—Feb. 17.—For erection of an engine-house, cottage and outbuildings thereto, in Albert Road. Mr. J. B. Everard, engineer, 6 Millstone Lane, Leicester.

**STOCKTON.**—Feb. 10.—For erection of the new Wellington Street Baptist church, Stockton. Mr. T. W. T. Richardson, architect, 57 High Street, Stockton.

**STOCKS.**—Feb. 3.—For construction of a girder-bridge at Chapel House, Stocks, near Slaidburn. British steel, viz. three girders, 6 inches by 5 inches, weight about 25 lbs. per foot; six girders, 8 inches by 6 inches, weight about 30 lbs. per foot, delivered free at Chatburn Station on or before March 1. Tender for all work and materials (except above girders). Mr. John Eastham, clerk, Rural District Council, Clitheroe.

**STOWMARKET.**—Jan. 29.—For boring an artesian well in the Street, Haughley. Mr. R. E. Wilkes, Stowmarket.

**STRATFORD-UPON-AVON.**—Jan. 27.—For erection of a cow-house and pigstyes at Comyns Park Farm, and for painting and repairs at King's Lane cottages and waterworks cottage, Snitterfield. Mr. Roden Dixon, borough surveyor, Municipal Offices, Sheep Street, Stratford-upon-Avon.

**STRATFORD.**—Feb. 12.—For painting, graining and repairs at the court-house (Beacontree division), Great Eastern Road. Mr. Frank Whitmore, county architect, Chelmsford.

**STYAL.**—Jan. 30.—For erection of cottage homes for 120 children at Styal, Cheshire. Mr. James B. Broadbent, architect, 15 Cooper Street, Manchester.

**SUNDERLAND.**—Feb. 6.—For supply of ten double and four single deck car bodies and trucks, equipped with all electrical fittings for overhead trolley system, gauge 4 feet 8½ inches. Mr. J. F. C. Snell, engineer, Town Hall, Sunderland.

**SWINTON.**—For erection and equipment of public baths in Victoria Park, Swinton, Manchester. Mr. T. J. Bushell, architect, 18 John Dalton Street, Manchester.

**THURLSTONE.**—Jan. 31.—For erection of two houses at Thurlstone. Mr. George Moxon, architect, Central Chambers, 26 Church Street, Barnsley.

**WAKEFIELD.**—Feb. 4.—For erection of a new stronghold, new staircase and new lavatories at the West Riding Registry Offices, Wakefield. Mr. J. Vickers-Edwards, county surveyor, Wakefield.

**WALES.**—Jan. 27.—For erection of the new entrance to St. Michael's churchyard, Aberystwyth. Mr. Rees Jones, borough surveyor, Corporation Offices, Smithfield Road, Aberystwyth.

**WALES.**—Jan. 28.—For erection of twenty-two cottages at Tycross, Pantyffynon. Mr. David J. Michael, architect, Tirydail, Ammanford.

**WALES.**—Jan. 29.—For erection of a large mixed school, with offices, boundary walls, &c., at Aberfan, Merthyr Tydfil. Mr. J. Llewellyn Smith, architect, 50 High Street, Merthyr.

**WALES.**—Jan. 31.—For erection of school at Penygraig, near Pontneathvaughan, Glynneath. Mr. Thomas Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

**WALES.**—Jan. 31.—For repairs, painting and papering to several public houses at Brynmawr. Mr. T. Edwards, Rhymney Brewery, Rhymney.

**WALES.**—Feb. 1.—For construction of tanks, flushing-chambers, and for providing and laying about 3,349 lineal yards of 4-inch and 2½ lineal yards of 3-inch cast-iron mains and other works, for the Gwyrfa Rural District Council. Mr. E. Evans, 8 Castle Street, Carnarvon.

**WALES.**—Feb. 3.—For erection of 100 houses at Pen-y-darren, Merthyr Tydfil. Mr. T. Aneuryn Rees, clerk, Town Hall, Merthyr.

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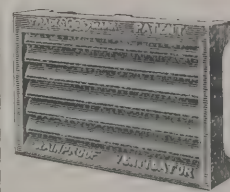
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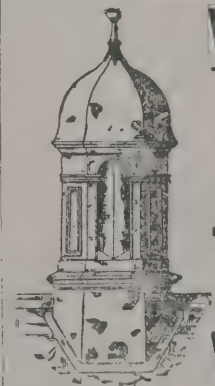
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WALES.—Feb. 5.—For erection of power-station and carsheds at Newport, Mon. The Borough Engineer, Town Hall, Newport, Mon.

WALES.—Feb. 7.—For erection of a house (29 feet frontage) at Crumlin, Mon. Mr. R. L. Roberts, architect, Abercarn.

WALES.—Feb. 7.—For erection of eighteen houses at Treorky. Mr. M. Falcon, 33 Bute Street, Treorky.

WALES.—Feb. 7.—For altering and rebuilding the Primitive Methodist chapel, Blaenau Gwent. Mr. A. Jones, Rosebery Street, Abertillery.

WALES.—Feb. 10.—For re-erecting the Crown Bridge, which carries the road over the canal at Sebastopol, near Griffithstown. Mr. T. P. Holmes Watkins, clerk to Urban District Council, Club Chambers, Pontypool.

WALES.—Feb. 11.—For erection of a gardener's cottage at the Rest Convalescent Home, Porthcawl. Mr. S. H. Stockwood, solicitor, Bridgend.

WARRINGTON.—Jan. 28.—For supply of feeder cables, &c. The Town Clerk, Town Hall, Warrington.

WATFORD.—Feb. 12.—For erection of a steel gasholder tank, 110 feet diameter by 20 feet deep, and a telescopic gasholder in three lifts, with guide-framing, inlet and outlet pipes, &c., at the gasworks. The Chairman, Watford Gas and Coke Company, at the Gasworks.

WEST BROMWICH.—Jan. 29.—For supply of boilers, feed pump and piping, steam dynamos and condenser, boosters, traction switchboard, and the extension of lighting switchboard. Mr. J. H. Wray, borough electrical engineer, Electricity Works, Black Lake, West Bromwich.

WESTMORLAND.—Jan. 27.—The South Westmorland Rural District Council invite tenders for (1 and 2) 16 tons of cast-iron water-pipes and a few bends; (3) construction of a 100,000-gallon concrete tank, and laying half a mile of 3-inch water-pipes in connection at Natland. Mr. Alexander Milne, clerk, Kendal.

WHITEHAVEN.—Feb. 11.—For erection of a new infirmary on land adjoining the workhouse at Whitehaven. Mr. Geo. Boyd, engineer, Queen Street, Whitehaven.

WREXHAM.—Feb. 1.—For erection of dwelling accommodation for the horsekeeper, &c. Mr. Thomas Bury, town clerk, Guildhall.

WREXHAM.—Feb. 18.—For reconstruction of the main lantern lights along the roof of the butchers' market, &c., and

reconstruction of market sanitary arrangements and conveniences. Mr. Thomas Bury, town clerk, Guildhall.

YORK.—Jan. 30.—For construction of a road bridge over the railway and concrete retaining wall, near Severus Junction, York, for the North-Eastern Railway Company. Mr. C. N. Wilkinson, secretary, York.

### NATIONAL REGISTRATION OF PLUMBERS.

THE annual meeting of the members of the Leeds District Council of the National Registration of Plumbers was held at the Leeds Institute, Mr. J. Wreghitt Connon presiding.

In the twelfth annual report presented by the secretary (Mr. J. W. Burrell), the Council congratulated the members on the success which had attended the movement during the year. In that period there had been added to the local register 43 master plumbers and 103 operative plumbers. The appeal to the Government to take up the new Bill for the Registration of Plumbers and introduce it as a Government Bill had met with a good measure of success, and the Worshipful Company of Plumbers were sanguine of attaining this end in the near future.

The Chairman, in moving the adoption of the report, referred with satisfaction to its encouraging character, and remarked that it showed that the plumbers of Leeds were standing staunch to the registration movement. Mr. T. Headridge (vice-president) seconded the motion, which was agreed to.

On the motion of Dr. J. S. Cameron (medical officer of health for Leeds), seconded by Dr. Porter, a resolution was carried recognising the valuable and necessary work now being done in the present system of registration, and urging the whole of the members of the plumbers' craft, through their Parliamentary representatives, to press upon the Government the desirability of bringing in without delay a measure necessary to place the craft upon a proper legal basis, and thus to increase the efficacy of the existing system of sanitation in buildings.

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Mr. WILLIAM JOHN WILLCOX, architect, 1 Belmont,  
Bath.

C. Wibley . . . . .	£7,834	0	0
Chancellor & Son . . . . .	7,618	0	0
Erwood & Morris . . . . .	7,510	0	0
W. Webb . . . . .	7,427	0	0
L. Hayward & Wooster . . . . .	7,425	0	0
Wills & Sons . . . . .	7,412	0	0
LONG & SONS, Railway Road (accepted) . . . . .	6,591	0	0

### BATLEY.

For construction of a wellhole to the new hydraulic hoist.  
Messrs. WALTER HANSTOCK & SON, architects, Branch  
Road, Batley.

*Accepted tenders.*

J. Farrar, Batley, mason, joiner, plumber, plasterer, slater and  
painter.

Calvert & Co., Huddersfield, hydraulic hoist and fittings  
complete.

### BIRMINGHAM.

For erection of new pavilions, boiler-house and other works at  
the Erdington workhouse. Messrs. C. WHITWELL & SON,  
architects, 23 Temple Row, Birmingham.

S. Surman & Son . . . . .	£18,106	0	0
W. & J. Webb . . . . .	17,719	0	0
J. Barnsley & Sons . . . . .	16,666	0	0
R. M. Hughes . . . . .	16,489	0	0
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W. H. Gibbs . . . . .	15,725	0	0
T. JOHNSON, Great Brook Street, Birmingham (accepted) . . . . .	15,700	0	0

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pressure of 120 lbs. per square inch.

TETLOW BROS., Hollinwood, near Manchester (accepted).

For erection of battery-room, storeroom and workshops at the  
electric-lighting generating station, Bentinck Street. Mr.  
CHAS. BROWNIDGE, borough engineer and surveyor.

P. TYSON, Dryden Street, Liverpool (accepted) £1,267 0 0

### BRIGHTON.

For painting the Madeira Road shelter hall and portions of the  
interior of the public baths, North Road.

#### Shelter hall.

Seed Bros & Croote . . . . .	£225	0	0
F. Reynolds . . . . .	208	0	0
Worsley & Co. . . . .	196	15	0
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H. Batchelor . . . . .	153	10	6
Hallett & Duke . . . . .	147	0	0
T. F. Holland . . . . .	145	0	0
J. J. Richards . . . . .	125	0	0
GATES & SON, North Road, Brighton (accepted) . . . . .	125	0	0

#### Public baths.

Seed Bros. & Croote . . . . .	250	0	0
Hallett & Duke . . . . .	160	0	0
T. F. Holland . . . . .	135	0	0
H. Batchelor . . . . .	121	11	6
GATES & SON (accepted) . . . . .	119	10	0

### BUCKHURST HILL.

For construction of bacteria beds, sewage filters, storm overflow  
sewers, &c., at the sewage works. Mr. H. TOOLEY,  
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J. & T. Binns . . . . .	£2,021	0	0
W. Coker . . . . .	1,898	0	0
G. Bell . . . . .	1,823	0	0
C. Ford . . . . .	1,740	0	0
F. J. Coxhead . . . . .	1,560	0	0
G. F. Tomlinson . . . . .	1,450	0	0
Wilkinson Bros. . . . .	1,400	0	0
W. & C. FRENCH, Buckhurst Hill (accepted) . . . . .	1,390	0	0
W. Manders . . . . .	1,312	0	0

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## HULL.

For rebuilding the Tally Ho, Bond Street. Messrs. FREEMAN SON & YASKELL, architects, 11 Carr Lane, Hull.

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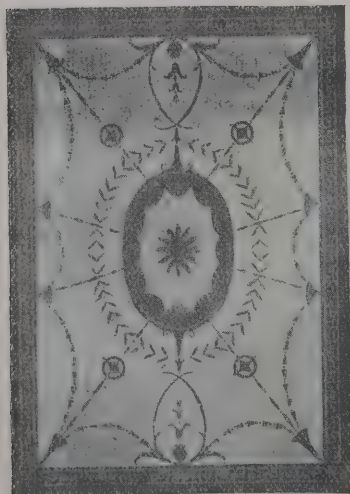
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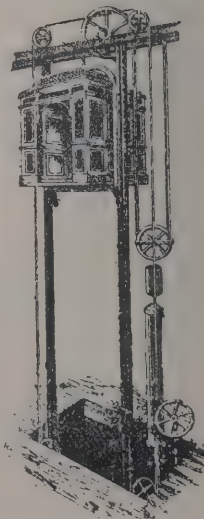
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Braithwaite . . . . . £1,084 0 0

Gordon Bros. . . . . 995 0 0

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For repair of Sandown and Oakley Roads.

Sandown Road.

E. ILES, Tamworth Lodge (*accepted*) . . . . . £855 0 0

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E. ILES (*accepted*) . . . . . 859 0 0

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C. Pettit . . . . . 235 10 0

COATES & SON, Thrapston (*accepted*) . . . . . 227 0 0

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For erection of an infants' school, to accommodate 200 children, at Cwmcelyn, near Blaina, Aberystwith. Mr. R. L. ROBERTS, architect, Abercarn.

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J. Jenkins . . . . . 2,527 0 0

J. Lloyd . . . . . 2,454 10 0

M. Jenkins . . . . . 2,448 18 0

J. NEWCOMBE, Victoria Road, Ebbw Vale (*accepted*) . . . . . 2,400 0 0

For erection of car dépôt in Newport Road, Roath, Cardiff. Mr. W. HARPUR, borough engineer.

E. Turner & Sons . . . . . £27,032 0 0

J. Allan & Sons . . . . . 25,867 0 0

E. R. Evans & Bros. . . . . 24,478 0 0

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W. T. Morgan . . . . . 23,126 0 0

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D. W. DAVIES, Cardiff (*accepted*) . . . . . 21,998 0 0

For street works in Bute Street, Cardiff. Mr. W. HARPUR, borough engineer.

J. E. Evans . . . . . £2,667 8 6

J. Allan & Son . . . . . 1,822 11 10

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For erection of premises at the corner of Wyndham and Adare  
streets, Bridgend. Mr. P. J. THOMAS, architect, Bridgend.

Lloyd & Tape . . . . .	£3,518	0	0
W. McGaul . . . . .	3,300	0	0
W. Francis . . . . .	3,040	0	0
R. Jones . . . . .	3,015	10	0
C. H. Cookseley . . . . .	2,930	0	0
P. GAYLARD, Bridgend (accepted) . . . . .	2,750	0	0

For sewerage and sewage-disposal works for the villages of  
Senny Bridge and Defynock, Brecon. Mr. B. L.  
PRITCHARD, surveyor, 8 Castle Street, Brecon.

J. Monks . . . . .	£3,484	19	7
Johnson Bros. . . . .	3,379	19	10
J. Lawson & Co. . . . .	2,977	13	6
Barnes, Chaplin & Co. . . . .	2,824	7	2
J. Sutherland . . . . .	2,609	19	4
W. MOSES, Senny Bridge (accepted) . . . . .	2,300	0	0
F. Martin . . . . .	1,699	2	8

## BUILDING AND BUILDERS.

At a meeting of the St. Andrews, N.B., executive committee on Monday, it was agreed to invite plans for the restoration of the town church from Mr. M'Gregor Chalmers, Glasgow. It was intimated that a member of the congregation had promised 1,000l. to the restoration fund.

THE foundation-stone of St. Paul's Church, Fairhaven, in the parish of St. Cuthbert, Lytham, will be laid to-morrow by Mr. H. W. Worsley-Taylor, M.P. The site for the church, parsonage and schools was given by Mr. J. Talbot Clifton. The new church will meet the needs of the rapidly increasing district of Fairhaven.

THE foundation-stone of a new public hall for Alford Aberdeenshire, which has become necessary by reason of the inadequacy of the wooden building which has hitherto had to serve the purpose, was laid on Saturday last. The new building, which is to cost 1,200l., will comprise a hall 87 feet by 43 feet, and seated for 500 persons, and a small hall seated for 100 persons.

THE characteristic American plan of preferring entire reconstruction to any kind of repairs is, we hear, about to be illustrated at Chicago, where the Montauk building, one of the most notable sky-scrappers in the city, is to be pulled down. Its site may be utilised for part of a new office building. At its last assessment it was valued at over half a million dollars. The new structure is to be erected by the First National Bank of Chicago, which has paid a million dollars for its new site and will spend four million dollars on the new building.

THE Chesterfield Town Council have determined on the erection, by way of experiment, of twenty houses for the poor, subject to the approval of the Local Government Board. The idea was that they should not erect a class of houses which would be brought into competition with those provided by private enterprise, but rather that they should make provision for the very poor for whom it does not pay an ordinary landlord to erect houses, and who are hence driven to dwell in low-rented slum property. The Corporation are advised that they can build houses with one room downstairs and two upstairs to let at 3s. per week, and an application is to be made to the Local Government Board for permission to borrow the money necessary. There is some doubt whether that permission will be given, but at any rate the Council will have made an honest attempt to deal with a very difficult question.

THE baths and parks committee, at their meeting on Monday, under the presidency of Mr. Marsh, resolved to recommend the Birmingham City Council, at their meeting on February 4, to authorise them to proceed with the work. The propose to acquire from the watch committee the police-station in George Arthur Road, which will be vacated as soon as the new premises in Bloomsbury Street are finished. The front part of the building will need very little alteration to adapt to the requirements of the administrative department, and some modification of the cells will be sufficient to transform them into ten private baths for women and sixteen for men. It is not in contemplation at present to sink a well and provide a swimming bath, but a piece of land at the rear of the station

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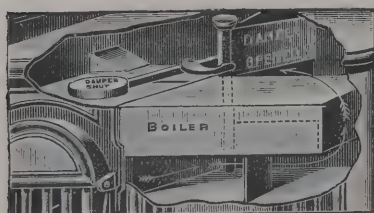
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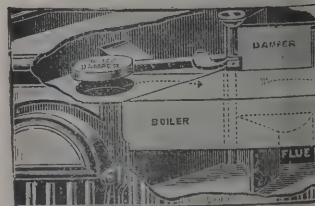
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The above shows the heat concentrated under the boiler and the waste heat passing under the hot plate.

This Independent Range is fitted with hot water circulating boiler, as shown in the sections, and the heat of the fire passes direct under the bottom of the oven.

A Fire Brick Dome and damper is fitted over the fire, which enables the heat to be concentrated at pleasure on the hot plate or boiler, the waste heat of either passing under the other, thereby utilising what is usually lost.



The above shows the heat of the fire concentrated on the hot plate and the waste heat passing under the boiler.

The casing and oven door are lined with slag wool and a third oven can be arranged if required.



be acquired which may be utilised for that purpose in the future. The proposed arrangement between the two committees is based upon the city surveyor's valuation, and the estimated cost of the conversion will be brought forward at a later stage; it is not, however, anticipated that the outlay will be excessive, or that the cost of maintenance will be very large.

### TRADE NOTES.

THE Mission Hall, Rugby, has been fitted with the latest improved hot-water heating apparatus by John King, Limited, Engineers, Liverpool.

THE ventilation of Mansefield U. F. church and hall, winning, is being carried out by Messrs. Cousland & Mackay, ventilating engineers, Glasgow and Manchester, by means of Mackay's patent direct-acting ventilators and air-panels, of which they are the sole makers.

### A USEFUL DIARY.

A combined diary, blotting-pad and memorandum-pad which at the beginning of each year the Victoria Stone Company sold to their business friends is an extremely useful, as well as handsome adjunct to the writing-table or desk. The diary consists of some hundred foolscap pages ruled for a week's engagements to the page. The blotting-pad is thick and of large dimensions, and the memo-pad, the leaves of which are perforated for detachment, is conveniently placed at the right-hand side, that and the diary, both covered in ornamental cloth, folding over the blotting-pad, to which they form an effective and effectual protection.

### VARIETIES.

A CELTIC cross about 30 feet high is about to be erected at Mahilly, co. Cork, as a memorial of the late Lord Carbery. It was constructed from a design by Sir Thomas Drew, R.C.A.

AS a result of the competition for the Hearts of Oak Benefit Society new offices, the first premium has been awarded to Messrs. Essex, Nicol & Goodman, 21 Waterloo Street, Birmingham; the second to Messrs. Meaby & Webbe, Jessel

Chambers, Chancery Lane, W.C.; and the third to Messrs. Lanchester, Stewart & Richards, 1 Vernon Place, Bloomsbury Square, W.C.

MUCH interest is being taken in Harrogate in the question of the enlargement of the Royal Pump Room. The Corporation have already decided that a new pump-room and covered promenade should be erected at the entrance to the Valley Gardens.

DURING the restoration of All Hallows Church, near Rochester, two fine arches, one fourteenth-century and the other earlier, have been discovered. A consecration cross in a good state of preservation was also uncovered. The church dates from the Norman Conquest, and its ancient Early Norman font and fifteenth-century oak pews and chancel screen have been carefully preserved.

DR. BODINGTON read a paper on "Schliemann's Troy" at the meeting of the Leeds and Yorkshire Architectural Society on the 17th inst. The president (Mr. Butler Wilson), referring to the impending dissolution of Victoria University, said that in the new Yorkshire University there should be a Chair of Architecture, and called upon the architects of the county to support and endow such a chair. Dr. Bodington, in replying, welcomed the suggestion. He would gladly try to arrange for representatives from the Yorkshire College to meet the Council of the Society. The suggestion came at a very opportune time, since the governors were now considering what provision they were to make for the future.

THE Wednesfield parish church, about two miles from Wolverhampton, was burned to the ground on Saturday evening. The church was a very old one, and wood was used largely in its construction, its dryness accounting for the fierceness of the flames and the inability of the firemen to check their progress. Nothing but the charred walls remain of the edifice, which has withstood all the elements since 1760. From the fire only the communion plate and the ancient registers were saved. A heavy bell crashed down among the villagers, many of whom narrowly escaped injury. The vicar, who has been thirty years at the church, which was insured, is lying seriously ill.

THE following circular, dated Wednesday, has been sent to the shareholders of the Welsbach Incandescent Gaslight Company, Ltd., by the secretary:—"I am instructed to inform you that terms have been arranged whereby the members of

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Is the name of the Improved Germ-Proof Filter sold by

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from Filters attached  
to the service pipe,  
without interfering  
with the ordinary  
draw-off tap.



House Filter H as sketched, 30/-  
Smaller Size F, 22/6

Architects are invited to  
see these Filters  
in operation  
at our Showrooms.

ANDREW WILSON writes as follows:—"The 'Tubor' Filters sold by the Berkefeld Filter Co., Limited, London, W., remove all germs from water. They therefore represent ideal filters, giving pure (i.e. germless) water, and thus prevent Typhoid and many other diseases."



the old board have resigned their position as directors and the following members of the advisory committee—namely, Messrs. Philip Stanhope, Thomas James Barratt, George A. Touch, William Whiteley and Edgar Williamson—have been appointed as a provisional board, entrusted with the selection of a definitive board, whose appointment is to be subject to ratification by the shareholders at the next annual general meeting of the company."

THE first seasonal meeting for 1902 of the Historic Society of Lancashire and Cheshire took place on the 16th inst., Mr. J. G. Prentice presiding. The paper of the evening was "Church Dedication in Cheshire and South Lancashire," by Mr. J. Brownbill, M.A., who commenced with a brief history of his subject from early times to the Middle Ages, before people were influenced by political events. A list of the civil divisions of that part of the country was also given, with the patron saints of the ancient churches and an account of the many changes and much confusion that had taken place in the early centuries, many of the original dedications having been lost, and comparisons drawn with other parts of the country showed that the counties' former inhabitants were old-fashioned and showed a distinct preference for the earlier saints. At the close a long and interesting discussion took place, after which a hearty vote of thanks was accorded to Mr. Brownbill for his learned and interesting paper.

AN interesting and very varied programme will be found at the Alhambra just now, the greatest novelty which Mr. Slater has provided for his patrons being the Moug Toon trio of Burmese ball manipulators, whose dexterity is remarkable. The ball first used is made apparently of plaited cane, about 6 inches in diameter, and it is thrown about and caught by feet, knees, thighs and shoulders, but the hands are never called into requisition. The cane ball is succeeded by one and later by three or four of fine blown glass, and the skill with which these are tossed into the air and caught by the "leading gentleman" of the trio approaches the marvellous. This is altogether an attractive turn, on having secured which Mr. Dundas Slater may be congratulated. The programme comprises, however, thirteen other excellent items, including the three ballets "Soldiers of the King," "Santa Claus" and the particularly bright and sparkling "Gretna Green."

IN view of the agitation which prevails in connection with the municipal insurance question for the Cripple Gate area, some interest attaches to the fact that the British Fire Prevention Committee have arranged for a very important test to

take place on Wednesday next with a large warehouse constructed entirely of Karri and Jarrah wood, the floor being constructed on the same principle as recently adopted for big warehouses in the new Free Port at Hamburg. There will also be tests with Karri and Jarrah wood doors for comparison with the fire resistance of oak and teak doors. A large attendance is anticipated, including several foreign respondents, who will be specially visiting London. *A propos* by the way, of the latter, the executive announced that the silver medal which they offered for the best essay on fire-resisting materials exhibited at the International Fire Exhibition of 1901 at Berlin, has been awarded to Lieutenant Elmer of Berlin, the assessors being Chief Officer Giersberg of Berlin, and Mr. Edwin O. Sachs, the chairman of the committee. The essay will be published in the official Government report of the exhibition in the German language, and also in the committee's publications in an English translation.

### THE MAY-OATWAY FIRE ALARM.

AT the Ilford Town Hall on Friday last a large and influential company assembled, on the invitation of Sir Eyre Massey Shaw and the directors of the May-Oatway Fire Appliances Limited, to witness a public test of the fire preventive apparatus which has been installed in the handsome new municipal building.

Among those present were Captain Walker, representing the War Office; Mr. Williams, Admiralty; Mr. A. M. Muir, chief surveyor, Corporation of the City of London; the members of the Essex County Council, Ilford, Wanstead, Leyton, Barking, Walthamstow and East Ham District Councils; representatives of the Poplar, St. George's-in-the-East and other Boards of Guardians; the Royal, North British Mercantile, Hand-in-Hand, and other insurance companies; Great Eastern, Midland and other railways; the secretary of the district chairman of the National Fire Brigades Union; deputation from the London Private Fire Brigades Association; Mr. R. Gordon Stuart, chief officer Johannesburg Fire Brigade; General Electric Co., Western Electric Co., Siemens Bros. & Co., Ltd., &c., as well as a large number of architects, surveyors, City men and directors of companies.

Sir E. M. Shaw, chairman of the company, in his address explained that during his thirty years' connection with the fire brigade he had seen and tested innumerable devices for the prevention or detection of fire and the minimising

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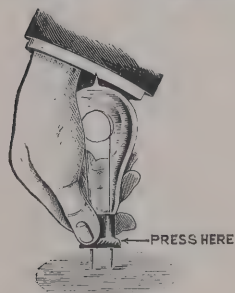
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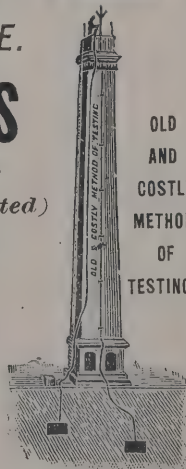
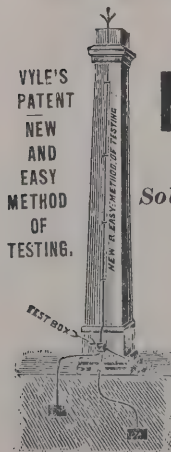
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loss attendant on their outbreak, but he was quite satisfied to the superiority of the May-Oatway system, as a proof of which he had not hesitated to identify himself with it. Mr. G. H. Oatway (managing director) followed with a few remarks introducing the tests, and an independent committee was formed consisting of Captain Miller, Leyton, representing the National Fire Brigades Union, chairman; J. W. Heyfield, superintendent Woodford Fire Brigade; R. Gordon Hart, chief officer Johannesburg Fire Brigade; Superintendent Smith, West Ham Fire Brigade; C. Bevan, for the London Private Fire Brigades Association; T. F. Britton, chief officer London General Omnibus Fire Brigade; W. Chatterton, chief officer in charge of Midland Railway Company's brigades; Stubbings, chief officer in charge Great Eastern Railway Company's fire brigades; James Sheppard, surveyor to the North British and Mercantile Insurance Company; J. F. Webb, late engineer Metropolitan Fire Brigade; S. Bacon, member of the Board of Guardians; C. J. Dawson, F.R.I.B.A., architect for the School Board; H. K. Gilbey, chairman, School Board; J. Lawrence, East Ham District Council; B. Bailey, chairman, Ilford District Council, for the purpose of devising the most searching tests to which they could subject the apparatus which, as we may remind our readers, only resembles a fire-alarm appliance to the extent that the expansion of metal by heat is used to open or close an electric circuit, thereby causing a signal to be transmitted. A wire having a high expansibility, such as copper or iron, is stretched horizontally across a room or other premises. When tightly strained, the wire "sags" from its own weight, but if the wire becomes heated the sag increases, and the vertical wire and hanging weight attached to the horizontal wire then drop sufficiently to close an electric circuit, whereupon the alarm is sounded. After the alarm has been acted upon the apparatus resumes its normal condition. The first test consisted in lighting fires on the stage in the hall, a spacious apartment 75 feet by 50 feet, and 40 feet high. In a very few seconds the wires which run across the ceiling above were acted on, and a bell was rung in a room situated at some distance, and in a little over a minute a taker, followed immediately by a fireman with a hose, appeared on the scene. In the next test the wire to be acted upon was stretched across the ceiling of the main hall, and in 2 minutes 36 seconds the small fires on the ceiling of the hall had caused it to act, and the bell was again heard. So prompt, indeed, was the action that

even the chairman and managing director were agreeably surprised. Other tests followed, all being equally satisfactorily met, and at the close of the proceedings the committee expressed the liveliest satisfaction at the excellent results attained and the unanimous opinion that the company had provided an appliance which would effectually protect large and small buildings.

### NEW CATALOGUES.

MESSRS. MATHER & PLATT, Manchester, have just got out a new price-list of their "steel-clad motors," which they manufacture in eleven sizes, covering all powers up to 85 b.h.p., and the choice of the speeds and voltages given is very large. All parts are made strictly interchangeable, and machines of any size can be delivered from stock at short notice. A complementary list of "electrically-driven machinery" is also ready.

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### JAMES WATT.

UNDER the auspices of the Greenock Philosophical Society the James Watt anniversary lecture was delivered by Mr. H. S. Hele-Shaw, LL.D., F.R.S., Professor of Engineering in University College, Liverpool, and the subject was "James Watt, Inventor." Professor Hele-Shaw, according to the *Glasgow Herald*, said that the lapse of a century since the great work of Watt, and indeed of a century and a half since that work began, had seen the dawn of what must be regarded as another era in the industrial development of the world. This era is distinguished by the universal awakening to the fact that for industrial pursuits, as for the learned professions, highest possible intellectual training is necessary. It was by a study of the life of Watt, and by the discovery of his views, especially those of his more maturer years, that a true conception could be arrived at as to the proper form which technical education should take. The lecturer, therefore, devoted his remarks entirely to that particular side in the story of Watt which had attracted less attention hitherto, in order to see what lessons could be learned from his history. What struck Professor Hele-Shaw in Watt's correspondence was the remarkable way in which he worked at every detail himself, making experiments and apparatus, and although he had here and there the assistance of others, it was upon himself that he relied, working with his own hands at his inventions, and thinking out each idea himself in every detail. The conception of the idea of a separate condenser, which occurred to him in 1765, and upon which idea he set to work to experiment the very next day, occupied him a great many years of laborious and often painful application before he had the satisfaction of seeing any substantial result. During that time, although he had for years at a time to earn his living by turning his knowledge in other directions, he never lost sight of his great idea. He spared no labour in acquiring all that books could teach him, mastering foreign languages for this purpose, and he performed innumerable experiments when intricate points could be elucidated by scientific investi-

gation and research. He worked in wood, brass, copper and iron, and made patterns with his own hands. It was thus seen that Watt was furnished with three of the great essentials for the successful prosecution of invention in its widest sense. First, the knowledge acquired by reading of what others have done, an intimate acquaintance with and thorough familiarity with the properties of materials acquired by becoming himself a thorough skilled mechanic. Nor must we omit to mention the power of draughtsman which Watt had assiduously cultivated, and which was necessary to go hand in hand with actual workmanship. Watt was not naturally gifted by nature with much artistic skill, but he had evidently cultivated this faculty so that it became one of the greatest services to him. Then, again, by studying the life of Watt, he had become familiar with scientific principles, and by the aid of his knowledge of mathematics was enabled to apply these principles so that, instead of attempting to do things blindly, he contemplated the improvements he had in mind, and had a guide which enabled him to work steadily towards the end he had in view. The instances, of course, which were familiar were those wonderful experiments he made on the properties of heat, and which led him to independently discover the composition of water; but there are other illustrations not so well known, and the lecturer had prepared and put together some sheets of diagrams containing certain of his inventions which would illustrate his resource and fertility in solving mechanical problems. These are taken entirely from his development of the steam-engine, and while illustrating how thoroughly he thought over every aspect of a problem which presented to him, brought home to us the fact that it would have been impossible for him to have conceived these ideas, all of which were thoroughly sound and practical, and put them into effect, unless he had been mentally equipped as well as he was for that work. The first sheet of diagrams consisted of a method of converting reciprocating into circular motion. There was every indication that he intended to use the now universal method of converting reciprocating into circular motion by the use of the crank. The second sheet of diagrams gave the result of his discovery of the use of the expansion of steam as a means of saving great waste and effecting a great economy in its use, which were set forth in his patent of 1782. The third sheet of diagrams gave the various methods by which he proposed to get a straight line motion at the end of his piston-rod, as set forth in his patent dated 1784.

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the series of sheets was devoted to Watt's steam-engine motor. The study of these inventions showed how common he was able to draw upon the knowledge alluded to, utilise the training indicated, and although they may have been equally valuable, were all eminently sound and rational in their conception. Watt made very few mistakes in application of mechanical principles, and we found him on occasions combating false views of mechanical questions, setting forth so clearly the true conditions of the case that we cannot read his writings without astonishment. One particular towards the end of his life has the greatest interest at present time, when mechanical traction on roads has been very much into prominence, and when motor cars have created so much interest throughout the world. Watt had been accused of opposing the introduction of the steam carriage, but just as George Stephenson in his early years opposed numerous impracticable schemes which were well were merely visionary and calculated to be a waste of public money, so Watt, towards the end of his life, writing on the subject of the steam carriage, set forth the difficulties which have been the real causes of preventing its introduction for more than a century after the invention of the steam-engine itself. When quite near the end of his life Watt led—apparently by an obvious want of knowledge on the part of a teacher in Greenock and also of his pupils—to wonder whether there were any other young men of promising genius in the town, and whether native genius might not be fully stimulated by judicious encouragement. After due consideration he determined to appropriate a sum of money to the purchase of a scientific library at Greenock, and the point struck one most was the character of the original list of books proposed by Watt. This included not merely practical books upon naval architecture, shipwrighting, fuel, watermills, &c., but theoretical treatises on fluids, mechanics, conic sections, experimental philosophy, astronomy, and a number of books which were at the time dealt with higher mathematics, such as Euler's "Flexions," the "Differential and Integral Calculus," Legendre's "Geometry," &c.; indeed, a number of books which most people would think quite above the heads of the young men which Watt had in his mind to benefit; and his foundation of a prize at the Glasgow University, as a recognition of the many favours he had received from the learned body, he wrote:—"To excite a spirit of exertion among the students of natural philosophy

and chemistry appears to me the more useful, as the very existence of Britain as a nation seems to me in great measure to depend upon her exertions in science and arts." He should be sorry to conclude his discourse without referring to a fourth and most necessary qualification possessed in such an eminent degree by Watt, viz. force of character. [He was not sure that the lessons to be learnt from his life, if they could only be universally appreciated, and the benefit conferred by its study would not be of equal importance with the material results of his successful inventions.

The lecture was throughout of an exceptionally interesting character, and was eloquently delivered. At the close Professor Hele-Shaw was given a very cordial vote of thanks.

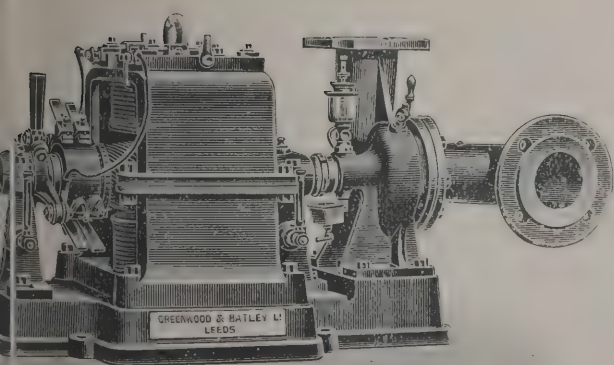
### MASTER PLUMBERS' DINNER.

THE annual dinner of the members of the Glasgow and West of Scotland Master Plumbers' Association was held at Glasgow on the 17th inst. About ninety gentlemen were present. Mr. J. M. Symington, the president, occupied the chair, and Mr. Thos. Daye, vice president, and Bailie Macfarlane, Port-Glasgow, honorary treasurer, discharged the duties of croupiers. Mr. Robert Crawford, in proposing "The Master Plumbers' Association," remarked that, being a member of the Honourable Company of Plumbers, he could tell those present that that company had spent 20,000*l.* in helping on the registration movement, and had devoted themselves, with an entire departure from all the traditions of London Company life, to try to do the best they could to advance and increase the status and to develop the responsibility and education of the plumbers. That company had also done its utmost to put before the public mind the immense importance of seeing to, paying for, and selecting the best kind of plumber that could be obtained. They had also done much to raise the position of the public health of the country. And he was glad to tell them that of all places in the United Kingdom where the response had been made to the efforts of the Plumbers' Company, Glasgow and the West of Scotland had done the very best. That had been so because the men had been alive in their desire to advance with the times. And he believed it was an acknowledged fact that there were no better plumbers to be found anywhere than in Glasgow and the West of Scotland. He had consulted Mr. Fyfe as to the plumbers of the present day, and that gentleman had told him the work was

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entirely satisfactory. He was glad to know that their Association was flourishing, and that it had a benevolent side, which he trusted would go on and prosper. The Chairman, in acknowledging the toast, stated that the plumbers held an almost unique position, for they were being continually told that they held the lives of the people in their hands. What havoc a careless plumber might bring about in a building, and even in a city, when with a little foresight much misery could have been avoided and loss prevented. That showed what delight they should have in their craft, and they should make it their aim to strive earnestly and determinedly to attain to the height of perfection that would bring honour to themselves and credit to their trade. He urged them to study sanitary science, and thus discharge the duties laid upon them as individuals and as citizens, and endeavour to play a noble part on the stage of life. Mr. Robert Russell gave "The Lord Provost, Magistrates and Town Council of Glasgow." Councillor Primrose, in reply, said that while at the present moment they stood in presence of many accomplished facts in civic life and enterprise, there were two or three pressing and profound problems facing them in the immediate future. In front of these was that of the housing of the very poor. As to the existence of the evil there was no doubt, and the problem was how best to solve it. Various methods had been suggested. Some had said, "Let us have a Royal Commission." But he believed the answer of Parliament would be that they had had two Royal Commissions, and had provided legislation under which nothing had been done. The alternative of a local Commission offered far more probability and possibility of success. The conditions of every city varied, and a hard and fast codification could not adequately meet the needs of different localities. What he would warmly support would be the appointment of a local Commission, founded on the broad line of practicable possibility and acceptability to the community. He would have on that Commission a certain number of members of the Town Council, and added to that he would willingly take a practical contribution from Gilmorehill, and then he would strengthen the board with citizens who had devoted much of their lives and time, and in some cases part of their treasure, to the solution of that problem. He would further strengthen it with a representation from the Landlords' Association, and then he would appeal to the common sense and patriotism of men who had done and were doing practical work in the various structural conditions that attached to human habita-

tions. With that body he would wish to lay the foundation of a solution of the problem. They might not arrive at an absolute and final conclusion, but could accumulate a mass of opinions of which they could avail themselves, and end probably go to Parliament and ask for sanction to local effort and a new departure towards the solution of the problem. He believed that Parliament, recognising the many blunders Glasgow had been a progressive city, was prepared to give special legislation to face the experience of this question. His ideas might be crude, but he believed the solution of the matter lay in that direction. He held it to be an absolute obligation on the governing body to have a direct hand in dealing with the lowest stratum of the people, and they must approach it without the hope of a return without the possibility—of commercial return. It was a fact that the present conditions were intolerable, and a menace to the well-being of the whole community. To that extent the Corporation would be justified in an effort to do it, did not possess within it the potentiality of commercial success. If in any measure they solved that deep problem, what a work for the community would have been accomplished.

### AMERICAN WORKSHOP METHODS.

At the ordinary meeting of the Institution of Civil Engineers on the 14th inst. the paper read was "American Workshop Methods in Steel Construction," by Mr. H. B. Molteno, M.Inst.C.E. The author, in noticing the fact that recent contracts for steelwork had been secured by American manufacturers in competition with English firms, stated that a description of American methods would be of interest. The quality of American first-class work was excellent in design, material, workmanship and finish, and equal to English work. The cost of labour, though regarded as the amount earned by individual workmen, was less than in England when the quantity of work turned out was taken into account. English bridge works were cramped for room, and hampered with old-fashioned obsolete machinery, while American works were kept up to modern requirements, and obsolete machinery was replaced as soon as it was superseded by anything more modern. Works in America usually ran night and day, and workmen took fewer holidays than English workmen. The author confined his description to the bridge department.

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Works of the American Bridge Company near Philadelphia, and after giving a general description of the works, the material from the bridge-shop yard through the processes into the loading-up yard, whence it was sent. The bridge-shop was electrically driven, the cranes being machines having each its independent motor. The material was moved longitudinally through the shop on trolleys transversely by electric cranes, the shop was roofed in and the material rested almost entirely on rollers, and every process moved it further along the shop till the work emerged at the opposite end to that at which it entered. The output in gross tons per man per week averaged:—Draughtsmen, 771; bridge-shop, 115; forge, 185; templaters, 2,366. The steel was open-steel, rather softer than was generally used in England, of excellent quality, and giving very uniform tests. The greatest care was taken to deliver all material into the shop yard perfectly straightened. The drawings were made in a very complete manner and gave much more information than was usually furnished on drawings in England. Great care was taken to minimise smith's work, to duplicate as many parts as possible. Stops, guides, spacing punches and multiple punches were largely used. The angle-shear was used much more than in England, and the largest size were sheared at one cut without re-orientation; punches and dies were all made on automatic machines and were interchangeable. All the larger shearing machines were mounted on turntables. Plates were handled by rollers by roller frames or goose-necks and moved by bar working on a fulcrum. Rimming was done by drills, which resembled a Wellington crane with eight drills on it. Pneumatic drills and rivetters, and chipping machines of the Boyer type were much used, and bad holes, which were very uncommon, were rimmed and not drilled. Long pieces were rimmed or drilled by compressed-air machines up to the work by a compressed-air cylinder behind. Large plate-girders were rivetted by hydraulic gap machines mounted on a ram to raise or lower them, the work suspended from an electric Wellington crane traversed on the rivetter-platform. Ends of members were planed by rotary planers which had heads 4 feet 6 inches to 6 feet in diameter, with cutters fixed near the periphery. Angle-plates were bevelled in pairs in a milling-machine with fast feed, and fitted perfectly. Large joists or channels were planed with clip-hooks furnished with chisel points. Planing was done in the works; "Universal" plates were rolled by nearly all American plate-mills at a charge.

Causes of cheap working in America might be summed up as follows:—1. The workmen, though more highly paid in England, turned out a much larger quantity of work. 2. Arrangement of the works was more carefully thought out, and labour-saving appliances were more used. 3. There was more scientific knowledge in the drawing office. 4. The works were run night and day. 5. Planing was reduced to a minimum by care in the drawing office and by the use of automatic machinery and stops. 6. Obsolete machinery was turned out of the works as soon as it was superseded by anything better. 7. All machinery was kept in a state of perfect efficiency. 8. Railway rates were lower than in England. The responsibility for the low output per man in England rested only partially with the manufacturer, who was hampered in every effort to introduce improvements by the action of the workmen. The author pointed out the following lines:—(a) A careful arrangement of works to avoid unnecessary handling and give facilities for such as was necessary. (b) More complete use of stops, guides and multiple punches. (c) The condemnation and removal of obsolete machinery and the proper maintenance of what was in use. (d) The use of motive power. (e) The more extended use of stops, guides and spacing punches. The saving which might be made by systematic methods in the drawing office, and the use of stops and guides and multiple punches, so as to avoid re-templating, was very great. Small portions of the work could be made interchangeable and turned out without marking each piece. The use of the spacing-punch was unnecessary for wooden templates and for marking.

assume that automatic machine operations are invariably more economical than handwork. It was, however, the paper said, beyond dispute that the producing power of the individual, aided by the labour-saving automatic machine, is practically unlimited, whilst we have long since reached the limit of production of the skilled worker making use only of simple machine and hand tools. A high degree of accuracy is possible by either the old or new method; but accuracy combined with cheapness is only possible under new conditions, whilst interchangeability is commercially impossible except in those establishments fitted with the best machine tools and gauges. In regard to the latter, the author said it is not true that the extensive use of accurate gauges is only economical where either highly accurate work is called for or parts are to be made in large quantities. The paper proceeded to describe various modern gauges, explaining the system of "limit" gauges, which are now so extensively used in America, and which are being largely introduced into this country. The subject of milling, which is doubtless a development of the old rose-cutting of early English practice, was next dealt with, some remarkable examples of advanced practice being described. The attributes necessary in the design of a good planing machine were discussed, and the modern system of grinding parts by emery wheels, in place of ordinary machinery, was described. "Chucking," an American term used to designate that class of work which is held in a face-plate chuck, was dealt with at some length, machines and small tools being described and illustrated. Turning, polishing, gear-cutting, jig-work and small tools also received attention. Among the machine tools specially described were the turret lathe, the vertical mill and different types of portable machines. The paper concluded with references to organisation and the apprenticeship question. The meeting was adjourned until Friday, the 31st inst.

## LONDON AND BRIGHTON ELECTRIC RAILWAY.

PASSENGERS on the London and Brighton line are daily speculating as to the possibilities of the new line. All sorts of impressions prevail, says the *Sussex Daily News*, both as to the exact route and the character of the new railway. That it is to be an electric railway, and that it is to be the introduction of high speed railways into the South of England is fairly well grasped, but it has not yet so thoroughly been realised that the primary object of the proposed railway is the rapid transition of passengers from London to the sea, and *vice versa*. It is naturally disappointing to the "people in between" to have to realise that in a scheme to bring London within half an hour of the coast the towns and villages in the country districts must necessarily be slipped past. The idea of a train travelling from station to station, collecting and distributing passengers and goods as it goes along, must be abandoned. At present the plans of the proposed electric railway show no indication of any intermediate station in Sussex. There are rumours that efforts will be made to take up local passengers at three or four intermediate stages, including Haywards Heath, but whatever designs the engineers of the new railway may have in view, the plans give no clue to stations other than at London and Brighton, the length of forty-seven miles including nearly twenty miles in tunnel and covered way, and upwards of seven on viaducts. It is known that the scheme also involves a new bridge across the Thames.

The object of this article is to give Sussex people an idea of the course to be taken by the proposed railway through their county. It is necessary, perhaps, to state that the London terminus will be in the Pimlico district. The proposed line will cross the Thames by a new bridge and south suburban London on a long range of viaducts. In passing through Surrey, the Merstham Downs will be tunnelled under to the extent of seven and a half miles, providing a tunnel that will occupy a very respectable position in the list of the long tunnels of the world. Leaving the Surrey hills behind, the line will bank across the flat pastoral district bordering the two counties. As auctioneers would say, the proposed new line will be within easy distance of its long established competitor. From London southwards it will run on the east side of the present London to Brighton line. In its course along the level belt of country above described the new line will strike the county of Sussex at Tinsley Bridge, entering the parish of Worth. The engineers propose straightening portions of the tortuous courses of several rivers and streams, and the river Mole will be one of the rivers dealt with in this locality. The railway track will run through Worth Park, between the fine mansion of Mrs. Montefiore and the present railway line. It will cross the Worth and Crawley road at a point near the lodge of Worth Park, which is not a great distance from Three Bridges station. Just south of the branch line from Three Bridges to East Grinstead the plans show a large site to be obtained for the purpose of an electricity generating station. The country south of this point becomes

## MODERN MACHINE METHODS.

A meeting of the Institution of Mechanical Engineers on Friday, the 17th inst., in the theatre of the House at Storey's Gate, the president, Mr. W. H. in the chair. The chief business of the meeting being the reading of a paper by Mr. H. F. L. Orcutt, of London, on "Modern Machine Methods." The author received his training as an engineer in American workshops, and has extensive experience in Germany. The paper dealt with automatic machine tools, but the author did not



of the well-known Sussex forest character. On the west side of the line the forest is called the Tilgate Forest. On the east side, through which the new line is drawn, the name of Blunt's forest is locally given, which gives the clue to its ownership. It is a wild, picturesque district, dear to the sportsman with the gun. It begins, also, to show the ups and downs of Sussex country.

In approaching Balcombe parish the new line, after a long run in the open, will go to earth again and tunnel for the considerable distance of 4,307 yards, or more than two miles and a half. This long bore will go under Old House warren. The forest road, with the descriptive name of High Street, will cross the tunnel at an altitude of 250 feet. The tunnel will also go under Balcombe Down and the Highley Manor estate, and emerge at Wellgrove Wood for a short distance, dipping under the Balcombe and Handcross Road and passing between the village and the present railway line, burrowing under the Balcombe and Cuckfield Road by another tunnel some 1,175 yards long. The present railway curves eastward in shaping its course for Haywards Heath, but the new railway will keep in a more direct southern course, and will pass under the present railway line at Beanham Wood, and continue on the west side, still keeping very close company. It will quickly have to face the depressions of the Ouse Valley district, beautiful to the tourist's point of view, but not economical to railway promoters. The view of the magnificent viaduct bearing the present line across the valley is more known and appreciated by pedestrians and cyclists than by the travellers on the railway itself. The new railway will be carried across the valley by two succeeding viaducts, one 400 yards long, crossing the stream at the height of 64 feet, and the other 790 yards. The Ouse, not a very formidable stream at this point, is to be straightened a bit. The next obstacle is Borde Hill, and on this estate the new railway will run into tunnel again for 556 yards. The new line will now be well on the west of the present railway. Leaving the Borde Hill ridge, it will quickly reach the rising ground of Haywards Heath. The town is avoided. After crossing the Lucastes private road, the line will plunge to earth again close to Winnalls, and go in tunnel under the Paddockhall Road and Muster Green for some 827 yards and emerge close to Oakwood.

In a very short distance another well-known depression will be reached, the Valebridge lake and mill being a familiar scene to the thousands using the present Brighton Railway. This valley will be crossed by a viaduct commencing at

Brooklands, crossing the stream at the height of 100 feet, extending 1,923 yards. The new railway has hitherto well clear of Sussex towns and villages, but after crossing the Valebridge district it will land, metaphorically speaking, at the top of the town of Burgess Hill. It will cross the stream by a viaduct 1,050 yards long, its greatest height being 40 feet. The route will go over the Burgess Hill and the junction of Mill Road and Leyland Road, passing a disused windmill over Park Road, Crescent Road and Road, just escaping St. John's Church. The plans point show peculiar lines of deviation, taking in more than is required for the ordinary passage of the line. It given rise to the conjecture that a station of some importance is anticipated. The plans, however, give no indication of the purpose of acquiring the range of property in close proximity to St. John's Church. The line will proceed across the town district, over Station Road, and run on the east side of the London Road over the well-known New Close property. At Hassocks the line will begin its burrowing again at Stamford Avenue, this tunnel going to the main Ditchling to Hurst Road, and its length being 303 yards.

A short spell in the open, and then the line will enter another very long underground course for 7,991 yards, or practically 4½ miles under the Southdown hills, its course just west of the lime-kilns and the well-known road to Clayton Hill. When it emerges on the south side of the hills it will be inside the Brighton borough boundary. It enters Brighton (according to the plans) about 173 feet below the surface of the ground. It remains in tunnel (going over Dyke Road from the east side to the west a little way) north of the Windmill inn) to a point about 11½ chains of Dyke Road Drive, where it is 55 feet below the ground, then enters the parish of Preston rural in an open cutting through Clark's field at a point about opposite the Booth Museum, a length of about 17 chains. It goes into tunnel again north of the old Shoreham Road, and follows the Dyke Road through that portion which is in the parish of Hove on the east side of Dyke Road. The line re-enters tunnel from the last-named point to Buckingham Road, a length of 970 yards, at a depth varying from 77 feet to 32 feet—the tunnel coming to the east of Dyke Road at Seven Dials. The line is again in open cutting from side of Buckingham Road (at its junction with the London Road) to its terminus in Queen Square, where the ra-

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et 6 inches above the road level. The gradients generally easy, the steepest being 1 in 300, while the last-named h of open cutting is level. It is not until this point is ned that any interference with Brighton property takes la. It is proposed to stop up that portion of Church Street er part) which lies between Kew Street and New Dorset t, also the whole length of Mount Zion Place, about et at the south end of New Dorset Street, about 300 feet the middle towards the south end of Centurion Road, n about 250 feet from the middle to the south end of St. olas Road.

In lieu of these streets, which are to be closed, it is pro- d to make a new road from Church Street, just above Kew et, going north along the east side of the open cutting for it 500 feet, thence around the face of the proposed tunnel back again to Church Street on the west side of the cutting point opposite the gateway entrance to St. Nicholas ch. The total length of this road is about 370 yards. area of the land proposed to be taken within the limits of eition for the formation of the new road, open cutting and erinus is about 5½ acres, and contains about 150 dwelling es, besides several workshops, stables, stores, &c., and it is rtant to note that part of the churchyard to the east and n of St. Nicholas Church. The whole of the west side of n Square will be taken, including the large institution n as St. Mary's Home, and Wykeham Terrace. The h of streets to be stopped up is 1,320 feet. One of the disabilities to the people in the neighbourhood is that the upper part of Church Street stopped up they will no er be able to secure direct access from that thoroughfare e Dyke Road and the district beyond without making a detour, to say nothing of the inconveniences which will be ed by the severing of sewers, water and gas mains, &c., at point. It will be gathered from this that the whole me embodies engineering proposals of a phenomenal character.

ASSOCIATION OF ELECTRICAL CONTRACTORS.

The first general meeting of the newly-formed Northern section of the National Association of Electrical Contractors was held at the Grosvenor Hotel, Manchester, on Saturday, and was attended by delegates from various towns. Mr. H. Bland, the president of the Association, presided,

and explained the objects of the Association. It was, he said, a combination formed for the purpose of defending the interests of the electrical industry. Many attacks were now being made upon that industry by the municipalities and by other bodies with conflicting interests. These attacks could not be met by the individual traders, but only by organisation. The question of labour was an important one. The manual workers in the trade were now combining in every town, and it had become necessary for the masters to combine also, so as to meet the men in a united body. As to municipal trading, he pointed out that many corporations are now using their powers of expenditure for the purpose of competing in trade against that section of the ratepayers who were engaged in the electrical industry. Of course the corporations were able to undersell the private contractors in every case, for if a loss resulted it could always be made good out of the rates. Parliament never intended the municipalities to use their powers in this way. Municipal enterprise was rapidly growing, and if the electrical contractors delayed much longer they would combine too late to effect much good. It was proposed to form a conciliation Board in connection with the Association, whose influence would be exerted in preventing trade disputes and strikes. Improvement of the laws and rules relating to the trade was aimed at, and they wanted also to improve the technical knowledge and the capacity of every one engaged in it. It was the duty of the combination of masters to help forward the education of the apprentices, to promote excellence in electrical work, and to encourage honourable conduct in business. They wanted to see the electrical trade entirely in the hands of properly qualified electrical engineers, and they appealed to the manufacturers to help them in this matter. The programme of the Association included the formation of local associations in every town to support the objects of the general body.

Mr. Wallis (Leeds) moved, "That the London Central Association be requested to take action in conjunction with kindred associations for the purpose of defining the limits of legitimate municipal enterprise as regards electrical work and strengthening the hands of those who are unfairly exposed to competition by municipal and other authorities trading under Parliamentary powers." He said that municipal trading seemed a very innocent thing when it began, but it had now spread in many directions in which it interfered unfairly with private traders. If municipal trading extended much further electrical contractors would be forced to take up some other

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line of business to support them, while they ran their electrical contracting as a hobby. They did not want the electrical trade to be degraded by unfair municipal competition. Electrical contractors did not desire to prevent the municipalities from extending their works in legitimate directions, but when a corporation began to supply wire to cottage houses and to adopt the free-wire system it was clearly exceeding its duty.

Mr. Richardson (West Hartlepool) seconded the resolution, and suggested that the Association should take action to test the legality of the action of municipalities in undertaking certain work now being done by them.

Mr. Dugdill (Manchester), in supporting the resolution, said that municipal trading in electricity was only the first step towards a purely Socialistic local government. If a corporation supplied houses with electric fittings, why should they not also do the plumbingwork and the carpentering, or even feed the inhabitants?

The Chairman also supported the resolution, and contended that when electrical work was done by corporations the consumers did not get better value for their money than when the same work was let out in fair competition to private contractors. He urged the necessity of offering united resistance to the grant to the local authorities of powers which allowed them to compete unfairly with traders.

The resolution was carried unanimously.

### THE INSTITUTION OF CIVIL ENGINEERS.

THE fifteenth annual dinner of the association of Birmingham students of the Institution of Civil Engineers was held on the 16th inst. in the Grosvenor Rooms of the Grand Hotel. Mr. R. E. W. Berrington, president of the Association, occupied the chair.

Mr. A. P. Dashwood, in proposing the health of the Institution of Civil Engineers, coupled with the name of its president, Mr. Charles Hawkesley, remarked upon the benefits Birmingham students received from the Institution, and voiced the appreciation all felt at the kindness of Mr. Hawkesley in attending that evening.

Mr. Charles Hawkesley, in responding to the toast, pointed out that the Institution of Civil Engineers was founded in the year 1818. It had a small beginning, but had reckoned amongst those who in former years acted for it as honorary

secretary the father of the present Lord Chief Justice of England, who was at that time a barrister engaged in Parliamentary practice, and a good deal interested in engineering matters. The present Lord Chief Justice is now one of its honorary members. The Institution passed through a great deal within his own recollection; changes had taken place through the ever-increasing number of its membership. He could remember when it occupied No. 25 Great George Street, London. But they grew in number. When the class for students came to be added they increased in membership, and now they numbered 6,000 Associates and associate members, and there were exactly 1,000 students attached to the Institution. They now occupied a fine building which had been erected on the sites of Nos. 24, 25, and 26 Great George Street. No. 24 was memorable from the fact that it once contained the office of Robert Stephenson, the great engineer. George Parker Bidder, who practised there until the late Mr. Bidder's death. Speaking of old times, he thought they all wished to bear in mind the old engineers who did so much before there was any teaching, or any text books or books of reference, yet they did work which any one of them might be proud of in the present day. Not long ago one of their members, Mr. Mansergh, took several of the Council to Llangollen to inspect the great aqueduct which Brindley made somewhere about the beginning of the last century, and to see the grand aqueducts near Llangollen. It made one proud to feel that in those days engineers could do such magnificent work. In those days engineers paid more attention than was paid now sometimes to the beauty of their work; they had greater architectural feeling than the engineers of the present day. It would be a very good idea if the young engineers of the present day devoted part of their studies to architecture, and acquired at least some knowledge of its principles, which they could embody in the work they designed. In this regard he might point to the work of the late past president, Mr. Mansergh, at Rhayader. The works he had designed there were designed with due regard to the beauty of their surroundings as well as to necessary strength. These works would do credit, not only to their designer, but to the city of Birmingham for ages to come. Dealing with the examination which the students had to pass, the speaker pointed out that men who failed to pass were eligible for membership of the Association if in the course of their work they proved themselves worthy. He hoped this would be so, because there was no test so good as the work an engineer was able to perform in actual practice.



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# The Architect.

## THE WEEK.

THE meeting on Monday to aid in the promotion of a university for Liverpool should be considered successful, for the Lord Mayor was able to announce that about 80,000*l.* had been promised towards the expenses. The city already possesses a university college, which was founded in 1881. At present there are about 700 students in arts and sciences who go through systematic courses, and in addition about 1,100 students attend the day and evening classes. Nearly half a million sterling is invested in buildings, land and endowments. But the college has not the desired status, and the City Council are asking Parliament for powers to convert the college into a university. The word "university" is, however, somewhat inapplicable, for it is not proposed to teach all branches of learning; what is sought is a place which will have a special curriculum adapted to the requirements of Liverpool and the surrounding district. As one of the speakers said, when they came to establish a university in a place like Liverpool, surrounded by the hustle and bustle of daily active commercial life, it could not fail to become permeated with the spirit with which it was surrounded, and to be active in itself. Another speaker pointed out that they ought to be thankful for having two such gigantic schemes before them as a cathedral and a university. A model was exhibited at the meeting showing the buildings already erected and those in course of erection, all of which will be available for the new university.

WHEN it is remembered how wide is the experience of an architect in several classes of business, the training in practical logic which his everyday occupations afford, and the knowledge of law which he must possess in order to safeguard a client's interest, it is astonishing that a larger number of members of the profession is not to be found in the magistracy. The peculiarity is the more incomprehensible when we consider the kind of men that so often make their way among the great unpaid. We are therefore glad to find that Mr. G. W. WEBB has been appointed by the Lord Chancellor as magistrate for the borough of Reading. His professional career is known to his townsmen. After being articled to the late E. W. GODWIN, he entered partnership with Mr. C. B. TUBBS. At the end of five years the partnership was dissolved, and Mr. WEBB started by himself. Amongst public or semi-public buildings designed by him are Swansea Road Board schools, the Wellington Club, the Metropolitan Bank, Messrs. J. & C. SIMONDS's Bank, the Berks County Cricket Club Pavilion, the Royal Hotel (Henley), and BONA's new hotel. He was for many years secretary of the Reading Horticultural Society, and founded the Chrysanthemum Society. He was one of the founders of the Kendrick Lodge of Freemasons. As a Conservative, he was on Mr. A. G. SANDEMAN's committee during the 1880 election, and is now a prominent member of the central committee. He was returned as a member of the Corporation in 1891. Within two years he was elected chairman of the survey committee, and served in that capacity for seven years. As chairman of that committee he brought forward the scheme for the extension of the town halls, which, in extended form, is now under consideration. He used to play for the Reading C.C. He also served on the Reading Regatta committee for many years, and acted as hon. secretary to the Reading Gymnasium Club. Such a record of services well deserves the honorary appointment which Mr. WEBB has received, and no one in Reading can have any misgiving about the new magistrate's impartiality.

THE discontent which the Ecclesiastical Dilapidations Act has caused among clergymen and their representatives was exhibited in an application for an injunction which a few days since was heard before Mr. Justice WRIGHT. The Rev. Mr. SCOTT, the vicar of Gringley-on-the-Hill,

refused to carry out the repairs required on the benefice buildings, on the ground that he declined to recognise the bishop's jurisdiction. He also refused to allow the diocesan surveyor, Mr. JOHN WIGRAM, to inspect the premises. The defendant said that his oath of canonical obedience was to the Bishop of LINCOLN, and he considered that priests were not chattels to be handed over to the Bishop of SOUTHWELL when the new see was created. He had been forty years in the parish, and the only complaint against him arose out of the dilapidations. The Bishop of LINCOLN had not given him notice that he was released from his oath, and in consequence he refused to take an oath to the Bishop of SOUTHWELL. Mr. Justice WRIGHT said that under section 67 of the Ecclesiastical Dilapidations Act, 1871, the surveyor was entitled to enter by force and inspect the premises, but it was much better for him to come and ask the assistance of the Court. The Vicar's obligation was to submit the premises belonging to the benefice to the inspection of the diocesan surveyor. That did not depend upon any oath of canonical obedience, but upon the provisions of the Dilapidations Act. The defendant owed to the Bishop of SOUTHWELL the same oaths of canonical obedience as he owed to the Bishop of LINCOLN. An injunction was therefore granted, with costs. The case is interesting as a revelation that the old privileges of the clergy are presumed to still exist. Nearly all immunities of the kind were set aside at the Reformation. A clergyman may not be a juryman, bailiff, or constable, and while engaged in Divine service he cannot be arrested in a civil suit; but, with those exceptions, the clergy are under the ordinary law, and especially the Ecclesiastical Dilapidations Act, although it sometimes appears oppressive.

ALTHOUGH the Workmen's Compensation Act has a purpose which is indicated by its title, the liability of an employer at common law is not necessarily removed by the clauses. The workman retains his old rights just as they were prior to the passing of the Act in 1897, and if he should fail under the new Act to obtain compensation he has still another remedy. All lawyers are, of course, aware of this fact in England, and we expect the majority of employers as well, but the principle appears to have been unknown in Ireland. To establish the right it was necessary to bring a case before four judges. The plaintiff in *BECKLEY v. SCOTT & Co.* lost his hand while in the defendants' employment. He sought compensation, but the Recorder of Dublin, who heard the case, decided against him because of the short time he was at work. He then brought his action at common law and was non-suited by the same judge on the ground that he had already taken action and failed under the Workmen's Compensation Act. Mr. Justice WRIGHT held that the purpose of subsection 2*B* was to prevent an employer having to pay under the Compensation Act and by common law, or a double amount of compensation. He therefore decided that the trial of the action should take place. Mr. Justice BARTON concurred in that view. Mr. Justice BOYD, on the other hand, held that once the workman elected one course he was prohibited, when that was determined, from taking any other. Mr. Justice GIBSON expressed the opinion that the taking of proceedings under the Workmen's Compensation Act, when they failed was not any bar to an action at common law. The majority of the judges were therefore in favour of a new trial, and the costs already incurred were allowed to the plaintiff.

THE incidence of Easter will this year cause some slight change in the days for sending in works for the next Academy exhibition. All works under glass, comprising architectural drawings, water-colours, miniatures, black and white drawings, engravings and etchings will be received only on Thursday, March 27. As Good Friday will be March 28 and Easter Monday March 31, no works will be taken in on those days. Oil paintings must arrive on Saturday, March 29, and Tuesday, April 1; sculpture, on Wednesday, April 2. The hours for the reception of works will be between 7 A.M. and 10 P.M., and delivery must be at the Burlington Gardens entrance. The other regulations correspond with those of past years.



## NATIONAL PERSONIFICATIONS IN ART.

THE retention of the figure of BRITANNIA on the reverse of the new penny has given general satisfaction. In our prosaic age it is well to have an official acceptance of a symbol. The figure would perhaps have been more welcome if the lighthouse and the ship were introduced in order to suggest that the guardian spirit of the island was seated near the waves. But we should remember that the two adjuncts were not always seen on English coins, and in the most ancient figure of BRITANNIA, or at least that one which is accepted as such, although more likely to signify triumphant Rome, which is on the coin or medal of ANTONINUS PIUS, there is no suggestion of the sea. We now have grown accustomed to see BRITANNIA on certain coins, but the greater part of those which have been produced in England show a different treatment of the reverse.

Having been familiarised with the figure on coins, it is allowable to use BRITANNIA for other purposes. She may be noticed now and then on buildings. Sir JOHN TENNIEL occasionally preferred to employ a BRITANNIA in antique drapery or in modern dress, with an adaptation of the helmet as a cap or a toque, instead of his burly figure of JOHN BULL. For some reason, however, the latter is accepted as the more expressive embodiment of the national type. When seen surmounting the pediment of a building, BRITANNIA is easily mistaken for MINERVA, the patron of art, science and other things. There is much in common between their appearance. It must also be admitted that when poor BRITANNIA appears in the transformation scene of a pantomime, or elevated on the triumphal waggon of a travelling circus, she does not become impressive, and there is no great loss arising from the indifference of sculptors and painters to make representations of the national spirit in her form. It is not easy to endow her with British characteristics, and on that account the lighthouse and the ship were introduced. It is best to think of her as she was seen in vision by CAMPBELL:—

Her march is o'er the mountain-waves,  
Her home is on the deep.

Although BRITANNIA may be regarded as being to some extent a failure as a type of Great Britain, she can be considered as a definite being if compared with Scotia or Hibernia. No sculptor has yet succeeded in creating a form that would be recognised by Scotsmen all over the world as recalling their stern and wild motherland. The woman weeping over a harp which is occasionally made to stand for Ireland has not the dignity nor the resolution which should belong to a national type.

If we turn to France we shall find that a great many artists since 1870 have been endeavouring to evolve the figure of a woman that will worthily represent their country. The difficulties are, however, insuperable. It is desired to suggest primarily France the Avenger, but the good sense of the artists compels them to believe that a figure which is always about to strike can only serve a temporary purpose. It would be superseded if the country were victorious in a contest, and, moreover, such a figure, although expressive enough, is inadequate to stand for the complete France; it only represents the militant spirit but not the France who is mistress of the arts and of many of the joys of life. Meanwhile as a substitute a lion has been made to serve on many of the public monuments to typify the might of France, and the heads employed for the postage stamps are being continually altered in the hope that eventually one will be found which will become eloquent of the general aspiration.

Germany, on the contrary, finds no difficulty in producing an expressive Germania. This is the more remarkable because the land has been long cut up by kingdoms, principalities and dukedoms. From the great hymn by ARNDT it might even be concluded that the Fatherland was some ideal country where truth shone in all eyes and love was warm in all hearts, but one not circumscribed by any terrestrial boundaries. The fact, however, is that figures of Deutschland are of ancient date. Owing to comparatively recent events they are to be seen all over the Empire, and it is generally endeavoured by the artists to suggest some colossal BRUNHILDE who can use the sword in defence, but gives a preference to law. The Freedom's War of 1814

gave an impetus to the production of such figures, and there is no doubt that, whether seen in statues or on coins, the forms served as pioneers to the unification of Germany which was eventually accomplished in the Palace of Versailles.

In all those personifications there is only an imitation of Classic examples. Owing to its physical form Greece was divided into several more or less independent states. In an age when deities were numerous and required occupation in order to while away the tedium of Olympian life it was only natural that each state should claim to be under the protection of a particular god or goddess. The myth relating to the contest between NEPTUNE and MINERVA for the guardianship of Athens shows that a high value was set on the possession of votaries. ZEUS was allowed to have some participation in honours as a recognition of his supremacy. He had an altar and a festival in Athens and his name was respected in other places. It is also believed that some of the earlier race of gods were worshipped if they were honorary protectors. The representative of a Greek city was often an immortal being, and it was no easy matter to determine its true character. When a statue of MINERVA or ATHENE became the personification of Athens, the qualities of the deity were accepted by the people as characteristic of their city or, in other words, of themselves. For that reason at Athens the sculptor's work was of more interest than that of the architect's. The Parthenon was made to appear as a shrine which was too circumscribed to contain its treasure, and every sailor who from afar saw the helmet and spear of the goddess rising above the temple was inspired with confidence in the preserving power of the protectress of the city. In earlier days the idea formed of a deity must have been rather nebulous, but when PHIDIAS executed his *Athene* and his *Zeus* there was more definiteness, and the personification of Athens was accepted as perfect. It was no longer the infinite with its darkness which troubled the citizens; they were able to realise beings with whom the human form was majestic, and in whom time produced no weakness or disturbance of repose.

The peculiar identification of earth with heaven grew, if possible, more pronounced in Rome. The Temple of Venus and Rome which the Emperor HADRIAN designed is evidence of the extent to which it was carried. The building was magnificent, for it was the glorification of the people and of their ancestor, the mother of the pious *ENEAS*. Examples of sculpture still remain which show Rome as she was imagined to be—an Amazon seated on trophies of victory and holding the sword with which the Gauls were won. Such is the figure which is on the medal of ANTONINUS PIUS and which is accepted as if it were the Roman sculptor's notion of the conquered Britain. But generally the Romans preferred to be personified by a mailed MARS rather than by a woman in ample draperies. There was, however, a *Bona Dea* representing a more ancient cult, who was long a favourite with the people, and therefore with sculptors. She usually is shown as wearing a mural crown.

Whatever the majority of the Roman people might think about personifications in female form, we may be sure the statesmen and officials preferred some other mode of recalling the greatness of the city. The four letters S. P. Q. R., or an abbreviation of Imperator, were a more embodied which could not be misunderstood. Probably the representation of the triumphs of CLAUDIUS was thought a more emphatic representation of the sovereignty of Britain than the figure which is now taken as BRITANNIA. The mason's work in roads, bridges, walls and temples was another and more enduring personification, and it has survived throughout the greater part of Europe. The Romans also had figures to suggest the Nile and Tiber and they sometimes flattered themselves and the people they subdued by devising statues which were supposed to be embodiments of local characteristics. Their example was imitated after the fall of their power.

If considered in their practical aspects, it must be admitted that all these personified representations have fallen out of date. Some people now find it difficult to understand what purpose they served. But it should be remembered that it is very often advantageous in scientific work to have knowledge condensed into a formula. The



old sculptors' works to which we have been referring were political formulæ. They summed up the attributes of a country or a city, and even dull men must have had a notion that although a city might be inconvenient, costly or oppressive, in spirit it was such a being as the sculptors had imagined. The figure of BRITANNIA on our coins can in that way still have its use. It recalls, it may be in a dim way, a country and a history of which Englishmen should be proud, and although utilitarians desire something more conventional, we hope it will long remain on the coinage of the country as a reminder of the necessity of continuous watchfulness for national defence.

#### AMERICAN DICTIONARY OF ARCHITECTURE.\*

WE have heard so much of late about American expedition in many varieties of production, we suppose there ought to be no surprise at the completion of the "Dictionary of Architecture and Building" in little more than a year. The annals of publishing do not, however, record a similar case. If we think of how much must be accomplished before three large volumes dealing with such a multiplicity of subjects can be obtained by readers, the organisation that was necessary will be realised. A vast number of articles had to be prepared and co-ordinated, illustrations and diagrams to be drawn or reproduced, and the most characteristic buildings of the world to be brought, as it were, within the range of the reader's vision. In other words, the past had to be explored. But the present was also to be described in connection with various forms of buildings, and even the terms now in use by workmen needed a record. The editor, Mr. STURGIS, suggests some of the problems which he had to encounter when he speaks about definitions not only of things that are, but of things that are not. For instance, what is an arch and what is not an arch; what is the original and the derivative meaning of Doric; in what cases should piazza be substituted for verandah? The English language is not respected always by the representatives of building. "We of English speech," he continues, "have to borrow words from the languages of men more versed and more traditionally at home than we are in the things of fine art, but we may at least take those foreign words in their true senses, and we may use our own English words aright. Let us not force Renaissance to include the Decadence as well; let us not admit that a wainscot can be of marble." These words may be taken as expressing one of the difficulties of an editor when he endeavours to bring unity into a work consisting of contributions by sixty or more writers, as well as countless shorter articles compiled from as many treatises.

The expedition with which obstacles were surmounted will in a few years be forgotten, and the Dictionary must then depend upon the value of its contents, which will be judged as if they were slowly prepared. Readers in Europe may then overlook the fact that the three volumes are mainly an American work. In the United States architecture has been followed of late with so much ardour, it would be excusable if an effort were made to prove that in the art modern Americans had licked European, Asiatic and African creation. But it is remarkable, and at the same time most creditable to the editor and his contributors, that they have looked on architecture in its universal signification—as an art in which the human race has been occupied for several thousand years. American work of the present day is hardly allowed so much space as would have been allotted to it in a dictionary produced in London, Paris or Berlin. There is, for example, only one American office building represented—the American Surety Company's premises in New York, and the name of the architect is not appended. Similar reticence is observed in many other cases. Those who may not be acquainted with the Dictionary may therefore be confident that the desire to attain undue prominence, which THACKERAY and other English travellers have declared to be an American characteristic, is not exhibited in the pages. The same

catholicity is seen in the treatment of such subjects as marble, wood, &c.

The review of the history of architecture in the United States, by Mr. MONTGOMERY SCHUYLER, frankly acknowledges the debt to Europe, and the correspondence between the contemporary efforts for improvement which were made in England and in America. He says that in the middle of the nineteenth century "the art of architecture had seldom sunk so low in any civilised country as in the United States." A Gothic revival began with the erection of Trinity Church in New York. About 1860 the Victorian or Ruskinian Gothic supplanted the earlier variety. It was applied, not only to churches, but to commercial and domestic buildings, and even to Government offices. "Queen Anne" found little favour. The reaction towards Classic architecture was interrupted by the appearance of H. H. RICHARDSON, who adopted Romanesque as his favourite type. He designed, says Mr. SCHUYLER, "Romanesque town halls, court-houses, exchanges, libraries, schools, warehouses and dwellings, all characterised by simplicity and by a cyclopean massiveness, and all have an interest which had a more rational basis than their mere novelty." His influence was immediately felt, and while some contented themselves with copying, others endeavoured to grasp the principle of RICHARDSON'S style. The Romanesque revival, we are told, was the most promising beginning that had been made in the United States, if not in any country, towards the evolution of a living architecture. But it cannot be said to have produced many developments. Subsequently French Renaissance was the favourite. A new necessity had, however, to be met in which mere style became insignificant. Mammon-worship demanded many-storeyed temples in confined areas where ground was costly. No less than thirty storeys under one roof have been made possible for habitation owing to the invention of the elevator. It was requisite to economise space, and steel framing was therefore devised. It was found impossible to distinguish every storey by architectural features. Two or three storeys below received some emphasis, as if to serve as a base, and two or three above to serve as a capital, the intermediate storeys being like the courses of a square or oblong shaft. "The analogy thus suggested of the Classic column has been as closely followed as the conditions will allow, and may be said to have imposed itself upon most designers of tall buildings as a model upon which it is permissible to execute variations only in detail; it is allowable to speak of it as in some measure a new architectural type." Mr. SCHUYLER does not, however, form a very high opinion of the type. In appearance the tall building is factitious, for the true constructional frame is concealed by a screen. But some efforts have been made, it appears, to suggest the relation between the outer covering and the skeleton within, of which the outcome may be more successful as architectural expression.

It must be said that the articles relating to American practice are among the most interesting. The writers realise that time is money, and they endeavour to convey their information in as few words as possible. Take the following passage on the "trimming" of office buildings as an example of the condensation which prevails:—

The preference seems to be generally for wood floors in the offices, though ground cork or plastic asbestos may soon be in general use; mosaics or marbles in the halls, corridors and toilets; wood trimming to the windows and doors on the office side, and in the best buildings fireproof, or wood covered with sheet metal on the corridor side. Communicating doors between offices may be fireproof or not, depending upon the character of the building and funds available. The windows, as before mentioned, may be double hung, or may be made casement windows, opening out, there being two sashes in the frames. The doors should always have transoms over them for ventilation. Occasionally the entire upper half of the corridor partition is made with sash and frames. This is objectionable on the score of fire risk, and because in many offices the space is required for bookcases, pictures, large maps, &c. Fireplaces are sometimes placed in the office, but are objectionable, occupying valuable room, thereby decreasing the rental value of the office. In localities where the size of the lot occupied by the building has resulted in very deep offices, fireproof vaults have been introduced simply to use up the room, as safes are generally preferred. Generally conveniences of this character which are built in the room are likely to meet with

\* A Dictionary of Architecture and Building: Biographical, Historical and Descriptive. By Russell Sturgis, A.M., Ph.D. Vol. III. London and New York: Macmillan & Co., Ltd.



the approval of but a restricted number of tenants, and may profitably be omitted.

The great depth of the foundations required for the lofty office buildings will, we suppose, prevent the removal of one of them to a different position. But some remarkable and successful experiments in that way are recorded by Mr. WIGHT in his article on "Shoring." With the Americans, the English system of shoring does not appear to be appreciated as more than a waste of time and opportunity. They employ shores either for raising buildings or for moving them. One interesting case was conducted under the direction of Mr. WIGHT—a three-storey apartment building in Chicago. According to him:—

There was no possible direction in which the building could be moved as a whole on account of obstructions, for it was 49 by 72 feet in size; so the building, which was a comparatively new one, was cut into two, vertically, through its greatest axis, and moved in two sections, one following the other, on the same platform. The aggregate distance travelled was nearly 800 feet, and three corners had to be turned by each section. The sections had brick walls only on one side, and it was necessary to load the floors of each with 100 tons of sand to balance them. They were successfully put together on the new foundation, anchored and finished off as a new building which has never shown any effects of the operation. The necessity of preserving the proper level of the platform and providing against its gradual settlement in this case will be readily appreciated, but the whole operation was conducted without failure or accident. This is the first time that a brick building has been cut in two and united again.

It is strange that experiments of the same kind are not more often made in Europe, but it appears that Mr. FRIESTEDT, who conducted the operations in Chicago, has lately moved a large building in two sections in Budapesth and reunited them. The authorities would not allow the work to be done until heavy security was given.

An instructive article by Mr. H. R. MARSHALL relates to the preliminary studies for new works. He is opposed to the custom of depending altogether on elevations, and he is not entirely satisfied with perspectives which are made by special artists. Mr. MARSHALL finds models to be less expensive and more useful, for they enable him to study his lights and shadows and coloured masses with great accuracy. He employs a preparation of clay which retains the form given to it, and does not need to be kept wet. The model receives coatings of shellac and then can be painted in oil-colours as desired. The models "can be placed in the sun from time to time during the process of the work upon them, and properly oriented, so that one can study in them the real shadows to be cast by roofs and projections, and not merely the 45 degrees shadow of convention; and, furthermore, they may be photographed from many points of view, the photographic prints being used in place of and much better than elaborately "rendered" drawings, to explain to clients the appearance of the buildings they propose to erect.

The article on glass in windows, by Mr. JOHN LA FARGE, reveals to us that Sir E. BURNE-JONES was not satisfied with the execution of his designs by the firm of MORRIS & Co. He said his designs assumed a commercial shape when thus translated into glass. In such cases the error arises from giving less attention to the execution than to the drawing and cartoon.

We have only glanced at a very few of the articles relating to modern work. In a Dictionary of Architecture the history of the art must, however, obtain most attention. In the third volume there are several elaborate articles which deserve attentive consideration. Mr. PHENÉ SPIERS treats of Parthian architecture, Roman architecture, Persian architecture (Part II) and Syrian architecture. Mr. BLACKALL describes the architecture of Spain and Portugal, Mr. W. P. P. LONGFELLOW Romanesque architecture, Mr. HAMLIN the architecture of Scotland, Mr. FROTHINGHAM, jun., Sicilian architecture, Mr. F. M. DAY temple architecture, &c. We are not exaggerating when we say that all the subjects on which information is generally desired will be found treated at more or less length in the pages. The volumes will refresh the memory of the professional architect who consults them. Owing to the careful treatment and the vast number of illustrations, the contents would

also be found entertaining by gentlemen who possess average amount of education, and they would find a new interest in cities and towns after they had glanced through the pages. There is no similar encyclopædia in the English language which could be so generally useful, and all who have taken part in its preparation deserve congratulation for bringing the work to a successful termination in a time so short as not to allow any part to become obsolete.

## RESISTANCE TO FIRE OF FLOORS AND DOORS.\*

I AM going to limit myself strictly to two departments of construction, namely, floor construction and door construction; but these two departments will give you an idea not only of what has been done, but of what an enormous scope there is in this field of investigation and the collection of reliable data.

Starting with experimental tests with floors, the first which I shall direct your notice is an ordinary floor with joists and floor, the soffit of which was protected by plaster termed asbestic plaster. This was applied on ordinary wooden lathing, and the thickness of the plaster after completion was about  $1\frac{1}{2}$  inch. On drying this reduced itself to about  $\frac{3}{4}$  inch, and during the process of drying cracks developed over the surface. Before the test these were stopped, and the appearance of the soffit as you now see it is due to this cause.

The testee decided to have a 45 minutes' test, 15 minutes a temperature not exceeding 500 degs, then a gradual increasing temperature for the remaining 30 minutes up to 1,500 degs. The summary of effect is as follows:—No perceptible difference in the ceiling was observed during the progress of the test. The application of water caused no injury to the ceiling. No portion of the ceiling fell, either during or after the test. When examined after the test cracks had developed over the surface, and some of the wood laths were charred, but none had ignited. This test may be considered satisfactory, as the object was attained, viz. to render the floor fire-resisting for 45 minutes, which would, under ordinary circumstances, have allowed the occupants in the rooms over to have escaped.

The next floor was of ordinary joists and boarding, but the protecting material to the soffit was slag wool  $1\frac{1}{2}$  inch thick. This was secured with screws to the soffit of the joists, and  $\frac{3}{4}$ -inch matchboarded ceiling was placed under the slag wool. The testee decided to have a test of one hour's duration, with a gradually increasing temperature to 1,800 degs.

The summary of effect was as follows:—At the conclusion of the test the flooring on top was, so far as could be seen, uninjured, and when the joists were examined they were sound. The boarded ceiling had, of course, disappeared, but the slag wool remained in position, and had protected the floor. A good deal of heat was retained in the floor, and at one point where water had not been applied, a small hole was burnt through the flooring some three hours after the test was concluded. This test may also be considered satisfactory, as it retarded the spread of the fire for at least an hour.

We now come to a floor of simple balks of timber laid side by side, any spaces between being filled with fireclay grout, the soffit not being protected in any way; the depth of the balks was 9 inches. This was the Committee's own test, and it was decided to have an 80 minutes' test with a gradually increasing temperature up to 2,000 degs. Fahr. The result was that the under-surface of the wood beams was charred to an average depth of about 2 inches, but beyond this no damage was done. The test clearly demonstrates what fire resistance there is in such a floor, but it must be carefully borne in mind that the space must be left between the timbers that is unfilled by the grouting, otherwise the fire draws up through and spreads to the next floor.

Another floor comprises 7 by 2 joists,  $\frac{3}{4}$ -inch flooring, concrete and Portland cement concrete, 5 to 1, filled in between the joists to a depth of 5 inches, and kept in position by  $\frac{1}{2}$ -inch fillets nailed to the sides of joists 2 inches from the bottom; a ceiling was nailed on to the soffit formed of  $\frac{3}{4}$ -inch matchboarding. The time decided for the test was 75 minutes, commencing with a temperature of 500 degs., and increasing not more than 2,300 degs. The floor also was to be loaded with 100 lbs. per square foot distributed. The result of the test was that the floor collapsed in 82 minutes.

The summary of effect is as follows:—In 15 minutes all the boarding to the soffit was consumed; in 54 minutes flame came through the floor between the last joist and the wall.

\* From a paper by Mr. Edwin O. Sachs, chairman of the British Fire Prevention Committee, read before the School of Military Engineering, Chatham.



I should like to point out here what an important part the 1 by  $\frac{3}{4}$  fillets played in the construction of the floor in preventing the fire getting through, and it was in consequence of the fillets being omitted on the outer side of the two end joists that the flame came through there, and these two joists were the most damaged. The concrete between the two east joists fell out in 74 minutes; meanwhile the fire had been gradually eating its way up the other joists some 2 to 2 $\frac{1}{2}$  inches, they, being thus reduced from 7 inches to 5 inches or 4 $\frac{1}{2}$  inches, could no longer sustain the weight of 100 lbs. per square foot, and the floor and load collapsed in 82 minutes. The floor-boards were not burnt but only blackened by the smoke.

A test of a somewhat similar character to the one just mentioned was instituted to discover the fire-resisting qualities of different descriptions of concrete.

The floor was constructed of 3 by 9-inch deal joists spaced 16 $\frac{1}{2}$  inches centre to centre, which gave seven bays. Two of these bays were filled in to the full depth of the joists with coke breeze and cement concrete, 6 to 1. The next two bays were filled in with pit-ballast and cement concrete, 6 to 1, and the remaining three bays were filled in with concrete composed of pit-ballast three parts, coke breeze three parts, and cement one part. The concrete was supported between the joists by 1 $\frac{1}{2}$ -inch by  $\frac{7}{8}$ -inch fillets. The soffit of the ceiling was plastered, render, float and set, and  $\frac{7}{8}$ -inch flooring was nailed on top of the joists to complete the floor. It was decided to test this floor for one hour and a half to a gradually increased temperature up to 2,500 degs. Fahr., and then to apply a stream of water for four minutes. The summary of the test was that after a few minutes the plaster of the ceiling began to fall, whereupon the lower edges of the joists became ignited and gradually burned upwards. At the end of the period the whole soffit of the floor was seen to be fully incandescent, particularly that in the coke breeze and cement bays. On the application of water the soffit of the ballast and cement concrete and the ballast, breeze and cement concrete immediately disintegrated, and about 3 inches in depth of it fell. The coke breeze and cement alone were not affected. The floor remained in position at the conclusion of the test, but appeared seriously weakened and deflected.

It is to be regretted that it did not remain in position sufficiently long to be photographed, but after a test of this description a good deal of latent heat remains in the materials, and the joists being of combustible material continued to smoulder, and the result was the collapse of the floor five hours after the test. On examining the remains the joists were found to be burnt through from 2 to 6 inches deep, and tapering to a further depth at the ends. The boarding was found to be slightly charred on the underside and at the joists, but otherwise was sound. It could not be said the fire had passed through the floor, although smoke came through, and I think the floor may be considered a fire-stop, although the weight of the concrete caused the collapse of the floor, and might constitute a source of danger on that account. The behaviour of the ballast concrete shows it an undesirable material for fire resistance, while coke breeze has many advantages. The experience gained by the last two tests paved the way to the next; both the previous tests had shown that if the soffit of the joists had had further protection, the fire resistance of the floor would have been greater, consequently a test was arranged as shown, with an expanded metal ceiling suspended 1 inches below the bottom of the 7 by 2 wooden joists, which formed a centreing for the concrete as well as a key for the plaster. The construction will need no further description beyond that the concrete below the joists was of dry ashes and Portland cement, and that between the joists was composed of coke breeze three parts, dry ashes two parts and Portland cement one part. The test was arranged for two hours, which is the longest time yet given for a floor formed partly of combustible material. The temperature was not to exceed 1,300 degrees Fahr., and to be followed by a stream of water for two minutes. The floor also was to be loaded with 100 lbs. per foot distributed.

The summary of effect is very short. In twenty-eight minutes plaster began to fall in patches from the ceiling and continued to fall at intervals till the end of the test, when water was applied and further plaster was washed away. No other effect of the fire was noticeable, and at the conclusion of the test the floor was intact and carried its load. This floor did not subsequently collapse, although it smouldered all night. It was found that all the joists had been more or less damaged by the fire smouldering all night; portions of them were quite consumed, leaving the matrix only in the concrete. The least damaged of the nine joists forming the floor was the centre one, which was intact but for a piece about 12 inches long and 1 inches deep, which was consumed about 15 inches distant from the south end.

The next test, which was submitted by a manufacturer, dealt with a floor supported by 9 by 3 wooden joists with a terra-cotta wired lath suspended ceiling, and an air-space between the ceiling and the concrete filling between the joists.

The lathing was spread over the top of the joists and depressed in the centre to the shape of an inverted arch; upon this the concrete was placed to a depth of 7 inches in the centre, which, when levelled, brought it 2 inches thick over the top of the joists. The concrete was of Portland cement and washed sand, in the proportion of one yard of sand to two bags of cement. The suspended ceiling was formed of terra-cotta wired lathing secured to iron rods fixed to the soffit of joists with iron hooks. Ordinary three-coat work was applied to the lathing, but a proportion of plaster-of-Paris was incorporated with the material. The thickness of the plastering was 1 $\frac{1}{2}$  inch. The test was arranged for one hour and a quarter, the temperature was not to exceed 2,000 Fahr., and the floor was to be loaded with 56 lbs. per foot distributed.

The summary of the effect was that a considerable portion of the plaster ceiling fell during the test, some of the lathing being bare before the test closed. The floor cracked at each side to the extent of  $\frac{1}{2}$  inch and dropped  $\frac{1}{4}$  inch. When water was applied, smoke, steam and sparks came through the cracks in the top of the floor. One of the joists carrying the ceiling was entirely destroyed, two partially so, and one, though discoloured, was practically sound. This floor did not collapse, but its supports were practically destroyed; it trusted for its fire resistance to the suspended ceiling on the terra-cotta, wired lathing and air space, but after the ceiling was pierced, the heat had full play around three sides of the deal joists, and so brought about its ruin. A floor of similar construction, but with iron supports, will be mentioned later.

We now come to floors having pretensions to be fireproof, i.e. the constructional parts of the floor are of non-combustible material, and the committee started with a simple iron and concrete floor, the soffits of the iron joists forming the floor being exposed. The floor is constructed of 5 by 4 $\frac{1}{2}$  steel joists placed 2 feet 6 inches apart and filled in with coke breeze and Portland cement concrete 5 to 1. It was loaded with 168 lbs. per foot distributed. It was proposed to test this floor for 2 $\frac{1}{2}$  hours up to a temperature of 2,300 degs. Fahr., but after 1 hour and 25 minutes, and at a temperature of 1,650 degs., the bulk of the concrete in the two outer bays collapsed, owing to the deflection of the steel joists. The floor began to deflect after 20 minutes at a temperature of 1,200 degs., and a maximum deflection of 10 $\frac{1}{2}$  inches was recorded in one of the joists. The coke breeze concrete was but little deteriorated.

The disadvantage of filling in concrete between joists is in setting-up and striking the centreing, and the attendant obstruction to the progress of the works by the supports.

The Committee instituted the following test in which corrugated iron filled in between the iron joists was the centreing employed, and the coke breeze and cement concrete, 5 to 1, filled in on top.

The soffit of the joists and corrugated iron centreing was protected by 2 by 3 deal ceiling joists suspended from the joists, and wire netting,  $\frac{1}{2}$  in. mesh, was used as lathing and a plaster ceiling, three-coat work, applied, inch floor boards were nailed into the breeze concrete on top, the floor and ceiling having a total thickness of about 12 inches. The floor was loaded with 168 lbs. per square foot distributed. The test was to last 1 $\frac{1}{4}$  hours, and the temperature 2,000 deg. Fahr. In half an hour the ceiling began to fall, and in one hour the ceiling and ceiling joists had all fallen. At the conclusion of the test the soffit of the iron joists and corrugated iron centreing were observed to be red-hot, and the joists had deflected about 2 $\frac{3}{4}$  inches, but on cooling returned to within 1 inch of level. The fire did not pass through the floor, but perhaps the test was hardly sufficiently long to enable a comparison with the former floor to be made, but certainly the deflection of the joists was not so great and the floor would have been serviceable without reconstruction, which the former floor would have not.

The next floor is one in which expanded metal forms a centreing as well as lathing. The construction of the floor is by iron joists 4 feet 9 $\frac{1}{2}$  inches apart, on the top of which the expanded metal is stretched and 3 inches of furnace ash and Portland cement concrete laid and finished on top with half an inch of cement and sand. The joists are protected with a suspended ceiling, as shown, of expanded metal and ordinary plastering applied. The space between the floor and ceiling was ventilated by means of holes in the walls of the chamber. The floor was loaded 140 lbs. per foot, distributed. The test was to last one hour and fifteen minutes, and the maximum temperature was to be 2,000 deg. Fahr. The result was that during this period the fire did not pass through the floor. The plaster ceiling remained intact until the application of water, when some of it was washed away. There was a slight deflection of the floor and ceiling.

We now come to the floor to which I before alluded, and it is on the same principle, but steel joists are substituted for the wooden ones.

Terra-cotta wired lathing is used both for the centreing and ceiling. The slide will explain the construction in detail. The



test was to be of  $1\frac{1}{4}$  hour duration and the temperature was not to exceed 2,000 degs., and the load  $1\frac{1}{2}$  cwt. per square foot distributed. The result was the fire did not pass through the floor, but on water being applied some of the plastering was washed from the lathing. So little was the floor damaged that the testee decided to replaster the ceiling, and the test was renewed at a subsequent date, when practically the same results were observed.

The last floor test to which I invite your attention is one of  $2\frac{1}{2}$  hours. The floor was constructed of iron and concrete, in which all the ironwork was embedded. The steel joists are spaced 6 feet apart, over which are placed stirrups to receive the bridging bars, spaced 20 inches apart. A slab of concrete is suspended to the soffit of girder, and a wood centreing is necessary for filling in the concrete, which is composed of clinkers, broken small, sand and Portland cement in the proportion of four parts clinkers, two parts sand and one part Portland cement. The concrete was 4 inches thick, a further depth of coke breeze and Portland cement concrete, 2 inches thick, was filled in on top of this between the floor strips; the soffit of the floor and the sides and soffits of the steel joists were rendered in plaster three coats.

The summary of this test is thus recorded:—The plaster on the underside of the ceiling and around the beams cracked slightly before the application of water. On the application of water some of the plaster fell off the soffit of the ceiling and beams. The concrete forming the floor was not damaged. That enclosing the beams was slightly damaged and cracked. The fire did not pass through the floor. The wood strips bedded in upper surface of the concrete were uninjured.

I now come to a very interesting series of tests with doors of various constructions and various materials.

For the purposes of comparison it became necessary to first of all ascertain the resistance of any ordinary deal door, and then of a solid 2-inch door of the same material. These tests are made more interesting, as the Committee were enabled to take photographic records of the outside of the several doors during the progress of the tests. You will find upon the screen at the side a tabulated result of these tests, as also a photographic diagram, showing the condition of the various doors at intervals, in most cases of five minutes, taken during the tests.

The first of the tests is that of an ordinary 1-inch ledged door and a 2-inch four-panel moulded both sides door, with panels  $\frac{1}{2}$  inch in thickness. They were fitted into the recessed wall, built about 14 inches back across the hut, one side of the door being in the chamber and the other side exposed to the external air. This arrangement was identical for all the tests, so that a separate description of the size and position of each door will be unnecessary.

Following upon this are two 2-inch bead butt both sides doors, with 2-inch solid panels. One was of deal and the other pitch pine. In 17 minutes flame appeared over the top of the deal door, and in 20 minutes over the top of the pitch-pine door. After 55 minutes the doors were mostly consumed.

We now come to the hardwood doors which are to be the fire-stop, one of American oak, and one of Moulmein teak. The fire came over the top of the teak door in seven minutes, but it did not appear over the top of the oak one for 35 minutes; in 55 minutes the doors were practically destroyed. It should be pointed out that it is very desirable that the doors should fit as closely as practicable; the reason for the flame coming over the top of the teak door so soon was in consequence of its not fitting closely to the frame. Another teak door of similar construction, but somewhat thinner and with the panels in two thicknesses, will appear later on, when the first appearance of flame was after 18 minutes.

The next two doors are of Austrian oak and American walnut; the flame did not come over the top of the oak door till 33 minutes after the fire was started, but in the walnut door flame appeared at intervals after 15 minutes.

The last doors tested in this series were of Honduras mahogany and poplar. The fire came over the top of the poplar door in three minutes, and over the top of the mahogany one in 10 minutes. The condition of the doors after 30 minutes was thus:—The poplar door had all the upper part consumed. It had all disappeared in 40 minutes, and a temporary door had to be fixed in its place to continue the test of the mahogany door, which collapsed at 50 minutes.

It will be observed that these two doors did not stand so well as the deal and pitch-pine ones, although, in justice to the poplar door, it had somewhat warped away from the frame at the top and greatly facilitated the flame coming over, and its consequent rapid consumption.

The committee's experience with this series of doors led them to experiment with doors made of material in three thicknesses, and two doors were made—one of deal and the other of pine. The material was in three thicknesses, the two outer faces being vertical and the inner one horizontal. The boards were in about 6-inch widths, and securely nailed together with 3-inch clasp nails and clinched on the outside;

the total thickness was  $2\frac{1}{2}$  inches. Each door was hung with one pair of strap hinges, 2 feet 6 inches long into brick rebates and before the doors were put in position the rebates were screeded, so that the doors should fit as close to the rebates as possible. These doors stood a longer test than the former series, as will be seen by their condition after 55 minutes. Flame was not seen through the pine door till 60 minutes, although in the deal door flame came through in 39 minutes. The destruction of the doors was very rapid after the flame came through, and at 65 minutes the test was concluded. Iron was the ruin of the doors, as on the nails and becoming red-hot they charred the timber around them and allowed the fire to come through.

This led the committee to test three doors of similar construction to the last, i.e. in three thicknesses, but the thicknesses were secured together by  $\frac{3}{8}$ -inch double wedge-shaped pins, driven in from both sides instead of clasp nails. The doors had frames, and the frames were rebated. The doors were respectively of deal, teak and oak. The test with these doors gave the best results of any of the previously tested fire-resisting doors.

The deal door of this construction was tested against a four-panelled teak door, with the result that at the end of 60 minutes the teak door was almost consumed, but the deal door was practically intact as a fire-stop. The oak and teak door of the same construction as the deal door at 75 minutes were still in position, the teak one being the better of the two.

This ends the series of tests with fire-resisting doors, and we come now to a comparative test with an iron door meeting the requirements of the Building Act under section 77, and a door constructed of wood and encased with tinned steel sheet, lock-jointed and screw-nailed. The test was to be 1 hour, and the summary of effects is as follows:—

The wood door covered with tinned steel plates remained in position, but was much buckled and bulged, and the upper part gradually inclined inwards to a considerable extent, permitting the passage of flame. The first spurt of flame over the top of door was seen after 5 minutes. The iron-framed and panelled door remained in position, but became red-hot, buckled and warped considerably, together with its rebate frame. The upper corner on the lock side gradually inclined inwards to a considerable extent, permitting the passage of flame. The first spurt of flame between door and frame was seen after 20 minutes. Notwithstanding that the iron door buckled, I am of opinion it is the best fireproof door at present in use, but to be effective it requires three hinges and three bolts, and the tendency to buckle is thus hindered.

A test with an iron door with styles and rails on both sides and one with styles and rails on one side only demonstrated the advantage of the door being secured at six points.

## A PAINTER'S DREAM.

IN his last lecture at the Royal Academy Mr. Val Prinsep linked together artists of the age and of the ages, means of a dream he had after studying portraits of painters from the earliest to modern time at the Uffizzi Gallery. He had striven to call up the manner of man each was, and to the character indicated by feature and expression to his knowledge, just as Von Moltke had done when sitting for his portrait before the counterfeit presentments of great military leaders at Versailles. A weird effect was produced on Mr. Prinsep by the presence of so many artists at the Uffizzi, and speculated as to how they would view the art of to-day induced a dream that had intense reality to him. He found himself at the Uffizzi Gallery, and was soon aware of a large company passing before Lord Leighton. In a few terse words the lecturer described the personalities of each guest—Michel Angelo, Millais, Raphael, Landseer, Delacroix, Sir Joshua Reynolds, Turner, Cellini, and the rest, all of whom talked together with ease. Then Mr. Prinsep greatly desired to approach his dear friend, but neither Leighton nor those around took notice, he realised that he was naught in such a goodly company. Leighton's statue, "The Sluggard," was discussed, Cellini finding it a magnificent piece, and the casting excellent, though in his day the artist would have cast it himself. Angelo, too, thought it a remarkable achievement, in many ways perfection, and that this English school, if it respected it, must command respectful esteem if it did not arouse fervent admiration. A few Old Masters examined the paintings, but found them incomprehensible, and when some modern painters tried to explain the meaning, Raphael pronounced them curious, but often mean and trivial, even saying that such things would be forgotten in a few years, asking, was there no religion, no belief? In his day, he further said, they strove to elevate, seeking beauty which would last in spite of modern, flashy fireworks. Hogarth hotly denounced such pretentious dilettanteism, saying he preached stern reality, and would back nature.



outlast convention. Wilkie extolled Dutch genre, and claimed that it was pretty, but Velasquez said the Dutch were content with plausible reality, and the word "pretty" was unknown to him. Then this strangely mingled company, congregated before "The North-West Passage," were eloquent on its delineation of divine form, but thought such fine work was vulgarised by being brought too near to nature, that the head of the old man was truly alive; but the end of art was not realism, and nothing made a soul so pure as to strive after perfection. Here a bellicose voice (Millais) objected to the rocksureness of such dicta, saying of the picture, "It is good, whatever they may say." Giotto and others followed in various strains. Then Titian and Reynolds gave their opinions of the picture, the former finding noble effort to be sincere, but joined to brutality that jeopardised the best art, for there should, he urged, be divine melody without one jarring note, and here was some coarseness, so that the homely melody suffered; yet was it the more wonderful that by treatment he thing was beautiful? Sir Joshua did not find that nobility which he felt in one of West's celebrated works, as his picture lost by commonness, as it was an effective achievement in a rather barbaric way. The ringing voice of Hals remarked that he noticed a want of joy, there was never any frolic, only the dark side of nature; but though he had lived in troublous times, he sought to present the brightest side of it. In defence, Leighton urged that "the sweetest strains are those that tell the saddest thoughts." Velasquez contended there was nothing so common that it could not be raised, and if commonness was shown, the fault lay with the painter, for nature was a book of reference, the words in which must be looked up by poets, or their utterances would be a mass of platitudes. He had himself gone to nature, and found in her none of the mannerisms that Italy had in his time. Millais chuckled at finding himself in the same position as Velasquez, and Rembrandt also backed him up, declaring he was right to paint in his own way; but Millais could not get over Sir Joshua, of whom he thought so much, not liking his work.

### ST. LEONARD'S HOSPITAL, YORK.

A PAPER was lately read before the Yorkshire Philosophical Society by Mr. George Benson on "The Hospital of St. Leonard."

Having traced the history of the foundation of St. Leonard's Hospital, Mr. Benson pointed out that the site was now occupied by the York Theatre Royal. He said that the cloisters were the undercroft of the Hospital of St. Peter, which owed its foundation to King Athelstan, who, returning from the famous battle of Brunanburgh, came to York and returned thanks to God in the Minster for his great victory. He found in the Minster some poor religious people called Culdees, devoted to works of charity. Their work was greatly hindered owing to want of means, so the king granted to God, St. Peter, and the Culdees a piece of ground on which they might erect a hospital, and added for the support of it one acre of corn out of each plough going in the see of York. The piece of ground which Athelstan granted to the Culdees of the Minster is that on which the Theatre Royal stands. On the site buildings were erected, probably of timber, for the hospital. These were destroyed in the great fire of 1069, which leaved the Minster Library. Thomas of Bayeux, when he became Archbishop of York, restored the Minster, and seems to have rebuilt the hospital with stone. A view of the undercroft was fortunately made by Joseph Halfpenny in 1807 and published in his "Fragmenta Vetusta." This undercroft is of Norman work, and consists of two aisles divided by a row of five short columns, opposite to which are flat pilasters to the walls. This apartment was about 80 feet long and 26 feet in width, and covered with vaulting of early character. Plain jointed arches of worked stone spring from the sculptured caps of columns and wall piers enclosing a square area, and this space, within four arches, is covered with rubblework, having plain diagonal groins intersecting each other and rising to the centre. A small wall shaft base has been found, which is identical with that figured by John Browne in his great work on York Minster. This indicates a close connection between the Minster and the Hospital. King William II. enlarged the site of St. Peter's Hospital, and built a church for the hospital and dedicated it to St. Peter. The undercroft, seemingly, was extended some 39 feet by 26 feet and formed L shaped. The chapel would be on the upper floor. The close of the hospital was further enlarged by King Henry I., and he gave them pasture in Galtres Forest for their cattle, wood to burn, and also timber for building. King Stephen built a church for the hospital on the part of the close adjoining the king's street, and the church was dedicated to St. Leonard. The king at the same time changed the name of the hospital from St. Peter to St. Leonard, and under royal patronage the hospital became independent of

the Minster. The history of it was then traced to its surrender in 1537. The ruins and site passed through various hands until 1675, when these were bought by the Corporation for 800*l*. In 1750 Joseph Baker leased the cloisters of St. Peter's Hospital and erected a small theatre. Fourteen years later it was extended over part of the cloister. In 1807 that part of the cloister sketched by Halfpenny was perfect, and remained so till about 1835, when it was cut through for a new staircase to the boxes of the theatre from the then newly formed street of St. Leonard's. Some fourteen years ago the Corporation in making alterations destroyed the greater part of the crypt, and last month saw all the remains cleared away except one bay, which, it is understood, will be preserved. A shaft with base and cap was recently presented to the Museum by Messrs. Parker and Sharp. These fragments may recall the loss which York has suffered in the removal of the historic Norman cloister of St. Peter with the earliest example of vaulting in York, and it was hoped that this fragment would be spared for many years. A great cry had been made about technical education; here was a technical institution to hand for masons, and in it the student could solve his problems. No deadlier blow was struck at education, especially technical education, in this country than in removing these ancient buildings, which had come down to us as perfect examples of the art of design and masonry, from which the designers and craftsmen of to-day draw their inspiration. In conclusion, he expressed the hope that the spread of education would tend to preserve the remaining early monuments of art, hallowed as they were by many historic associations.

### MUSEUMS IN MANCHESTER.

IN a letter to the *Manchester Guardian* Professor Boyd Dawkins writes:—It is clear from the letters in your columns that the public is beginning to realise the importance of improving the existing art museums in Manchester and Salford and of placing within the reach of the community the means of raising the standard of taste. I venture to add to the general discussion the following conclusions, founded on a study of upwards of thirty years of museums, both of nature and of art, on both sides of the Atlantic.

The various art museums and picture galleries in Manchester and Salford should be co-ordinated so as to cover different sections of the vast field of art, each taking some special line of its own. In this manner the opportunity of the study of the highest efforts not merely of the painter and sculptor but of the worker in metal, stone and wood, and of the handicraftsman generally, may be offered to every inhabitant of this city. Any scheme of future development without the latter section of art would not meet the needs of education in this district. We cannot, obviously, raise the standard of art production by the multiplication of picture galleries and by shutting out of art museums the highest work of the craftsman. There is room for great improvement in this direction without the establishment of a new art museum.

If, however, it is possible for a new art museum to be established, we have examples in South Kensington, Liverpool, and Birmingham, which can be bettered and modified to suit the local conditions. At present if I wish to study the best ironwork, or the best examples of enamel or of pottery, or to ascertain the place of Chippendale, Hepplewhite, Adams, or Sheraton in the world of art, I have to travel to London. If there be in this great centre of spinning and weaving a series of specimens illustrating the progress of the arts that lie at the root of the prosperity of this city, from their beginning in prehistoric times down to to-day, it has escaped my notice. These are merely a few indications of the directions in which an art museum, in its wider sense, would be of great value to the public.

There are already in Manchester materials which would go a long way towards the realisation of the ideal museum, in the hands of public bodies and private persons. In the Manchester Museum, for example, there are valuable collections from Egypt and elsewhere which cannot be exhibited, and await the museum of the future, in which they will fall into their proper place. Of private collections there is no end.

On the broad question of art museums in Manchester and Salford, the first step to be taken is to define clearly what is the best thing to do, and then to see how it can be done in the best way. The difficulties cannot be met by the appointment of a specialist, even with plenary powers. They may be overcome by a competent committee. The value of properly organised museums in teaching the people may be measured by the success of the Manchester Museum, which is now bearing the fruits of many years' labour. This movement, it may be remarked, is part of the general awakening of the country to the needs of the time, shown in other directions by the multiplication of technological institutes and new universities



## NOTES AND COMMENTS.

It cannot be said that the Law Society did not show an excess of zeal when summoning Mr. W. A. HASKINS for "unlawfully, wilfully and falsely pretending to be a solicitor." The offence arose out of a letter. In writing epistles on business purposes there is a general desire that they should sustain the scrutiny of lawyers in the courts, and on that account stereotyped phraseology approaching the manner of expression employed by solicitors is often adopted. The writer, of course, does not intend to pose as a solicitor any more than when he uses such familiar combinations of words as "circumstances over which I have no control," and the like. Mr. HASKINS's alleged crime consisted in writing from his office in King's Bench Walk, Temple, to a builder respecting ancient lights, about which, he said, he was instructed to apply for an injunction to restrain the raising of the walls. The letter continued:—"Will you be good enough to furnish me with particulars of the height and lines of your building, and in the meantime cease raising the brickwork, or you will compel me to take action?" The builder, on the receipt of that letter, called on Mr. HASKINS, thinking he was going to see a solicitor, but he found that Mr. HASKINS was a surveyor. The offence was in employing the words "I am instructed." There is nothing unusual in an owner of property who contemplates an action for interference with light and air to go in the first place to his surveyor, or for the surveyor to enter into communication with the builder on the subject. Why should solicitors alone have a monopoly of the word "instructed?" It was stated for the defence that Mr. HASKINS in writing the letter did not pretend to be a solicitor, and he firmly believed the builder would have known he was a surveyor. The Alderman, however, considered that the letter would give the impression that the writer was a solicitor. But as it was a case in which the full fine of 10*l.* was unnecessary, Mr. HASKINS was fined 2*l.* and 3*l.* costs. From the decision it is evident that a surveyor or architect, having an office in a quarter or building where lawyers congregate, should give some indication on his notepaper of the profession he follows, otherwise he is liable to become responsible for the erroneous conclusions drawn by those to whom he writes.

If the agent of some foreign State were to come across the catalogue of the books and tracts on Pure Mathematics in the Newcastle-upon-Tyne Central Library, he could not fail to draw the conclusion that the northern city must be inhabited by students of science more advanced than those who were found in similar places elsewhere. It is true that educated and wealthy people take advantage of the Libraries Act in order to save a little money which would be serviceable to the owners of ordinary lending libraries, and it is not a gratifying sight to see footmen in livery carry out piles of books to carriages in the High Street of Kensington. But students of mathematics rarely possess footmen or carriages, and it is safe to assume that any money expended for their benefit will not inflict a loss on any ratepayers. In Newcastle there is a lending library of mathematical books of an elementary class. But what the devotee of mathematics will be delighted with are the books in the reference department. We doubt if any of the universities are better equipped. The committee have been able to secure books on the science from the early days of printing until the present year. There is a "Euclid" printed in Venice in 1482, and there are others produced between that year and the end of the nineteenth century, including "The Elements of Geometrie of Euclide (Books 1-15), now first translated into the Englishe tongue by H. BILLINGSLEY. Whereunto are annexed annotations of the best mathematicians, and a preface by M. J. DEE, &c." which appeared in London in 1570. There is an "Archimedes" of 1561. NAPIER'S "Arithmetica Logarithmica, sive logarithmorum chiliades triginta" is dated 1624, and a French version was brought out four years later. Mathematical works in all languages are found together, OMAR KHAYYAM, the poet, and RADHAKRISHNAN being among the Eastern representatives. MONTUCLA'S great History is on the shelves, and the student has almost enough materials for testing the accuracy of the statements. But

for many the collection of tracts will be the most interesting part. The list of those by J. W. L. GLAISHER three closely printed pages. A. CAYLEY'S tracts occupy fourteen volumes. Then there are works by men who have won reputation in other fields, such as PASCAL, D'ALEMBERT, CARNOT, the organiser of victory, COMTE, the Positivist, HERSCHEL, and we might add THOMAS CARLYLE, whose tract on proportion forms an introduction to a translation of LEGENDRE'S "Geometry." That so marvellous a collection is available in so modern and practical a place Newcastle-upon-Tyne is most creditable, and happy are the ratepayers who possess so fascinating a treasure. Should we overlook the librarians, Messrs. ANDERTON, RICHARDSON, who have arranged the books, whose catalogue will be found worth reading by lovers of eternal science, who, unluckily for themselves, may not be able to utilise the central library.

NON-EPISCOPALIAN Scotland is not directly suggested by cathedrals, but it need hardly be said that it contains several which are of ecclesiastical as well as of historical interest. Iona, Glasgow, Brechin, Aberdeen, Dunblane, Dunkeld, Edinburgh still retain much of their original character. The change from Episcopacy to Presbyterianism was, no doubt, of momentous importance, but it is a fallacy to conclude that the reformers exhibited their zeal by destruction of ancient buildings. A great many of the English people who visit Scotland are not aware of the fact, and they neglect many interesting buildings through their ignorance. The small volume entitled "Scottish Cathedrals and Abbeys, their History and Associations," by M. E. LEICESTER ADDIS (London: ELLIOT STOCK), is such a book as is adapted to form part of the outfit of a tourist. It is produced in an attractive style, and the numerous photographs are sufficiently large to allow details to be visible. The author has industriously explored the literature relating to the buildings, and especially the papers read before antiquarian societies and reprints of ancient records. The cathedrals and abbeys have been like main actors in Scottish history, and this small volume will therefore, repay attentive study.

## ILLUSTRATIONS.

ST. MARY'S CHURCH, ECCLESTON, SOUTH AISLE, LOOKING EAST.

FOWEY HALL, CORNWALL. CORNER IN DRAWING-ROOM. DINING-ROOM.

CATHEDRAL SERIES.—RIPON: THE NAVE, LOOKING WEST.

FARMHOUSE, FOUR ELMS, EDENBRIDGE, KENT.

THIS house was built at Four Elms, a village near Edenbridge, on the site of an old farmhouse. The walls are faced with red bricks, with red Broseley tiles; the roof and upright framing of first floor, gables, &c. The ground floor consists of two parlours, kitchen, scullery, dairy, pantry, &c.; there is an oven for baking bread in the scullery. On the first floor are three large bedrooms.

Mr. WALLIS, of Edenbridge, was the builder, and Mr. HENRY JARVIS, architect.

HOUSE, EDENBRIDGE, KENT. STABLING.

THESE cottages were built some time ago, and are now being converted into one house consisting of hall, drawing and dining-rooms, kitchen, scullery, &c.; the stairs in one cottage have been removed and new porches put to the entrance. The walls of ground floor were faced with red bricks and the upper storey has hanging Broseley tiles on wooden quarterings. The roof is covered with similar tiles. A verandah with flat roof, forming balcony to first floor, is to be erected at one end. The coachhouse and stable are being built of red bricks with tiles to roof and sides of first floor.

The builder is Mr. LEIGH, of Edenbridge, and Mr. HENRY JARVIS, architect.



## THE ARCHITECT'S USE OF ENAMELLED TILES.\*

THE architect's use of enamelled tiles may be classed, for convenience sake, into three divisions, according to the purposes for which he uses them—either on hygienic grounds, or for the purpose of saving or reflecting light, or for decoration. These three divisions blend and shade off, of course, into each other, and sometimes all three objects are obtained simultaneously in one scheme of tilework. Thus the staircase hall in Lord Leighton's house presents a wall whose surface can be thoroughly and easily cleaned, whose glaze checks the diffusion of air, dirt and moisture, retains its light and colour even in the darkest corners, and by its pattern and hues constitutes a beautiful scheme of decoration. More often a combination of two requisitions only is secured, as in the case where tiles are used to line underground passages, railways, lavatories, dark rooms and courtyards. In a dairy, to take another example, the decorative as well as the hygienic aspects of the case are sometimes considered. But for to-night I shall pass by the builders' and plumbers' use of the material, and shall consider mainly the employment of enamelled tiles as a mode of decoration. Incidentally for this form of decoration I shall claim the collateral advantages it affords both as regards the economy of light and the wholesomeness of the practice of covering the walls with an impervious glaze; but the decorative treatment is what I shall most concern myself with, considering the use and the limits of its use, and what should be the architect's attitude in regard to this method of architectural enrichment. In referring to the examples of tilework in the past, I shall allow myself some latitude in my definition of an enamelled tile, for I shall want to cite the Assyrians' use of glazed bricks, the Persians' treatment of glazed terra-cotta, and the Della Robbias' of glazed earthenware; but the differences which are so apparent are not essential, as they arise from the nature of the material. A glazed brick is only a thicker tile, and a glazed plaque but a wider one. An enamelled tile, then, is a slice of terra-cotta with its face glazed, with white or colouring matter put on it or in the glaze. As a rule, the terra-cotta foundation has a distinct colour of its own, which shows through and modifies the effect of a transparent stained glass poured over it. To obviate this, when the simple result is undesired, there are two methods generally practised; one to render the glaze partially or entirely opaque by the admixture of oxide of tin, the other is to mask the surface of the terra-cotta with a film of white ware or porcelain (technically known as slip), and on this to flow the glass. The difference, in effect, of these two methods is very striking; comparable in terms of water-colour painting to the difference on the one hand of transparent tints, on the other of body colours. In the first instance, the brilliancy of the hues and the subtlety of the gradations depend upon the whiteness of your paper; that is, your highest light, and every tint you lay on it causes so much diminution of brilliancy. So with the slip-glazed tile, the white porcelain face is your highest light, and the more brilliantly white it is, the more brilliant show the colours of your stained glass upon it; it is the light reflected from the ground behind the glass that brings out the glory and splendour of the dyes. So it is precisely with transparent enamelwork on metal; the more brilliant the ground the richer and more beautiful the enamel.

With painting in body colours the nature and colour of the ground is unimportant—brown paper will do; the brilliancy of the finished effect depends upon the purity of your white pigment. So with opaque enamels, whether upon metal or terra-cotta, the brilliancy must be in the glass itself, the ground contributes nothing to the effect. The glass face to the tile is one of the difficulties in tile manufacture. It has to be melted to the tile, brought to a viscid state like treacle, and by rights both the glass and the terra-cotta should contract equally on cooling. But they do not, and the addition of a white ware slip complicates matters. Consequently cracks, generally minute but sometimes serious, occur in the glaze—known in the trade as "crazing"—and may be classed under two heads, those that occurring in the thickness of the film still do not really split it, and those that really divide the glaze, and in consequence expose the body of the tile to the elements. In many cases the "crazing"—where the cracks do not come through the glaze—adds a quality and charm to the tile. The webs of the fissures on either side slope at an angle and catch the light, reflecting the light, giving a lustre and a sparkle to the tile. But where the "crazing" is thorough it is an evil, for it renders the tile unfit for use if exposed to the weather, and even for internal use the beauty of the tile is gradually dimmed, because the cracks in time get filled up with a fine silage of dust, and the effect is that of a black cobweb sullyng the surface.

The question of using tiles externally is made very difficult

by the doubtful behaviour of the tiles themselves. It is a common sight to mark great patches on walls, where tiles have been and have dropped off—to find them cracked and discoloured. The Underground Railway here is painfully rich in examples of their failure, and I note that the linings in the Twopenny Tube are beginning to discolour. Wet, followed by frost, with an imperfect key for fastening at the back of the tile, accounts for the downfall in most cases, whilst the impure atmosphere of London endeavours to discolour everything that it cannot corrode. In Mr. William de Morgan's opinion, tiles made on the "dry" system—i.e. of clay ground dry, and compressed into shape by hydraulic pressure—are unable to withstand the action of frost when damp. The particles are in such a juxtaposition that the tile is soon saturated with moisture, and when this crystallises there is no room for the expansion of the water, and consequently the ice breaks up the tile. By the "wet" system—when the clay dust is mixed with water, and pugged and variously handled before it is dry enough to go into the oven—the disposition of the particles of clay allows for some expansion of the moisture that has soaked in, which enables the ice to be formed without doing damage to the tile or its cement backing. Fixing is often imperfectly done, and unless the fixing is perfect, that is to say, absolutely solid over the whole area of the back of the tile, its detachment is only a matter of time. Tiles made by the "dry" process keep very true in shape throughout all the steps of their preparation—which is by no means the case with those made by the "wet" process—and this accuracy makes their fixing much easier, and when a wall is being tiled with a view to protection from the weather, or reflecting the maximum of light, a close joint is a desideratum. Too much stress, however, I think, is generally laid upon this fine joint and even surface, and the tilework is apt to look mechanical in consequence. We lose much of the inherent qualities of our materials in our attempt to secure an excellence that really does no justice to them, and which has as its chief merit that it saves labour and ministers to our convenience. Now, as regards the necessities of our lives, these be great and real excellences. To be able to build a wall rapidly and well with bricks that can be equably and truly laid, set in mortar mixed, and mixed most efficiently, in a mortar mill, is a true convenience, and all thought to that end is thought worthily expended. But when we come to the luxuries, that is another matter. If you cannot afford to have them done well, why have them at all? It is their excellence that is the justification of their expenditure. And these not quite first-class luxuries defeat their own ends. They are not luxuries unless they amuse and interest us, and how can the blind fingering of a machine tell us of anything beyond its inhuman perfection? Compare a slab of marble, hand-polished, with one that has been polished by machinery. In the first instance the surface is full of life and movement; the light falls on its tiny depressions and irregularities, awakening wayward reflections, strengthening and palliating its colours, developing its lustres and translucencies, so that it becomes rich in story as well as in hue. In the other there is the dead level of polished surface, unassailably perfect, but, comparatively speaking, uninteresting. The life and vivacity of the marble are gone; it is merely a polished record, with the pleasant part of its individuality rubbed away into a wearisome uniformity. So it is with the machine-made wood panelling with which we decorate our rooms and halls. From lack of any other special qualities, its mechanical excellence becomes an offence, and we hang pictures on it, and back furniture up against it, to mitigate and interrupt its exasperating uniformity. So with mosaicwork. To keep the tesserae equal and to set them all to one level face, is to renounce the great quality of life in one's work, and to throw away much that constitutes the charm of the material. With tilework, the same holds good. A great sheet of exact shaped tiles, with dead true faces, irreproachably fixed on a dead straight wall (such as one sees at the Wallace Gallery, Hertford House), is sad misprision of the qualities of the material. The want of thought in the arrangement, the presence of mechanism both in the design and the facture (I can hardly use the word manufacture, for the hands only guide, they do not make) makes the result a bore, and oppressive from the consciousness that it must have been expensive. That all tiles should be made by the wet process and all be hand-painted is asking, in these days of economical production, more than the circumstances demand; but we might narrow our requirements down to these few particulars and refuse to allow ourselves to be tempted to enlarge them: that all tiles should have a sufficient key for fixing; that they should be coated with a glaze that protects them from injury by dirt, acid, or attrition; that those which are to be used for external purposes should be able to withstand the weather, and that when a printed pattern has to be put on its face, that pattern should be of a very simple character, so that its mechanical repetition may be as little tiresome as possible. In firing a batch of tiles there are generally some variations in the intensity of the colours, &c., and where the pattern is very

\* A paper by Mr. Halsey Ricardo read before the Applied Art Section of the Society of Arts.



simple these discrepancies become fairly marked, and when judiciously assorted help to alleviate the regularity of the printed design. There are various shifts that may be legitimately used to temper the exorbitancy of hand labour, such as stencils, printed outlines and so forth, but the cloven hoof is apt to peep out from amongst them. And the larger the area of repetition the more marked becomes the mechanical regularity of the design; a tile used in a single series down the side of a grate hardly betrays the method of its colouring, but a square yard of them blurs out the story beyond any possibility of suppression or disguise. Where cost is a consideration, and a large quantity of space is to be covered, use plain coloured tiles, and encourage such processes as exhibit the humours and behaviour of the kiln. The glory of a tile is its colour—the pattern is little more than a set of pegs on which to hang these colours, and to cripple one's effect by unnecessary care upon the skeletons of one's figures of beauty is a miserable misapplication of force. So much, then, as specification of the tile from the decorator's point of view, and of the chemistry of its clays, of its glass and the methods of handling and firing, I shall not here concern myself; but with the application of the finished article, and that not so much from the utilitarian point of view as from the decorative.

It will be as well, I think, to glance briefly at what has been done in the past, and at examples of what are acknowledged to be masterpieces in the way of tilework, when the art of tile-making and tile-using was at its height. To do this at all adequately is out of the question this evening, and it is only by severe and reluctant pruning that I can contain myself within reasonable limits. I must begin with Egypt because the Egyptians began first. They discovered a stone that would stand glazing, and they used glazed wall decoration extensively. The Tell-el-Yahoudi plaques are to all intents and purposes wall tiles, and their date is 1400 B.C., and Dr. Flinders Petrie has discovered glazed wall tiles of a still earlier date amongst the ruins of the palace erected by Ku-en-aten in his newly-founded capital. The colours mostly have disappeared, owing to the action of the damp during the centuries wherein they lay buried. When the Egyptians used polychrome decoration on their plaques, the different colours were let into the object, making it a kind of tile mosaic—not painting, as in a picture, on the surface.

The discoveries at Susa mark an advance in the art of wall decoration. During the Achæmenian dynasty the royal palace had its walls adorned with panels of painted plaques, but these were rather bricks than tiles, and the methods employed were derived from the glazed bricks employed in the architecture of the Babylonian and Assyrian empires. The walls were built of light grey and light rose, unglazed, bricks ranged somewhat like the walls of the Ducal Palace at Venice, whilst the ornamented parts, which were the portals and great entrance staircases, were in enamelled terra-cotta bricks, the colours being separated by what appears to be a vitreous wall, something after the manner of the metal walls of cloisonné enamels. Darius gave up the use of terra-cotta and employed a kind of concrete for his bricks because he found the enamel wore better on the latter.

From Susa it is but a short step into Persia. In Mesopotamia the Medes built the town of Ecbatana. Up the sides of a steep hill rose the seven circular walls, one inside the other, enfolding the treasury and the king's palace. The outer wall was of immense diameter, and the terraces enclosed by each ring carried collections of country houses with small farms and gardens attached, rather than the suburb building to which we are accustomed. The city was consecrated to the great powers of the firmament, and the devotion of its founders was registered in the form and colour of its walls. The battlements to the outer wall were white, to the next black, the third scarlet, the fourth blue, the fifth orange. The two last walls had their battlements silvered and gilt. Returning from an expedition or from the chase there stood before the eyes of the beholder the city of his home, voicing in its chord of colour the seven great orbs that guarded his family and hearth—the sun, the moon and the five planets—who rose and set in ceaseless vigilance to call him to action, to give him rest, to bring forth meat for him and the kindly fruits of the earth; and when the fever of life was over to proclaim to him by their silent march overhead through the vault of heaven the immeasurable might of fate and the tranquillity of the grave.

This profusion of colour and metalwork strikes us as extravagant even in conception, not to speak of realisation; but in Herodotus's time he was writing of facts well known to many of his readers who had seen Nineveh and Babylon and the pictured splendour of Egypt; and this is how he describes Ecbatana. Amidst this wealth of artificial colour grew up the art of Persia as we know it, and its influence throughout the past has been very subtle and far-reaching. It has coloured India and the shores of the Mediterranean. It is impossible to look at the Moorish work of North Africa and of Spain and not feel the Persian influence exhibited; nay more, most of the work must have been done by actual Persians carried in the

train of Arab conquerors. The art of Byzantium played its part, and probably deeply influenced it, but our knowledge of Byzantine art is at present too imperfect to let us pronounce definitely in this direction. The stream of merchandise flowed through Persia brought with it samples of the porcelain from far Cathay, and after a certain date Chinese influence on the Persian potter is very perceptible. In China coloured tiles are largely used in exterior work. The "Porcelain" tiles of Nankin (destroyed 1853) was so called because the lower nine storeys was covered with glazed brick, the eaves over balconies were roofed in with green tiles and the window jambs plated with glazed porcelain modelled in relief.

In the Middle Ages, and outside the sphere of Persian influence, there was tile-making—but the tiles so made were for pavements and later on for roof coverings. The floor tiles were unglazed, but the glaze soon wore away. Innumerable examples of these abound in England and on the Continent, may be imagined, to reproduce as well as might be the splendours of marble pavements abroad, about which the pilgrims sang when they returned from Rome and Byzantium or from crusades in Paynim lands. When the revival of letters and classic lore and antique art set in, every craft was touched by its influence, and pottery had its Renaissance as well as sculpture. But the tile-makers drew their new inspirations not much directly from the past as from Spain, and thus in a roundabout way came under the influence of Persia. Arabs invaded the Peninsula of Spain, A.D. 711, and remained there, so far as their influence of the tile trade is concerned, till 1610. The Alhambra was begun in 1272, and the tiles that decorate it are the oldest and most interesting in Spain. The style of the tiles was then widely known, and Spanish tiles spread far and wide; they were imported in considerable quantities to Genoa, to Naples, and to the islands westward of the Peninsula of Italy, and in company with the European craftsmen found a market in India.

During the period of the Renaissance various attempts were made to develop the qualities of glazed ware in the direction of architectural employment, the work of the Della Robbia family being the products perhaps the most generally known. Famous factories were established in Florence, Faenza, Gubbio and many other places under Italian rule; and under the Spanish in the Balearic Isles, and in Naples. So famous were they, that they gave a name to ware that lasts to this day. Faience is Faenza. In Majorca is the pottery that comes from Majorca. In the Spanish Peninsula, the Renaissance found a special stage in its affairs. To the south, in what was once the Sultanate of Cordova, Moorish traditions and Moorish craftsmen lingered on, distinct from the Christian workers who absorbed their territory; and these rival potters had occasionally blended, so that besides the Christian and Moresco styles, there was a third style that went by the name of Mudejar. It was not till the time of the Great Emperor Charles that the influence of the Renaissance began to be felt on Spanish work—the painted tiles date from the sixteenth century. Talavera was then the famous emporium, and goods supplied the country, Portugal and the far East.

In England, glazed plaques, other than paving tiles, are rare. There is an interesting specimen in Lingfield Church, Surrey, an effigy of the time of Henry VIII. in green tiles. The figure is incised on a rather coarse red ground covered with a greenish glaze now much worn away. It is supposed, however, that the tiles are of Flemish origin. Similar instances of sepulchral portraiture are fairly common in France.

By the time we are reaching the sixteenth century tile-making in Europe—except for pavings and skirtings—are ceasing to be architectural adjuncts, and becoming—or trying to become—more and more tile pictures. It was the flood-tide of the painters, and painters who prided themselves on their versatility. Every material was pressed into their service: mosaics, stained glass, tiles, pots, plates and dishes—all to come out as pictures regardless of the qualifications and limitations of the material. In Spain, the Spanish Netherlands and the two Sicilies this picture-painting was taken up heartedly—the humours of the material were allowed to be their say, and there is a general air of not being on your guard in the treatment of these panels. If you recall the subject of a set of Dutch tiles you will see a kind of ease in the handling and a liberal acceptance of the imperfections of the material altogether different from the tense serious treatment of the Maestro Giorgio tazza. The result is that these (to us loose and inaccurate but generally accepted appellation) Italian and Spanish tiles persist to this day as living things, whilst solemn works of art are to be found now only in museums, and we can observe how hopelessly dead the art of them has become, by the imitations of them that are being here and there manufactured. These finished picture-tiles fulfil the real want; and as soon as the great burst of enthusiasm and appreciation of all forms of craft was over, and the workshop excellence abated, they dropped out of circulation.



nobody would have—of such things—any but of the very best, and the very best were not being made. Even the other, more meagre, efforts shared in this discouragement and soon sank to a serviceable level, such as lining dark walls and those surfaces that were likely to get discoloured by smoke and dirt; and on these terms they are made and used to this day. The high standard of draughtsmanship and design had this advantage, that the artist, to gain this excellence, had to devote his whole force and attention to the pictorial side of his craft and so became divorced from his material. The tile is no longer treated on its own merits, and its decoration evolved therefrom, but as a field for the painter's display, and to secure effects which, though proper and natural in mosaics and easel pictures, are foreign to the nature of a tile, and can only be extorted—and then but partially—by the most technical ability.

In the East and that part of Europe under Persian influence—as regards the potter's craft—the aim was different. The qualities of the clays and glass were accepted as the basis for development and improvement, and all advance, both in the substance and the technique, was evolved from the tile itself. Nor was the standard pitched either too rigidly or on too high a plane. The ideal was not beyond the reach of the craftsman, and there was no thought of the presence of some superior imported personage who should invest, with the furniture of art, the product of the potter's labour; and yet on those terms we have examples of consummate work—supreme in technique and in beauty. And this art is still alive, and if it could be left undisturbed would go on quietly fulfilling its purpose. Unfortunately the restless activity of modern life, with its eager but ignorant appreciation of foreign work, is knocking at its door, and we are all busied by our patronage to change “the changeless East.” European—and, I am afraid, English—influence has, in its blind admiration for the art of Japan, ruined it. It set up a huge and feverish demand, and the Japanese at once set themselves in haste to satisfy it. Other nations in the East are not so mercurial and consequently have not been so much affected, but they have not been uninfluenced. Both India and Persia, not to speak of other countries, have set themselves to serve the British markets and to conform to British standards. It may be inevitable—it is certainly disastrous. It is sad to think, with our good intentions, how destructive we are of all those qualities we talk so glibly about, destructive because we are ignorant of what is the essence and purpose of the qualities we prize as beauty and art. At this moment we are not agreed as to what constitutes beauty and what is the function of art, and in our perplexity, whilst attempting to preserve and enlarge the influence of beauty, we do actually eliminate it, whilst we are endeavouring to transfer art from the practical side of life, and to view it as a kind of varnish which only the cultured can acquire and the leisured enjoy.

During the past century we worked ourselves up to a consciousness of the beauty of the works of the Middle Ages in England, our Gothic monuments in especial. We set to work to preserve these beauties, and not knowing wherein they consisted, we replaced them with restorations; consequently nearly all of the chief examples, and an immense number of the smaller, are examples no longer. In place of the original, with its history and its beauties, we have a replica which is a modern and silent forgery.

Another common instance of ignoring what constitutes the equal charm and beauty of a thing is, when some traveller discovers a little spot that has been left untouched by the modern excursionist. Struck with its peace, and the beauty that comes from centuries of quiet contention with, and mastery over nature, and anxious to share his discoveries with others, he thus add to their happiness, he shouts aloud in the highways and market-places the beauty of the village he has found, and the simple content of its inhabitants. The ring of enthusiasm in his voice reaches many ears. Next year the village is invaded. A toad-stool growth of cheap lodging-houses springs up, and attractions (so-called) are constructed. The railway sprouts out a branch line, and a station is dumped down cheek by jowl beside the church. The place is now easily accessible, and hundreds can now enjoy the refreshing solitude and idyllic simplicity of the place. Only the solitude and simplicity are gone. So with our improved methods of transit, our facilities of commerce and our demands, too important to be disregarded and too urgent to be properly executed, we have brought Oriental wares within reach of the humblest, but the beauty and excellence of the stuff is fast disappearing.

Let us review some examples of the architectural application of enamelled ware in times before the advent of the railway, and before the influence of the connoisseur was less universally diffused.

And now, what is the moral of all this? One thing that we hardly have escaped notice is the nature of the country in which the examples that you have seen occur. Both in Persia, in India and in the Spanish sierras we are in the presence of arid

wastes. Outside the towns there are no trees, no pasture. There is the blue sky over us—but till twilight too blinding for the eye to contemplate. No doubt there is a colour in the vault of night that can scarcely be imagined by those that have not seen it; but, speaking generally, there is no colour about these cities but what is of man's nurture or manufacture. The spring brings a flush of blossom and a short-lived wealth of verdure—enough to exemplify what luxuriance of colour means. But for the greater part of the year the landscape is a sober, drab affair, with little moisture in the atmosphere to temper the brilliancy of the sunshine. The great function of these enamelled tiles, then, was to catch the fleeting glories of the fields and gardens and, Orpheus-like, to fix them as “a lasting spring.” Both by their design and their colour they recall the starry meads and their wondrous varieties of hues and the lush luxuriance of their verdure.

In the Persian work this is more directly pictured than in the Spanish; but in both the instinct is to secure by carpets, embroideries, tiles and stained glass an entourage of colour.

In this country colour is perennial with us; it has its tides, its ebbs and flows, but even at its greatest ebb we are encircled with tender russet and purple tints from the woodlands and from the ploughed fields; the pastures keep a greenness, the hedgerows an intricacy of innumerable tints; the hillsides are shaggy with copse wood and fledged with pines; sheets of water reflect in intensified colours the vegetation that surrounds their margins, the trees that stand sentinels beside them, the hills in whose lap they lie and the blue of the sky overhead, and into every nook and fold in the landscape the witchery of the atmosphere flings a veil of mysticism, blending and suffusing the colours. At the call of spring the pulse of nature stirs and quickens; the fields put on a richer green; the cloud snow retreats, melting, giving place to the earth snow of the daisies and blackthorn and the pale amber of the primrose. From thence to midsummer the land is one glory of ever changing colour, the beauty of bud and blossom succeeding each other in limitless profusion and reluctantly yielding to its successor. We look out on a garden of living enamel. After blossom comes harvest, the harvest of the field and then of the orchard close, and the trees begin to don their heraldry of gold and bronze and scarlet, vying with the pageantry of the sunset in the skies. Strange swirls and wreaths of dreamy vapour hang indolently about the downs, the woods lay down thick carpets of crimson and copper beneath the beech trees and pine stems, the holly dons a glossier green and tricks itself out in its bravery of vermeil. In this kaleidoscope of colour about us, the need of artificial colour is less insistent. We have but to open a shutter or draw a curtain, and we disclose a painted window. But it is otherwise in our large and crowded towns; there nature's restless activities are confined in space and checked in growth. Year after year the seasons renew themselves, and with the seasons the impulses in branch and herbage. But the privation of light caused by our high buildings and our narrow streets, the acids and impurities of our atmosphere, cripple and scorch the tender growths, and degrade the freshness of their tints, till at last a film of grime reduces the green of summer to an inky grey, and obscures and sullies the yellow of decay, so that we view the complete ruin of the foliage as a desirable riddance, and are thankful to have the fallen leaves swept up and consumed as promptly as possible.

For half the year our city is the colour of a dirty cobweb, and the only refreshment the eye gets is in the glimpses of the sky overhead, the shop windows and the hoardings. These latter mark the hunger for colour significantly. The posters, so far as advertisement is concerned, might as well be in plain black and white, but they fairly wallow in colour. Often this chromatic carnival fails in effect, but the failure is due to ignorance of how to obtain the proper value, not from any sparingness in the application of the tints. And this liberality of colour is provided not out of generosity or exuberance of advertisement, but to supply a felt want. We want colour in our streets; we have tried for it by using coloured building materials, paint, creepers and flowers in window boxes, and we have gone to the cost of all these endeavours not merely to gratify our own cravings in the matter, but for the pleasure of the passer-by in the street. But these ventures are generally disconnected attempts, and so are on too small a scale to make any distinct effect, and owing to the nature of the materials they soon sink back into the general dinginess of the surroundings. Why not plate your building with tiles? I do not suggest that a man should veneer his vertical section of a street-side that serves him as his house and let his neighbour on either side follow or not his novel start, because colour to be effective in such circumstances must be in broad masses. I should like to see whole streets treated in permanent colour and please myself with the hope that some day they may be so, but as a beginning in so bold an experiment I should like to see the scheme tried on a detached building, standing free and with some trees about it, or a public building of such a frontage as should be sufficient to display a large mass of plain wall sur-



face. We have tried spots and panels of colour here and there in our streets already, and they have failed from the timidity of their employment and the insufficiency of their area. The colour must be laid on in a broad bold mass, and pattern used only sparingly, if at all. The windows and other openings should occur in a field of plain colour, or some simple chequer or trellised diaper, and the limits of the tiling should be bounded by bands and trimmings of glazed terra-cotta. I specify glazed terra-cotta, because in building you must not mix perishable and imperishable materials together. Whilst the one is toning, softening and decaying under the blighting hand of time, the other is merely getting dirty, and each time the front of the house is cleaned the tiles come up as fresh and bright as the day they were fixed, whilst the corroded framework must remain with the grime that age has brought it. This permanence is not so great an evil as at first appears. Much—say, one-third—of a house front consists in any case of imperishable materials, such as the glass windows and the woodwork, which are renewed periodically with coats of paint, and whilst the remainder of the house is toning into a dingy uniformity, the harmony of the frontage is, every few years, disturbed by the freshened appearance, under the painters' hands, of the parts required by the covenants of the lease, and thus making of the harmony a painful discord. It is true that where the materials are all indestructible, the kindly agency of time can play no part, the building is never any better than when it leaves the contractors' hands, except for the history that gradually humanises its walls. But this view of the ameliorating power of time belongs to our timid age, the age not of creation but of selection, and is by no means a healthy one. We are afraid to risk anything, and why? because we are so self-conscious, because we are so eaten up with our sense of responsibility. Not so came the models which we copy into being, although at this moment the style of the past most in vogue is perhaps the most self-conscious that we could have chosen, and (for this follows) the one that is the most disdainful in its refusal of colour. The love of colour and the power to apply it is characteristic of youth—of the youth of nations as well as individuals. Colour is the accompaniment of romance, of poetry, of enthusiasm, of abandon. Before the cold paralysis begotten of experience that we call wisdom colour pales and fades away. The best, and by that I mean the most inspired, work is done in youth, and the colour then is the richest and most eloquent, though some there be, like Gian Bellini or, to come nearer home, Mr. Watts, who retain their colour faculty right on into old age. In youth a nation has the courage to court failure, or, rather, to regard it as a passing circumstance in its attempt to grasp the ideal. For what to them was failure but the stepping-stone to new effort? So much experience brought to them so much new knowledge and suggested so many fresh possibilities. Not only the science of architecture, but the beauty which is the cream and bloom of science grew up from the careful observation of building disasters, and the invention of expedients that might obviate their recurrence. The conditions of the time and the temper of the people determined the actual forms of the building, so that, for example, we get in one case Classic, in another Gothic architecture; but these styles were living only so long as failure was allowed to be possible and experiments encouraged. When that ceased the art of architecture became a recapitulation of past examples, the science their reconstruction or adaptation. Why should we fear to cover whole streets in London with coloured tiles? Is there anything to lose? The streets at present are not beautiful nor are they interesting. The modern ones have no single architectonic quality. There is no general principle of design in them, no uniformity, style, composition, balance; a few good examples of designs occur in the general welter, but they make no effect on the whole, which mainly expresses private obstinacy, tintured with selfishness. What could be gained by a broad treatment of colour is periodically shown to us when the Quadrant at Piccadilly gets repainted. In that fine sweep we have an idea, unanimity of design and breadth of colour, and in consequence it is one of the pleasantest things one can meet in one's tramp through town. It may be objected that to encrust whole streets with enamelled tiles would be a very expensive business, and that the decoration, whether we liked it or not, would—owing to the cost involved in applying it—be permanent. I will take the latter objection first. It would, I hope, be permanent. Any scheme, reasonably comprehensive, simple and straightforward, must be a distinct improvement on the present polychromatic distraction, gradually surrendering its distinction under the obliterating coating of London grime. No other surface wears so well. Stone perishes rapidly. Brick and terra-cotta get incurably befouled. Marble requires frequent repolishing. Granite endures, but unless it be polished it also gets very filthy. But a good glazed tile, glazed brick or faience should be as durable as a plate-glass window, unaffected by the wildest acids that infest our atmosphere.

Then as to cost. Of course, tiles by the acre come expensive. But there is another side to the matter that we may

as well consider. At present our buildings, in order to get contrasts of light and shade—colour, in short—are covered with ornamental features, such as mouldings, pilasters, wall trimmings, cornices, balustrades and the like architecture upholstery, and adorned generally with a profusion of intricate carving. Now, although all this architectural frippery is cheap stuff considering, still, it does cost money, and the use of colour we can dispense with the bulk of it. The projecting cornices and sills, the carving and features give form so many shelves and nooks for the dust, dirt, and products of coal combustion and the unhydrated acids enveloping them. The rain comes and washes the collected dirt and the brickwork, whilst the liquid acids proceed to eat the stone. Besides, these big projecting cornices are the purpose of casting deep shadows, the very last things that we want in our streets. In tilework we can reproduce effect, and count upon its loyal service, whereas in our present work the effects of light get reversed by the soot, our lights become the deepest blacks, and the soffits, that should be in shade, are the brightest parts of our mouldings. So that a colour scheme with tiles the value of projections is gained in patterns and particular dispositions of tint, and all that is wanted besides the tilework are slips of some glazed material to act as boundaries to the fields of colour. There is another virtue in tilework besides its being imperishable and self-cleaning, and that is that it is impervious to the elements. There is not the same necessity to load up our girders with thick masonry walls to keep out the weather. A thin glazed skin is sufficient for this purpose, and our walls will be dryer and warmer as well. The ordinary brick wall is as thirsty as a sponge-cake, and after a heavy rain there is an immense amount of water to be vapourised before the walls can become dry and warm, and the weight of this water is considerable. With a glazed skin beyond the comfort of unchanging temperature, so much firing to dry the water will be saved. Moreover, the rain, instead of doing the house will help to clean it, and after each shower the streets of the filth, disease germs and acids, will be washed into drains and be got rid of comfortably.

But there is more to be done with tiles in the way of external decoration than merely to put them on the fronts of buildings. There are bridges, walls and fountains to be considered. Glazed brick makes an appropriate casing for the concrete arches of our modern bridges, and the spans might be most effectively treated with fine civic heraldic designs executed in tiles. Then as to our public places; take Trafalgar Square for an instance. At present it is an arid waste and ineffective, with various disconsolate grimy black spots attempting to ignore the presence of the two steaming fountains which mark significantly the proximity of St. Martin's and washhouses. Let us imagine it taken in hand and made to serve some pleasant and useful purpose, and, so far as we can, made beautiful. We will begin by reducing the inordinate size of the basins to the fountains and lining them with turquoise blue tiles, and by stipulating that for the future the fountains should spout clear water. We will lay the whole of the area, except a fringe to the south of the necessary paths, which shall be of Purbeck stone, with turf, and jealously keep the hoofs of the loafer from off it. The statues shall be cleaned up, and kept clean by frequent scrubbing or gilded. Gordon's statue should be moved nearer to the north wall, and the number of future statues permissible, and their positions, at once determined, so as to present an intelligible scheme, the wall serving for a background. This wall we will treat for the most part in plain colour, so as to form a quiet backing to the statues beneath the parapet we will have a row of hatchment arms of those who have done good service to the State, and who were connected with that neighbourhood. Beyond this base of colour rises the National Gallery, made richer by this coloured setting. At present we quite waste the statues by the inappropriateness of the sites chosen for them. Standing in the midst of the confusion and turmoil of crowded streets they form pathetic objects helpless in the torrent of the traffic, or else they are stranded against the building and absorbed in the conflicting detail of their surroundings. The monument is made regardless of the site, as nobody in authority seems to care, it is dumped down at the first convenient spot handy, where it may divide with the shadowing lamp-posts the duty of dividing the traffic and imprisoning the pedestrian.

Of the internal application of tiles there is not much to say. A good deal has been done in this direction of interesting description, but by the nature of the case most of the examples were conditioned by special circumstances. An early example of the decorative treatment of tilework can be seen in the refreshment and grill-rooms at the South Kensington Museum, and examples of Mr. Waterhouse's treatment of tiles may be seen in his various public buildings, banks, and insurance offices. Mr. Butterfield, in several of his London churches, was also a pioneer in this species of decoration, though the tiles he used were for the most part those mis-



oustic, rather than the enamelled ones. Subsequently Aitchison built the Arab Hall for Lord Leighton, using the most part the collection of old Oriental tiles that Lord Leighton had procured, and decorating the staircase with mainly new ones, but in admirable sympathy with the old. Outside the specimens of old tiles in the British and South Kensington Museums, a more beautiful sample of Persian tiling is not to be seen in England. Leighton House also helps to dissipate the rather general idea that a tile-surface must look cold and uncomfortable, for tiling can exceed the air of protection and richness that even plain tiles on the staircase give. Since then the practice of using tiles for internal decoration has increased immensely, and more in what are known as business premises than in private residences. It is consequently for the external use of our decoration that I would specially plead, and for the decoration to be of a permanent kind, got either by enamelled, glazed faience or mosaic. The French have already made some excursions into this field, notably at the Paris Exhibition, and are still pursuing the subject of building in tile and terra-cotta. It is a matter, I think, of deep regret that at the Victoria and Albert Museum, South Kensington, we are so plucky a start was made in using materials that with our climate, and carrying them out with so much interest and beauty, there should now be abandonment of the spirited use of tile instead of development, and that there should be a reversion to the tame respectability of stone. One might have expected that in a new building, for new purposes and on so large a scale every opportunity would have been taken to advance a step further the architecture of the present day, and since the occasion seemed so suitable to erect an example of coloured tile architecture. The result of this stony disdain, this proud exclusiveness of our streets, is that we can't live in them. Every day thousands upon thousands escape by every railway line these masterpieces of correct architecture and superfine craftsmanship to the shelter of the country, where the earth is green about them and the heaven blue above them. Cannot we make our streets a little more kindly and comforting to those who are prisoners who cannot escape? We have tried mass and light and shade, might we not now have an attempt at colour?

The paper was illustrated by a series of lantern slides, and cartoons of Sir Edward Poynter's designs for the decoration of the grill-room of the Victoria and Albert Museum, lent by the Board of Education.]

### ARCHITECT'S COMMISSION.

The Court of Appeal on the 24th inst, before the Lord Chief Justice, the Master of the Rolls and Lord Justice Mathew, the case of *Keats v. Rendle* came on for hearing. It was an appeal of plaintiff from the judgment of Mr. Justice Day, on February 11 last at Exeter, with a jury. Lord Coleridge said the case was one in which the jury had returned a verdict for plaintiff for 200*l.*, but judgment was entered for defendant. The action was for architect's commission. Plaintiff, Mr. James Henry Keats, was an architect who had been engaged in the preparation and sale of a number of building estates, and he came into communication in 1885 with defendant, who, with others, desired to develop an estate known as the Vinstone building estate, near Plymouth. Communications were entered into between the parties, as the result of which an arrangement was come to, the interpretation of which was that plaintiff was to receive 5 per cent. commission on all land sold. The interpretation of the agreement was contained in a letter by plaintiff to defendant, which was accepted by the latter as being correct. A good deal was done on the estate, and plaintiff received from time to time commission on plots sold. On October 26, 1896, defendant wrote to plaintiff stating that it was probable the owners of the estate would receive an offer for a considerable portion of the property as a whole, in which case they would not require the further services of an architect, and asking for plaintiff's charges, as the amount was to be settled with the co-owners, who were anxious to clear off all liabilities in respect of the estate. Plaintiff contended that this was contrary to the terms of the arrangement, and the case resolved itself into one of damages for wrongful dismissal. His contention was that plaintiff explained to the owners that he was not anxious for the situation except upon his own terms, which were that when any plots on the estate were sold he was to have 5 per cent. commission. The terms were agreed to, and for some years plaintiff obtained all sorts of purchasers, and no dispute arose as to the payment of his commission until a purchaser came forward who was apparently prepared to buy the whole lot, whereupon the owners wished to terminate their arrangement with the architect. That was the bargain.

The Lord Chief Justice: Your case is, then, that they might dismiss him.

Lord Coleridge: Not until the estate was sold. Continuing, he said the jury found a verdict for plaintiff on a question merely of fact. It was true they did not give him all he claimed, their view being, he supposed, one of damages for wrongful dismissal. There was nothing to show that plaintiff could compel the owners to sell any more land, but there was nothing unreasonable in suggesting that the terms of the bargain were thoroughly understood, and that so long as they continued to sell plaintiff was to receive 5 per cent. commission. The jury took the view that so long as plaintiff was willing to act for them the bargain could not be put aside. He submitted that the jury were right in their verdict, and that the learned judge ought not to have set the verdict aside on a question of fact.

The Master of the Rolls said a person was not bound to keep on employing a house agent.

The Lord Chief Justice asked counsel if he could put the agreement between the parties higher than that plaintiff was to have 5 per cent. on any land, however sold, so long as he was their agent.

Lord Coleridge said he could. Their lordships might think it was an agreement rather harsh upon the defendant. That, however, was not the point.

The Lord Chief Justice: Do I understand you to say that 5 per cent. commission is to be paid on land sold years after a person has ceased to be an agent?

Lord Coleridge said, of course, if he ceased to be an agent of his own account he could not recover. He contended, however, that plaintiff's terms were that he should continue to act as architect for the estate and receive commission on all sales.

The Lord Chief Justice said he did not find anything to show that plaintiff should continue for ever, but that he should have 5 per cent. on the sale of land, whoever sold it. Did not that mean "whoever sells it so long as I am your agent?" Counsel had to show a contract continuing plaintiff as the agent so long as there was any land unsold.

Lord Coleridge said he could only reply that the jury thought that such was the case.

Lord Justice Mathew: Was not the contract for services rendered on each occasion?

Lord Coleridge said he inferred that the class of house throughout the estate was to be selected by the vendors, so as to suit the neighbourhood and its requirements, and rather showed, if anything, that plaintiff was to be the architect of the whole estate.

Lord Justice Mathew: Was he not the agent of the vendors?

Lord Coleridge said they might call him an agent in one sense.

The Lord Chief Justice said he need not trouble counsel on the other side. For upwards of twelve years plaintiff had acted on certain terms, namely, that he was to receive 5 per cent. commission on sales of land for certain estates, whether he made the sales or not. To that extent he thought plaintiff had protected himself. It was now said there was also a contract that so long as the gentlemen concerned owned the estate he would continue as their agent, or that if they did not they would pay the 5 per cent. commission. In order to establish that it must clearly appear on the face of the contract. He thought that the outside it could be said to amount to was that it was a bargain that during the time he was their architect, whoever sold the land during that time, he should get 5 per cent. He did not think there was anything to show that the defendant had not the right to determine the contract. He thought Mr. Justice Day acted right in setting aside the verdict, and he did not think the case ought to have been left to the jury.

The appeal was therefore dismissed, with costs.

### THE ENCLOSURE OF STONEHENGE.

THE Amesbury Parish Council has petitioned the Wilts County Council under Section 26(4) of the Local Government Act 1894 to take action in the matter of the obstruction of alleged public rights of way leading to Stonehenge. The parish council admit that something should be done to secure the preservation of Stonehenge as a unique national memorial, but they do not think it is necessary for the stones to be surrounded by an unsightly barbed-wire fence or other means of enclosure, or that the public should be subjected to the imposition of an admission fee of 1*s.* to obtain access to the monument. They state that it is their conviction that the carriage tracks which lead to Stonehenge from three admitted public roads within which it lies are undoubtedly public ways. In associating themselves with the many protests of societies and of archaeologists, they desire to add that ample evidence is procurable to show that the tracks have always been used by the public.



## YORK ARCHITECTURAL SOCIETY.

A NUMBER of members of the York Architectural Society visited on the 18th inst. the York New Opera House, where they were received by the architect, Mr. John P. Briggs, who conducted them over the theatre and explained its principal features. The stage, which is on the Cumberland Street side of the building, came under review first. From it a capital view of the house was obtained, and those who recalled its condition as the Corn Exchange could not fail to be impressed with the transformation. Workmen were busy everywhere hastening its completion for the opening on the following Monday night. Above the floor of the auditorium are two tiers of seats having their fronts oval in form, and from which the line of double boxes splay to the stage opening. The asbestos curtain was dropped in order to show how the stage could be cut off from the rest of the theatre. The dressing-rooms were inspected. The stairs ascend to the gallery 20 feet above the stage. On the far side gallery the long line of ropes looked formidable; these are arranged in groups of three for drawing up or lowering the scenery. A ladder was climbed and the "gridiron" reached some 40 feet above the stage. The gridiron floor is suspended from the roof, and the floor formed of 5-inch boards with 2-inch spaces. On the floor are fixed the pulley-blocks for the ropes. There is a large louvered lantern over, and also a doorway on to the roof. The party now descended and inspected the auditorium. The front of the dress circle is richly decorated with boldly projecting figures, the upper circle with ornaments. The stage boxes are double, having scagliola columns surmounted by a richly-decorated frieze and pediment. The ceiling has a large circular panel, slightly domed. From the centre an ornamental pierced pendant hangs; above will be a fan for ventilation purposes. The decoration is cream, enriched with gold, and the whole is lighted with electricity. The entrances came under observation, and that from Clifford Street was particularly attractive. The thanks of the Society were conveyed to Mr. J. P. Briggs for his kindness in conducting the members over his well-designed Opera House.

## THE DISCOVERIES IN THE FORUM.

GREAT interest is being taken in the numerous and important discoveries being made in the Foro Romano. Some account of the progress of the work is given by Mr. F. G. Fotheringham in the pages of *Moring's Quarterly*. We make the following extracts:—

Much doubt existed for a long period as to the precise position and limits of the Forum, but these have for some time past been satisfactorily determined, and during the last two years important excavations have been there carried on by means of a very thorough and judicious method which has lately produced very important results. The most important of these is the discovery of the Lapis Niger. On January 10, 1899, while the workmen were engaged in excavating in the centre of the Comitium, they brought to light a pavement of black antique marble of about 11½ feet square and a foot in thickness, known as the Lapis Niger, which rested on made-up earth that had been collected there from other localities. On further excavating under the pavement they found at a depth of 4 feet 9 inches a corresponding basement of sandstone of the same geological formation as that of the Palatine, or of the upper stratum of the Capitoline. On the two extremities of this basement are two low quadrilateral structures, ornamented with an imposing Etruscan cornice, which has in part been broken away. Their dimensions are 8½ feet and 4 feet respectively in length, and 4 feet 1 inch equally in breadth, and between them there is a small open space of 3 feet 4½ inches, so that the entire frontage of the building to which they belong is about 11 feet 2 inches. The plinths of the columns are 11½ inches high, and are joined laterally by a layer of sandstone of about 1 foot 5½ inches, in which steps have been cut. The open space between the two buildings is enclosed by a parapet wall of sandstone 1½ inches high and 1 foot 8½ inches in breadth, which extends for 2 feet 4½ inches.

On the open space between the two buildings there is a slightly rounded pedestal on which is placed a monolithic cone of sandstone of 1 foot 7½ inches in diameter, and near it is another stone in the form of a pyramid, that measures 1 foot 6½ inches by 1 foot 8½ inches at the base, of which the top part has been broken away; what remains of it is 1 foot 7½ inches in height. This latter stone was not found in situ, but was discovered in its broken state between the Forum and the Comitium near the Arch of Severus, having been removed from its original pedestal. These stones are covered with numerous inscriptions, the letters of which have been deeply cut into the stone and are of the old Greek form, being similar to the oldest Etruscan inscriptions found on the Etrurian seaboard.

The numerous and important articles that have been in and around the votive heap of the Lapis Niger arranged in a classified form, and are all to be placed in a new museum of the Roman Forum. Therein are included a great variety of objects, many of which are archaic, the earliest of them, as has already been stated, belonging to the sixth or seventh century before Christ, and the most recent belong to the fifth century of our era. A period of centuries is thus represented.

All the objects were found in the greatest possible order among deposits of cinders and ashes, and not stratified according to the different periods of their origin, thus indicating that they had not been collected gradually one by one, but that they had been transported from other receptacles of a similar character. The place where they were thus heaped has all the appearance of a sacrarium, and the collection there of so large a quantity of sacrificial votive offerings would seem to indicate on the part of those who transported them that they wished to preserve them sacredly. This course may have been necessitated by the growth of the city of Rome and the exigencies of space in its walls, but at what period it took place it is not possible to determine.

## EDINBURGH ARCHITECTURAL ASSOCIATION.

AT a meeting of this Association, in their rooms, 117 George Street, on the 23rd inst.—Mr. H. Kerr, the president, in the chair—Professor Baldwin read a paper on "The Dome as an Architectural Form." The purpose of the paper, it was explained, was to bring into the general æsthetic character of the dome, and more particularly to vindicate for it a place among the architectural forms suited for a Christian church. The main characteristic of the dome in general was its embracing, uniting quality, an important so to employ it as to obtain from it its full unifying element in a composition. The employment of the dome as a mere roof, as in the multiplied domes of Byzantine churches, such as St. Mark at Venice or the cupolas along a rectangular aisle as in churches of the Middle Ages of France, was not the way to secure all the advantages of the dome, its most beautiful and expressive feature. The dome, when properly employed, lent distinction to a building, and it was rightly pronounced to be on the whole the most satisfactory form for the æsthetic sense of all architectural forms. The real value of the dome was, however, only exhibited when it was allowed to exercise an influence far beyond the limits of its own circumference, and brought into harmony the elements of a subdivided plan. The Pantheon of H. Rome, the starting-point of the development of dome construction in the modern world, completely embraced the plan it surmounted, but this plan was that of an unbroken circle. The Christian builders desired to use the dome for their own purposes; but such a plan as that of the Pantheon was not suited for a Christian meeting-house. One of the most interesting chapters in the whole history of architecture was occupied with various experiments by early Christian architects to adapt the dome to the requirements of congregational worship. Their efforts to overcome the difficulties presented by themselves were sufficient proof that they recognised the dome as a form not only beautiful in itself, but expressive of Christian ideas, and this was a consideration too often lost sight of by the Mediaevalists of the Middle Ages, who, as the discussions connected with the new L. Cathedral had shown, were still dominated by the ideas embodied in the Gothic Revival of the first half of the nineteenth century. The efforts referred to were ultimately crowned with success, when the architect of Justinian's church at Sophia at Constantinople combined the dome with the angular ground plan normal in the Christian meeting-house. It was a curious fact that after Sta. Sophia the plan of domed churches retrograded, and small cupolas were employed over the arms and intersection of Greek crosses, or disposed like the five on a domino over a square. Some later architects, however, seemed, however, to show a revival of the tradition. Meanwhile, other points of interest in the history of dome construction emerged, the chief of which was the employment of the cupola in later Byzantine architecture, and again in the Renaissance as an external rather than an internal feature. There was a fine field open for the efforts of the architect in the direction indicated by Sta. Sophia, the triapsidal plan, that could be effectively combined with the dome, offered opportunities for experiments, and these would result in a centralised church for congregational purposes, free from the suggestion of mystical sacerdotalism which characterised the Mediaeval fane, and recalling the glories of some of the early Christian domed structures that had passed away. Architectural students who went to Cologne would shortly stay in the Gothic cathedral, and spend more time in S.



the Capitol or the Apostles' Church, some fresh and promising elements might be imparted into the church architecture of the day. Some discussion followed the reading of the paper, which was illustrated by numerous lantern slides, drawings, &c., and at the close Professor Baldwin Brown was accorded a cordial vote of thanks.

### TESSERÆ.

#### The Owl in Art.

THE Egyptians represented Minerva under the form of an owl, whence the respect of the Athenians, and their opinion that the appearance of this bird was a favourable omen, all other nations deemed it bad. The owl was anciently, however, an omen of death. Upon coins it was the symbol of wisdom and her colonies, because it was that of the patroness Minerva, and the vases upon which it is placed imply (as is evidenced), the invention of vases of pottery, of which the Athenians boasted. An owl upon an altar, which occurs upon the coin of Nero, the Baron de la Bastie, justly rejecting Jobert's opinion, thinks a particular sacrifice offered to Minerva, from a But from the same type occurring upon a coin of Constantine, with the legend "Sapientia principis providissima," and from another of Trajan, published by Seguin, when an owl is placed upon that prince's column, it is more properly deemed a piece of low flattery, as being the symbol of wisdom to the emperor. The owl with two bodies and one head upon some Greek coins is not satisfactorily explained.

#### Celtic Standing Stones.

The most simple form of Celtic monuments is the Maen-hir, or long-stone, called also Peulvan, or stone pillar. This is without the earliest, as it is the simplest form of monument, and was erected to commemorate a victory, or to mark a boundary, or to denote the resting-place of some person of importance. These single stones are found in all countries, and we find notices of them in Holy Writ. Many of them now may be seen the remains of more extensive monuments which were destroyed when Christianity overthrew the ancient paganism, the decrees of councils of the Church were directed against such like monuments; A.D. 452 the Council of Arles, A.D. 567 the Council of Toledo, threatened with excommunication any bishop who would not use his influence to destroy all objects of idolatry, among which stones are enumerated. Chilperic in his edicts enjoins the destruction of the stone monuments which cover the land, and the Anglo-Saxon laws forbid the burial of stones. These stones afterwards were converted in many cases to Christian purposes, and have been used as monumental stones. Many exist in this island with the names of the sons of British or Romano-British extraction carved upon them, and a very remarkable monument of this kind exists at Joinville, in the department of the Meuse, on which is inscribed VIROMARVS ISTALIF, *i.e.* Viromagus, son of Istalus, which perhaps commemorates a Gaulish chief subject of the Roman power.

#### The Five Orders.

The real beauty of such proportions as are exhibited by the orders of architecture is not greater than that which we feel in the cases where we perceive means properly adapted to their end, and the admiration we feel from the prospect of the orders of antiquity is necessarily to be ascribed to other causes besides these proportions. The common people undoubtedly feel a very inferior emotion of beauty from such objects to that which is felt by men of liberal education, because they have none of those associations which modern education so early connects with them. The man of letters feels also a weaker emotion than that which is felt by the artist, the artisan, or the architect, because he has none of the associations which belong to the art, and never considers them in relation to the genius, or skill, or invention which they display. Deprive these orders in the same manner of their many ornaments and leave only the great and governing proportions, or change only in the slightest degree their forms without altering these proportions and their beauty will be in great measure destroyed. Preserve, on the other hand, the proportions of the orders, but diminish in a great degree their scale, and though they will still be beautiful, yet their beauty will be infinitely inferior to that which they have upon their usual scale of magnificence. It is possible in the form of a candlestick or some other trifling utensil to imitate with accuracy the proportions of these orders. It is possible in many of the common articles of furniture to imitate some of the greatest beauties of this art. But who does not know that their beauty in such an employment would be lost? Yet still the proportions are the same, if their proportions are the sole cause of their beauty. Destroy in the same manner all the associations of elegance, of magnificence, of costliness, and more than all, of antiquity, which are so strongly connected

with such forms, and every man will acknowledge that the pleasure which their proportions would afford would not, in fact, be greater than that which we feel in other cases where means are properly adapted to their end. The uniform adherence of mankind to these proportions is said to be in itself a sufficient proof of their sole or absolute beauty. Many other causes of this adherence may be assigned, and these causes are sufficient to account for the effect, without supposing any peculiar law of our nature, by which such proportions are originally beautiful. They who have had opportunities of remarking the extensive influence which the associations of antiquity have upon our minds, will be convinced that this cause alone has had a very powerful effect in producing this uniformity of opinion, and they who consider that the real effect of proportion is to produce only a very moderate delight, will easily perceive that an almost insurmountable obstacle has been placed to every invention or improvement in this art, when such inventions could oppose only a calm and rational pleasure to that enthusiasm which is founded upon so many and so interesting associations.

#### The Scientific Work of Leonardo da Vinci.

Leonardo da Vinci has long been recognised as the rival of Michel Angelo and Raphael. It is only of recent years that the publication of his writings has made him known as at once a theoretical reformer and a practical man of science. Among his discoveries his Italian editor, Venturi, refers to the attainment, and in most instances the establishment by proof, of correct theories (a) in mechanics—of the equilibrium of the lever under the action of oblique forces, friction and resistance, the influence of gravity on bodies in repose and motion, the descent and ascent of bodies on inclined planes, the relation of initial force to speed, and of the motor power of machines to the weight of the bodies moved; (b) in optics—the camera obscura, the laws of perspective, the nature of coloured shadows, the figure of light from the sun (which baffled Aristotle and was afterwards explained by Maurolycus), the movements of the iris, and the duration of visual impressions; (c) in hydraulics, he anticipated the observations of the astronomer Castelli on moving waters; and (d) in atmospheric chemistry demonstrated that respirable air must support flame; (e) in astronomy he distinctly assumes (in a treatise of 1510) the annual rotation of the earth, and refers to it as a common opinion of his time; he found before Maestlin that the obscure light of the unilluminated part of the moon is due to the reflection of the earth, and knew of the elevation of the equatorial above the polar waters; (f) in geology he had advanced so far as not only to assert, but on grounds of modern reasoning to demonstrate that the sea had once covered the tops of mountains on which shells had been discovered. Leonardo, theoretically as well as practically, understood and wrote well on fortification, architecture and the art of painting.

#### Greek Architecture.

In considering a work of art as a whole, harmony is the first quality to be sought, for it is simply the co-operation of all the parts in the production of the desired effect, and it is exactly in the production of this effect that æsthetic character consists. In working this out the Greeks were super-excellent, and thus vindicated their title to be considered great artists, in spite of the narrowness of their architectural ideas and the very slight amount of variety permitted by the type of horizontal construction which they exclusively favoured. They succeeded in making the very most of the resources which this construction afforded, and to this day remain absolutely unrivalled. We must not suppose, however, that their art displayed no variety. Besides the diversities which characterised their three principal orders, they were able to obtain variety by changing the numbers, the disposition and the spacing of their columns. They even ventured to disregard symmetry when they thought it could be done with advantage. They substituted a circular form for the usual rectangle in many of their monuments. But still we may fairly say that one aspect pervades the great majority of their structures. The spirit of Greek architecture may be compared to the poetic system of Sophocles. Euripides, on the other hand, had no sympathy with it. It was pure and logical rather than grand or picturesque.

#### Livy's House in Padua.

No persons have ever been more delighted with antiquities of their own manufacture than the Paduans. The Gothic tomb of Atenor attracted for a long period the patriotic veneration, and the house in which Livy was born was exhibited with pride to the stranger. "In this town," says Evelyn, "is the house in which Titus Livius was borne, full of inscriptions and pretty faire." Coryate likewise visited this mansion in 1608, and has given in his usual quaint style the reasons for his belief in its genuineness. "Amongst other very worthy monuments and antiquities which I saw in Padua the house of Titus Livius was not the meanest; for had it been much worse than it was I should have esteemed it precious, because it



bred the man whom I do as much esteeme, and whose memory I as greatly honour as any ethnic historiographer whatsoever, either Greeke or Latin, having sometimes heretofore, in my youth, not a little recreated myself with the reading of his learned and plausible histories. But seeing I now enter into some discourse of Livie's house, methinks I heare some carpinge criticke object unto me that I do in this one point play the part of a traveller, that is, I tell a lie; for how is it possible (perhaps he will say) that Livie's house should stand to this day, since that yourself before have written that Padua hath been eftsoones sacked and consumed with fire? How cometh it to passe that Livie's house should be more privileged from the fury of the fire than other private houses of the citie? I answer thee that it is very probable this building, whereof I now speake, may be the very house of Livie himself, notwithstanding that Padua hath been often razed and fired." Omitting, however, his arguments here, he thus concludes:—"For the very same house, wherein he lived with his family (as many worthy persons did confidently report unto me) and wrote many of his excellent histories with almost an incomparable and inimitable style, I saw, to my great joy, being in a certain street as you go from the Domo, which is the cathedrall church, to the gate Saint Johanna."

#### The Goethe-Schiller Group, Weimar.

The double statue of Schiller and Goethe which stands before the theatre in the Carlplatz gives it a dramatic character which it does not possess of itself. This statue, like all other statues which we have ever seen or heard of (except that of the superb Frederick the Great at Berlin), has had its detractors; and yet, assuredly, it is a work of art which improves upon prolonged acquaintance, which is not the least praise which can be given to a work of art. The two great poets are plainly clad in the usual dress of the period, whose merits are of a negative kind. Certainly a Roman toga would have enveloped them more gracefully, but it would have been an anachronism, and, so far, in bad taste. The statue has excited ridicule, because Goethe appears to be taking care of Schiller, or to be in a manner his keeper. But the idea is perfectly compatible with the respective characters of the poets, and with their mutual relations while alive. Goethe appears master of the world, as well as thoroughly at home in it. His brow is open, unabashed and dauntless. He stands well on his legs, and his portly figure indicates a sound constitution, good lungs and green old age. His manner is at once composed and unrestrained. He stands perfectly upright, and yet perfectly at ease. On the other hand, the position of Schiller indicates bodily languor and weakness, combined with enthusiasm and mental vigour. His breath appears to be drawn with difficulty, and his head is set somewhat forward on the shoulders. His brow and face appear illuminated with intellectual light, while the traits betray an expression of physical pain. He is in the world but not of it; he seems to be stretching out of it in endeavour to discover the secrets of the infinite. The one just, in fact, appears the complement of the other. They typify the two schools of classical and romantic poetry, not that they exclusively treated of subjects belonging to one or to the other, but that they treated all subjects, each in his own manner—Goethe sensuously, Schiller spiritually. The brotherly embrace of the group denotes that there can be no sharply drawn division between the two schools; and, in fact, the word schools is less appropriate than that of tendencies or points of relation.

#### GENERAL.

**Mr. George Frederick Bodley** was on Wednesday evening elected a Royal Academician. The choice will give general satisfaction to architects. Mr. M. R. Corbett, painter, was elected an associate of the Academy.

**Mr. T. G. Jackson** has contributed to the *Guardian* an article *apropos* of the Liverpool Cathedral. He recommends the adoption of bold spans—domes it may be—less encumbered floor space, greater simplicity of plan, and larger liberty to the architects in design. In that way the Gothic will be expressed, in spite, perhaps, of domes and round arches. But no bygone style can ever really be made to live again.

**The Will** of Mr. W. R. Kinipple, M.I.C.E., whose death at Brighton we recorded, has been proved at 18,881*l*.

**An Exhibition** of the works of Falguière, the sculptor, is about to be held in the Ecole des Beaux-Arts, Paris. The arrangements are being carried out by a committee under the direction of M. Paul Dubois.

**A Committee** has been formed to carry out repairs to the tower of Selby Abbey. The upper stones will be removed to lighten the weight on the foundations. The tower will be made similar to the one at Ripon and Peterborough Cathedrals.

**Portsmouth** is going to celebrate the Coronation by erecting a statue of Queen Victoria. The Mayor, having discussed the matter with Mr. A. Drury, A.R.A., found that a statue 11 feet high of the late Queen would cost 1,000*l*, granite base and bronze memorial tablet would cost 350*l*. On the three remaining sides of the base could be placed sized medallions of Dickens, Besant and Brunel. These cost another 350*l*, thus bringing the total cost up to 1,700*l*. Subscriptions are now being sought.

**M. Duval**, architect, has prepared his report on the cost of the structure on the stage of the Variétés Theatre represented Charles Garnier's staircase in the Opera. Several actors were seriously injured. It is shown that the accident was owing to carelessness, for which responsibility will have to be assumed.

**Eighteen Pounds Ten Shillings** per square foot was the price at auction for a freehold site at the corner of Bride Lane and Fleet Street, E.C. The total area was 550 square feet at a price 23,150*l*.

**The Death** is announced of M. Adrien Gaudet, the sculptor, of Lyons. He was a pupil of Joffroy. Several works were purchased by the State and Paris Municipality.

**At Leighton House** on Wednesday a course of six lectures began, entitled "A Brief History of the Art of Painting from Cimabue to Leighton." They will be delivered by Mr. W. Fry, member of the Royal Society of British Artists, and will be illustrated by numerous lantern slides.

**By the Will** of Mrs. Morris, wife of Mr. William Morris, the executors are to offer to the Trustees and Directors of the National Gallery the pictures by her late husband "The Shadow of Snowdon," the "Lime Avenue in Clonsilla Park," and a water-colour drawing, "On the Ribble." They are also to offer to the Lord Mayor and Corporation of London the pictures of "A Hampshire Home," "A View of Loughrigg Tarn and Langdale Pikes," "Dunham Castle," "The Chapel Rock," "The Bridge at Dunkeld," and "Beachey Head."

**The Decorations** prepared by Mr. C. W. Furze for the Liverpool Town Hall will shortly be exhibited in the Victoria and Albert Art Gallery, and also three models for the national monument to Queen Victoria.

**Mr. Balfour** has announced that a writ and statement claim on the part of the Attorney-General, and relating to gold ornaments found in Ireland, have been served on the defendants (the Trustees of the National Museum) have now to deliver their statement of defence.

**Workmen**, while making some excavations in the pavement of a convent school at Poitiers, came upon a statue of Mary 5 feet high, in white marble, dating from the second century.

**Mr. John Murdoch**, formerly a plumber in Dundee, has bequeathed nearly 70,000*l* for the provision of relief to the poor, bachelors and widowers. It is recommended that a building be erected thereon, to be known as the "Murdoch Rest," such persons may end their days in comfort, and the building shall be after the cottage system. It is desired that the applicants shall have shown a practical sympathy with the pursuits of science in which the donor has interested himself.

**Cardinal Vaughan** has decided to open the new Cathedral at Westminster on June 29 next, three days before the King's Coronation, provided nothing unforeseen should prevent the ceremony. Lady Vavasour has intimated that she will present a costly mosaic of the Welsh saint Winefride, towards the interior decoration of the building.

**The French Society** of Artists-Decorators now counts over 300 members. The second general meeting has been held under the presidency of M. Dubufe and under the vice-presidency of M. Louis Carrier-Belleuse.

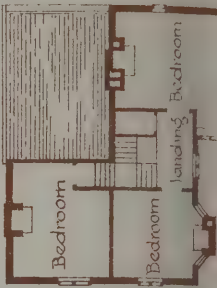
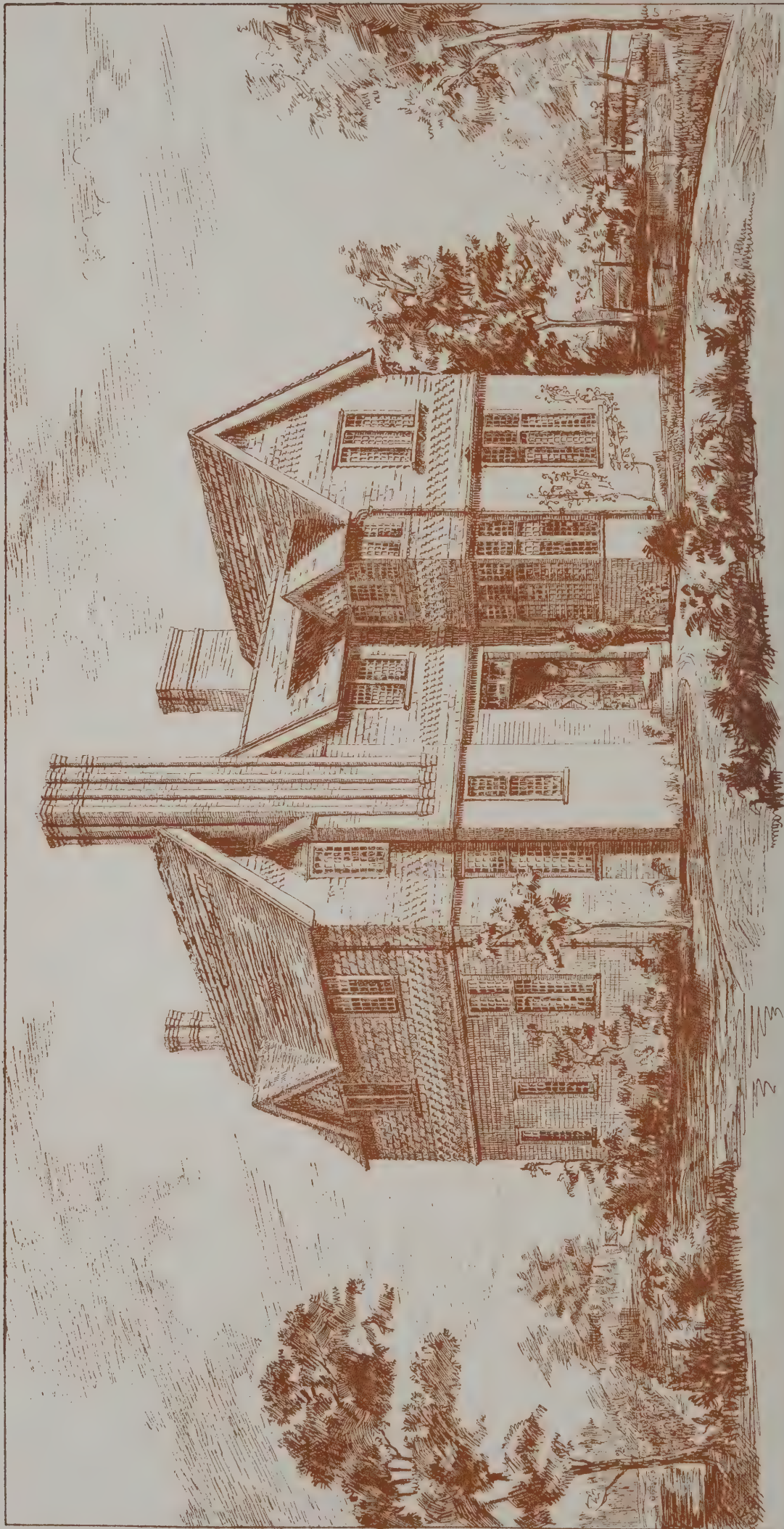
**The Annual Dinner** of the Plymouth, Devonport and Stonehouse branch of the Devon and Exeter Architectural Society was held last Friday, with Mr. C. King in the chair. Among the guests was Mr. Silvanus Trevail, who admitted the Society of which he is President were not careful at first in beginning about inquiring into the qualifications of the candidates for membership.

**Professor Corfield**, consulting sanitary adviser to Her Majesty's Office of Works, has been directing considerable improvements in the sanitary arrangements of the south part of Windsor Castle. The whole of the drains under the south towers, from Edward III's Tower to the Victoria Tower inclusive, have been done away with, so that there is no drain under the buildings on that side of the Castle, and watertight iron drains have been laid outside the buildings. Suitable disconnection arrangements have been provided between the new drains of these towers and the Castle sewers, so that each of the towers is, in fact, so far as the drains are concerned, a house in itself.



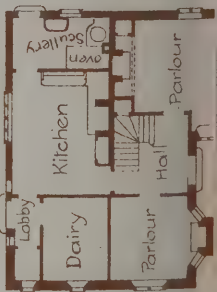
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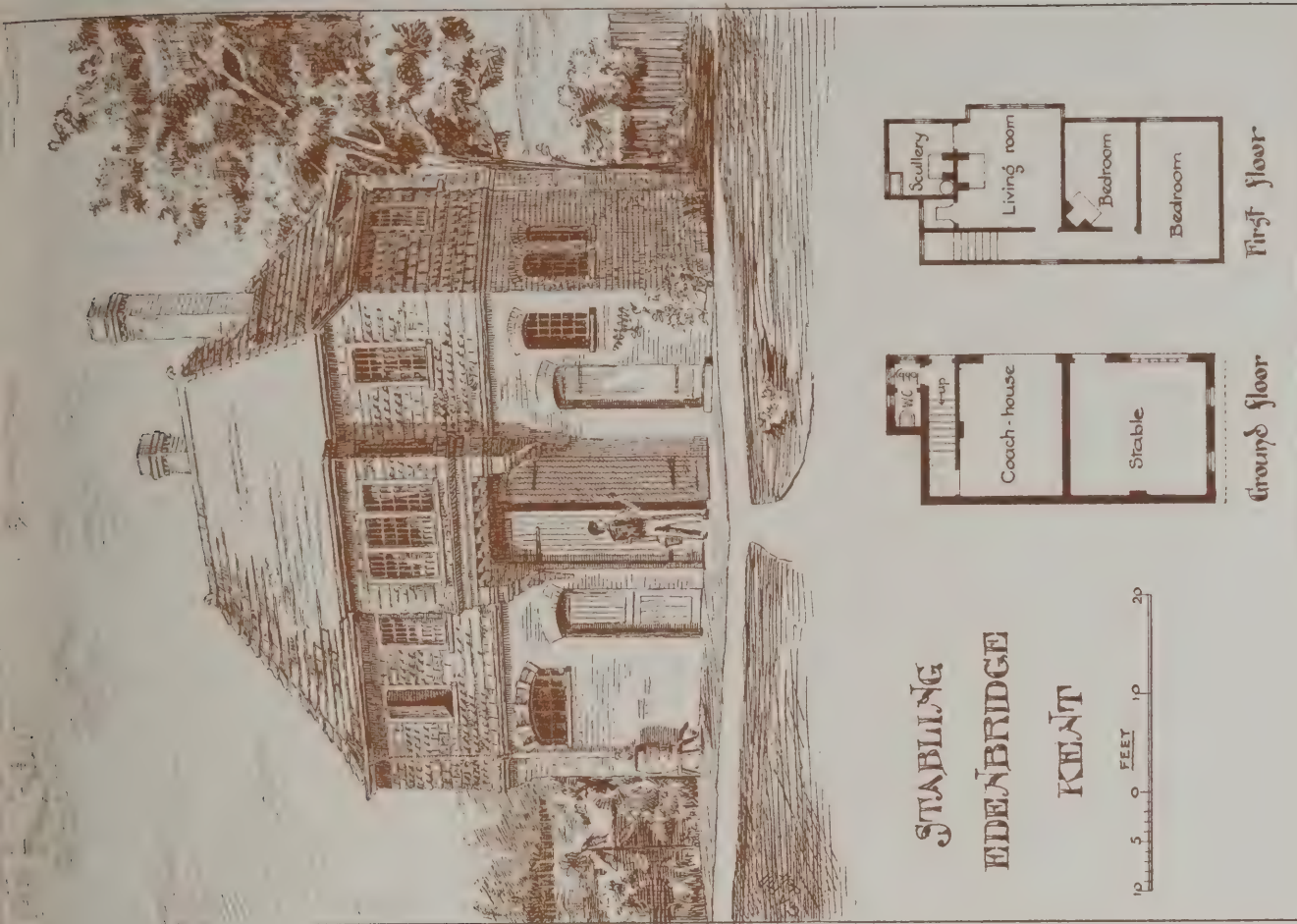
DINING ROOM.

FOWEY HALL, CORNWALL.



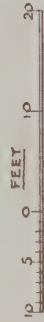




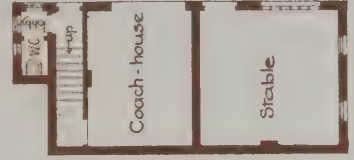


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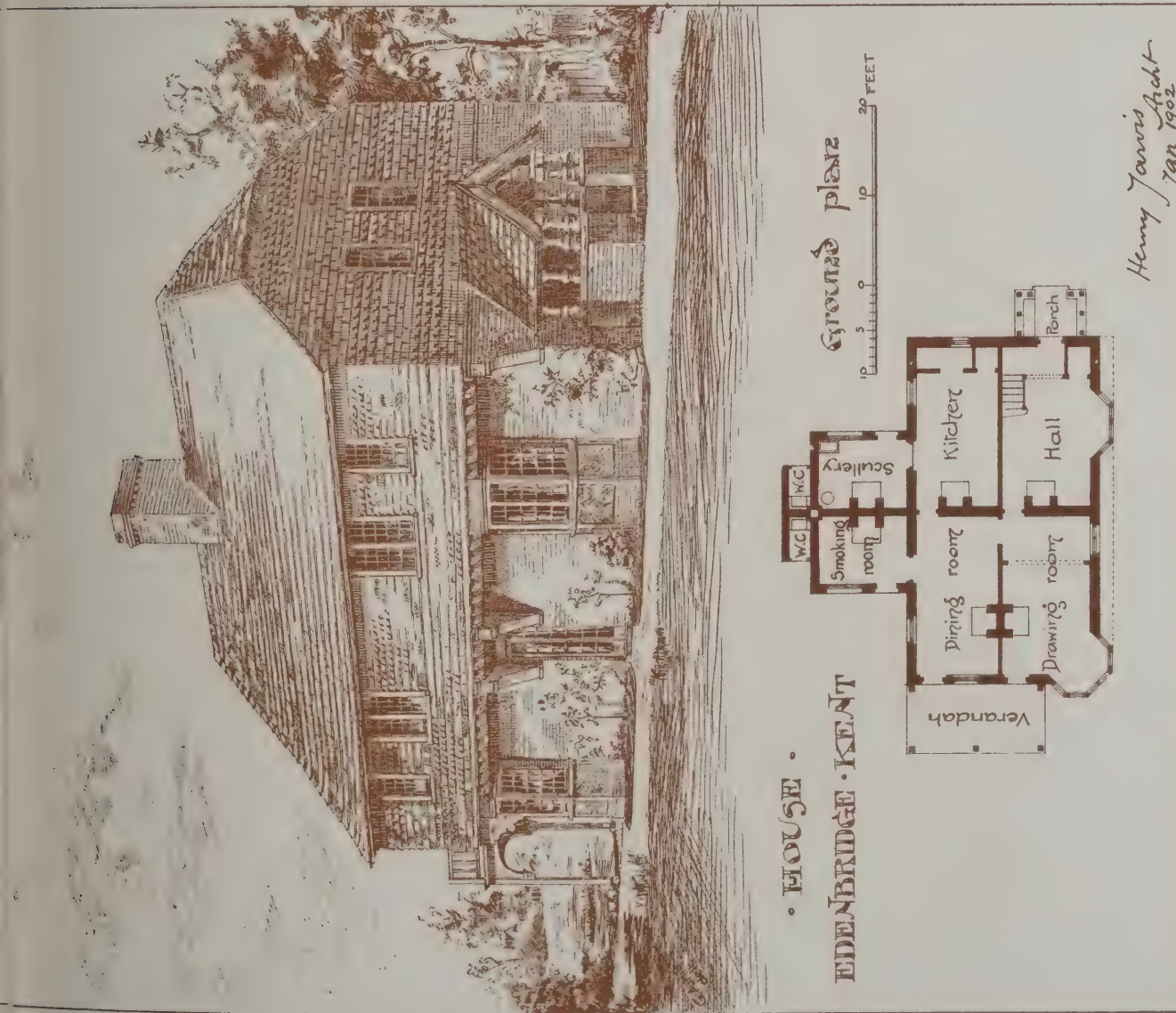


First floor



Ground floor

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HOUSE  
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Ground plan



Henry Jarvis Archt.  
Jan 1902



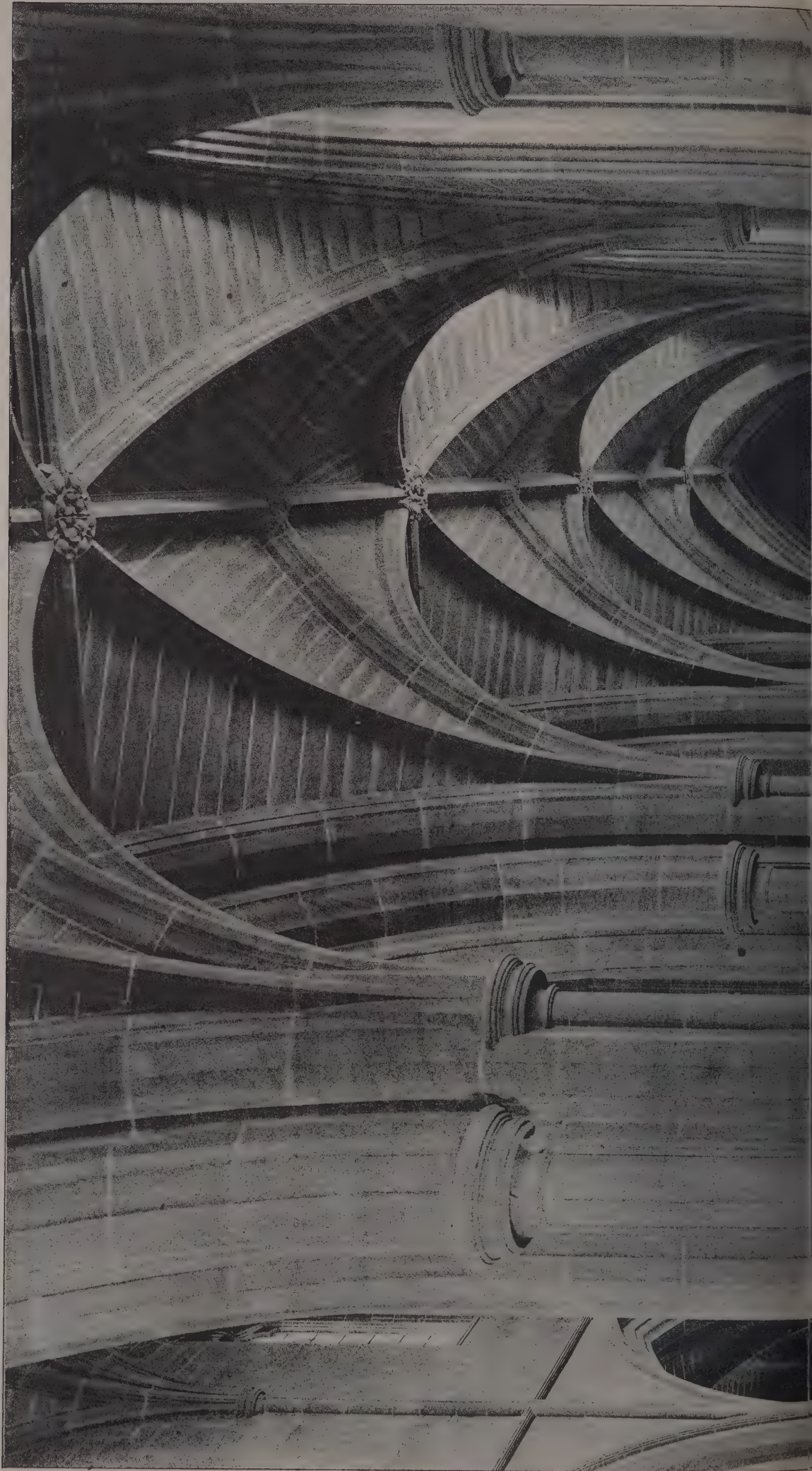
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The Architect, Jan 31<sup>st</sup> 1902.







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S. MARY'S CHURCH, ECCLESTON: SOUTH AISLE, LOOKING EAST.

G. F. BODLEY, A.R.A., Architect.



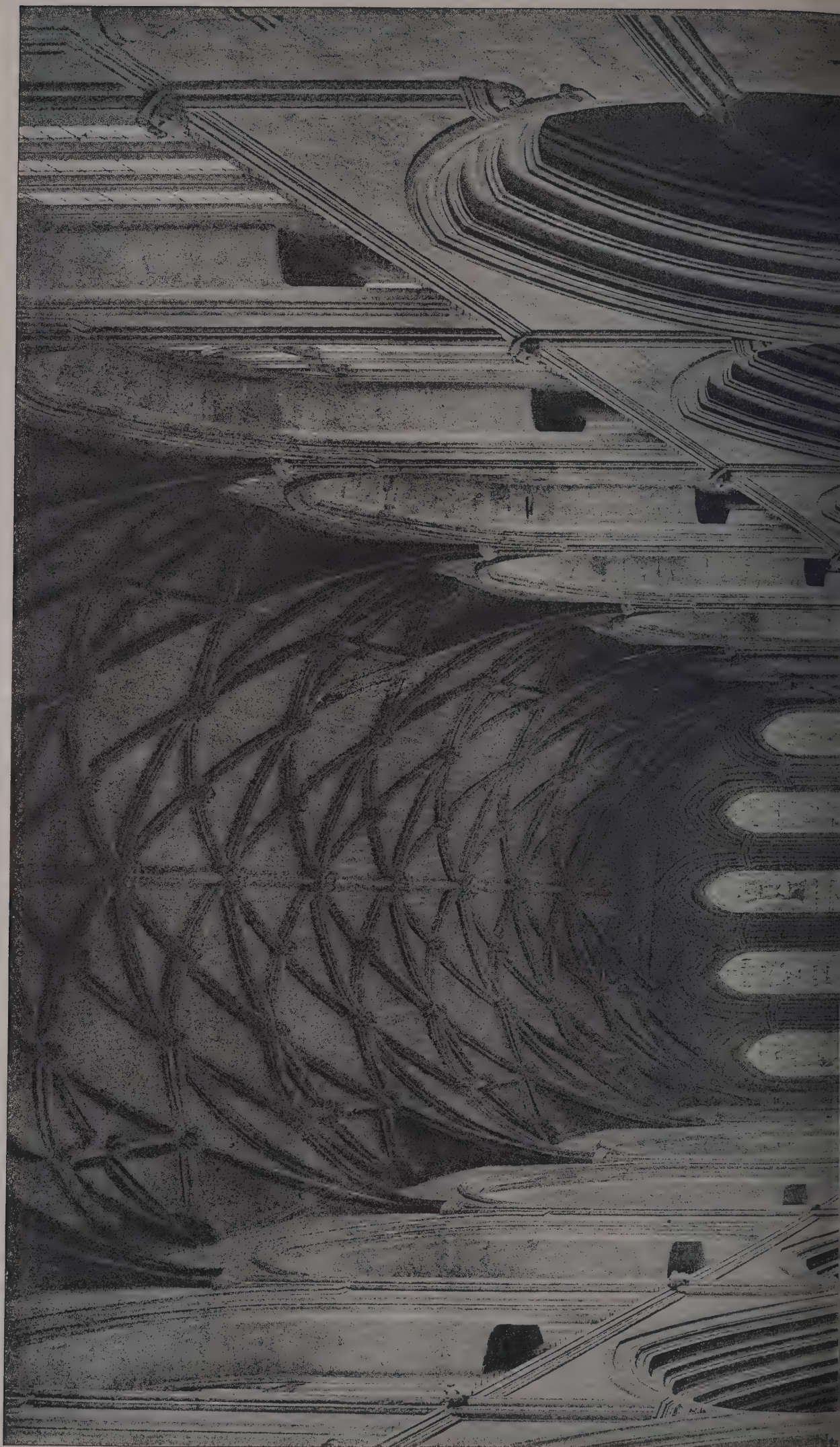
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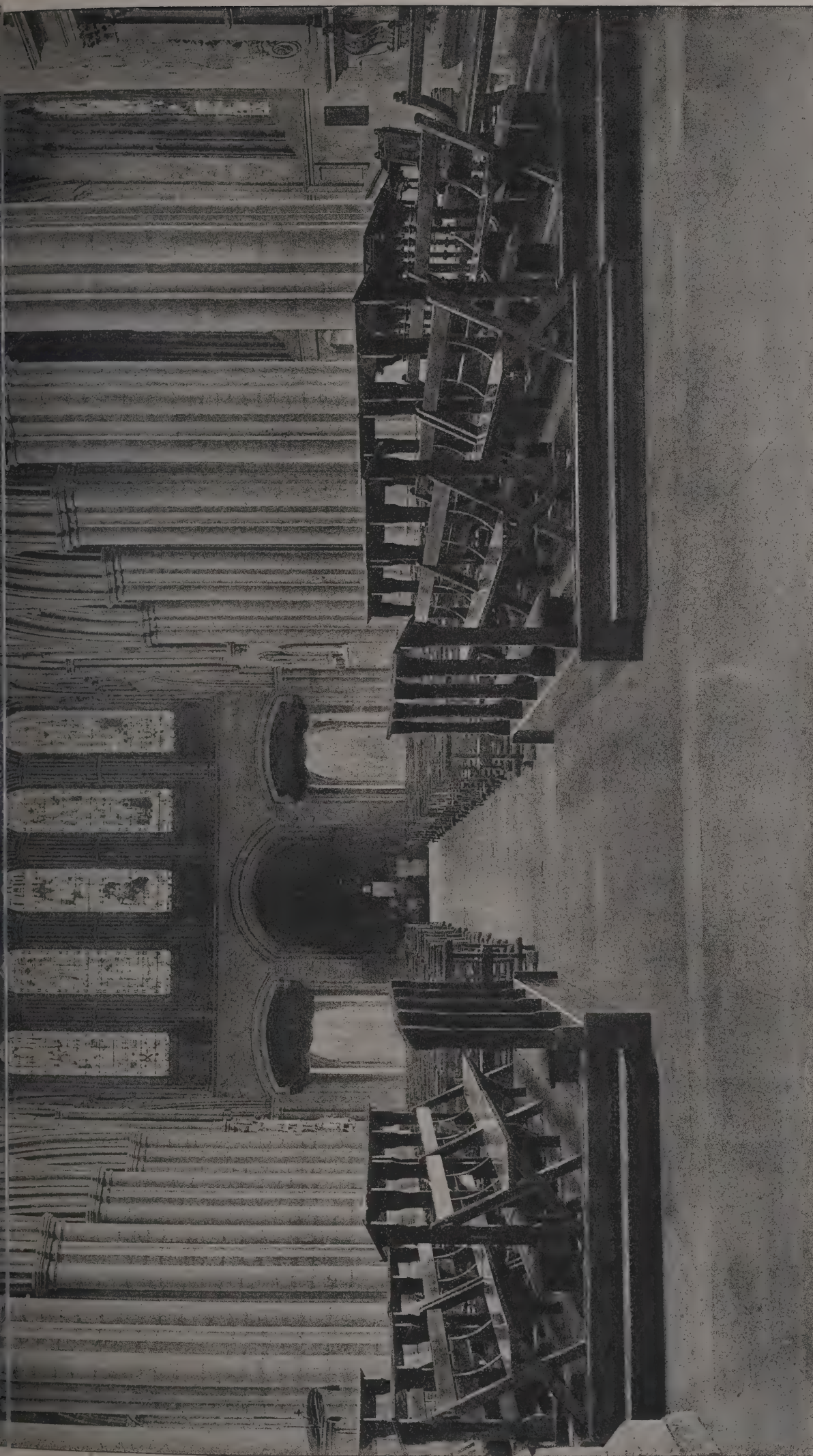




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CATHEDRAL SERIES, No. 379.—RIPON: THE NAVE, LOOKING WEST.







THE

Architect and Contract Reporter.

EDITORIAL NOTICES.

*view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

COMPETITIONS OPEN.

**ALDERSHOT.**—March 1.—Plans are invited for laying-out a pleasure ground about 6 acres of land in the centre of Aldershot. Mr Nelson F. Dennis, A.M.I.C.E., surveyor.

**ALDERSHOT.**—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for first, second and third best plans. Mr. Nelson F. Dennis, M.I.C.E., surveyor.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. All information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West-minster.

**HARROGATE.**—May 14.—Competitive designs are invited for a new town hall, the cost of which must not exceed 40,000l. Premiums of 150l., 100l. and 75l. are offered for the three selected designs. Mr. F. Bagshaw, borough engineer, Municipal Offices, Harrogate.

**IRELAND.**—Feb. 26.—A premium of £20 is offered for the best and cheapest report, plans, specification and estimates, &c., for providing the town of Kanturk with a wholesome supply of water. Mr. Mt. Timothy Guiney, clerk to the Kanturk Rural District Council, at the Boardroom of the Workhouse.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200l., 150l. and 100l. respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**MONTROSE.**—Feb. 15.—Suggestions are invited for an ornamental fountain to be erected in the Mid Links of Montrose in memory of the late Provost Scott. Price must not exceed 150l. Mr. A. Middleton, solicitor, Montrose.

**NEW MALDEN.**—March 5.—Designs, &c., are invited for public offices, fire-station, cart sheds, stables and mortuary to be erected at New Malden, Surrey. Total cost of buildings not to exceed 5,100l. Premiums of 25l. and 10l. respectively are offered for the best and second best design. Mr. C. T. Lewis, clerk to The Maldens and Coombe Urban District Council, 7 Market Place, New Malden.

**STAKEFORD.**—Plans, specifications and estimates are invited for the erection of a bridge over the river Wansbeck at Stakeford, in the county of Northumberland. Mr. E. E. Charlton, 32 Grainger Street West, Newcastle-upon-Tyne.

**WALES.**—Feb. 4.—Competitive designs are invited for municipal offices proposed to be erected by adapting, adding to and rearranging the town hall buildings at Mountain Ash. A premium of 75l. will be paid to the author of the design placed first in order of merit. Mr. H. P. Linton, clerk, Town Hall, Mountain Ash.

CONTRACTS OPEN.

**ACCRINGTON.**—Feb. 17.—For erection of shops, offices, stores and assembly-rooms. Messrs. Haywood & Harrison, architects, Post Office Chambers, Accrington.

**ALDRETH.**—Feb. 14.—For erection of a bridge at Aldreth, over the West River. Mr. Herbert Leete, county surveyor for Isle of Ely, Ely.

**ANNFIELD PLAIN.**—Feb. 1.—For shop fittings for new shops, &c., Annfield Plain, Durham. Mr. G. T. Wilson, architect, 121 Durham Road, Blackhill.

**AVONMOUTH.**—Feb. 17.—For construction of a new dock having a water area of about 30 acres, with an entrance lock and entrance channel from the river Severn, a graving dock, embankments, sea-walls, &c. Mr. W. W. Squire, engineer, Underfall Yard, Cumberland Road, Bristol.

**BARNSELY.**—Feb. 5.—For erection of two steel lattice girder bridges respectively required for supporting the lines of cast-iron socket pipes across the river Porter, or Little Don, near Deepcar Bridge. and across the river Don, near Soughley Bridge. Messrs. T. & C. Hawksley, civil engineers, 30 Great George Street, Westminster, S.W.

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**BIRMINGHAM.**—Feb. 12.—For reconstruction of Bournbrook Road bridge. Mr. John Price, city surveyor, Council House, Birmingham.

**BLACKPOOL.**—For erection of a new front to the Queen's Hotel, New Road, Blackpool. Mr. William Parker, at above address.

**BOURNEMOUTH.**—Feb. 12.—For supply of steel poles, overhead line, section boxes, arc lamps, arc lamp-poles, carriers, &c. Mr. F. W. Lacey, borough and tramway engineer, Municipal Offices, Bournemouth.

**BRIDGWATER.**—Feb. 24.—For construction of collecting trenches and other works upon the Willoughby estate. Messrs. E. D. & Henry Marten, engineers, Cheltenham.

**BOWNESS.**—Feb. 7.—For additions and alterations to the Crown hotel and villas. Mr. Stephen Shaw, architect, Kendal.

**BRACEBRIDGE.**—March 3.—For alterations and additions to the present buildings of the Bracebridge Asylum, near Lincoln. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, S.W.

**BRADFORD.**—Feb. 20.—For erection of Eastbrook Mission Hall and adjoining premises in Leeds Road. Messrs. W. J. Morley & Son, architects, 259 Swan Arcade, Bradford.

**BRADFORD.**—Feb. 18.—For extension of the Rawson Place markets. Messrs. T. C. Hope & Son, architects, 23 Bank Street.

**BRIDGINGTON.**—Feb. 4.—For alterations and additions to Chapel Street. Mr. J. Earnshaw, architect, Carlton House, Bridlington.

**COVENTRY.**—Feb. 10.—For erection of five cottages and other buildings at the sewage pumping-station, Whitley, Coventry. Mr. J. E. Swindlehurst, city surveyor, St. Mary's Hall, Coventry.

**CROYDON.**—Feb. 17.—For supply of ten double-deck double-truck cars, equipped complete with motors, &c., for overhead trolley system. Mr. E. Mawdesley, town clerk, Town Hall, Croydon.

**CROYDON.**—Feb. 21.—For enlargement of Croydon Crown Post Office. Particulars may be obtained of the Secretary, H.M. Office of Works, &c, Storey's Gate, London, S.W.

**DARLINGTON.**—Feb. 3.—For erection of a pair of detached cottages at the Corporation farm. Mr. H. Steavenson, town clerk, Houndgate, Darlington.

**DERBY.**—Feb. 26.—For boilers and engineering and tary work in connection with new public baths, Regent Street. Mr. John Ward, borough surveyor, Babington Street, Derby.

**DURHAM.**—Feb. 15.—For erection of a five-roomed house, two-stalled stable, out-offices and yard, walls, &c., in Parade, Leadgate, for Mr. Robert Laidlaw, Front Street, Leadgate.

**EASTBOURNE.**—Feb. 10.—For erection of a technical institute, public library, science and art schools, fire-station, &c., in Grove Road, Eastbourne. Mr. H. West Fovell, town clerk, Town Hall, Eastbourne.

**EAST MOLESEY.**—Feb. 5.—For alterations and additions to Langton House. Mr. D. G. Andrew, architect, Broom Road, East Molesey.

**EDBURTON.**—Feb. 3.—For alterations and additions to Grange, Fulking Hill, near Edburton, Sussex. Mr. Francis Tillstone, town clerk, Town Hall, Brighton.

**GREENWICH.**—Feb. 7.—For construction of two brick cottages at Greenwich Cemetery, Shooters' Hill. Mr. Francis Robinson, town clerk, Town Hall, Greenwich.

**GREENWICH.**—Feb. 5.—For repairs to Wharf House, Anchor and Hope Lane, Charlton. Mr. Francis S. Robinson, town clerk, Town Hall, Greenwich.

**GRIMSBY.**—Feb. 3.—For reconstruction of quay wall, Victoria Street. Mr. H. Gilbert Whyatt, surveyor, Court Chambers, Town Hall, Grimsby.

**HALIFAX.**—Feb. 13.—For erection of a pair of detached villas on the Moorside Estate, fronting into St. Road. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

**HARROGATE.**—Feb. 8.—For supply of a Lancashire boiler. Mr. F. Bagshaw, borough engineer, Municipal Offices, Harrogate.

**HULL.**—Feb. 4.—For erection of a pair of semi-detached villas at Hessle. Mr. Alfred T. Martindale, architect, Wellington Road, Bridlington.

**HULL.**—Feb. 5.—For erection of a central police station. Mr. Alfred Gelder and Parliament Streets. Mr. Joseph H. H. city architect, Town Hall, Hull.

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IRELAND.—Feb. 6.—For erection of 10 labourers' cottages and out-offices, Drogheda. Mr. Louis Turley, architect, Drogheda.

IRELAND.—Feb. 8.—For erection of bathroom and water-sets at the infirmary of the Donegal workhouse. Mr. D. C. Carson, clerk to the Guardians.

IRELAND.—Feb. 8.—For erection of a medical officer's residence and dispensary house in the townland of Killyfast, Ballymena. Mr. Chas. Johnston, clerk, workhouse, Ballymena.

IRELAND.—Feb. 8.—For erection of a residence at Lawrence Street, (Foyle College grounds), Londonderry. Mr. P. McGrath, architect, 28 Carlisle Road, Londonderry.

IRELAND.—Feb. 13.—For general repairs and improvements to the fever hospital of the workhouse, Thomastown. Specification, &c., can be seen at the workhouse.

IRELAND.—Feb. 22.—For erection of a bank-house, shop and offices on the site of 114 and 115 Grafton Street, Dublin. Messrs. W. H. Stephens & Son, surveyors, 13 Donegall Square North, Belfast.

IRELAND.—Feb. 26.—For erection of the technical institute, Belfast. Mr. Samuel Stevenson, architect, 83 Royal Avenue, Belfast.

IRELAND.—Feb. 28.—For erection of new National schools at Windsor Avenue, Lurgan. Mr. H. Hobart, architect, Drogheda.

LEEDS.—Feb. 4.—For erection of four houses and shops, including post office, in Church Lane, Pudsey. Messrs. G. W. Bird & Sons, architects, Exchange Buildings, Queen Street, Leeds.

LEEDS.—Feb. 8.—For erection of the police station and library in Harrogate Road and Town Street, Chapeltown. Mr. William H. Thorpe, architect, 61 Albion Street, Leeds.

LEEDS.—Feb. 15.—For erection of baths, lavatory, dormitories, &c., at Adel reformatory, near Leeds. Messrs. Thomas An & Sons, architects, 92 Albion Street, Leeds.

LEEDS.—Feb. 15.—For extension of warehouse block, conversion of warehouse buildings into warehouse and offices, at Cardigan Mills, Milford Place, Leeds. Messrs. Thomas An & Sons, architects, 92 Albion Street, Leeds.

LEICESTER.—Feb. 7.—For erection of public baths at West Aberstone. Mr. A. H. Hind, architect, 3 Grey Friars, Leicester.

LEYTON.—Feb. 13.—For erection of steam, exhaust and water-pipes for engine and boiler-rooms, for the electric-lighting committee. The Engineer, Electricity Works, Cathall Road, Leytonstone.

LIMEHOUSE.—Feb. 18.—For erection of a block of artisans' dwellings, Queen Catherine Court area, Dorset Street. Mr. Geo. W. Clarke, town clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

LISCARD.—Feb. 20.—For supply and erection of feed-water heater, &c., at the electric supply works, Sea View Road, Liscard. Mr. J. H. Crowther, engineer, Great Float, near Birkenhead.

LONDON.—Feb. 18.—For delivery and fixing of three 13 feet long by 5 feet diameter Cornish steam boilers, induced-draught plant and feed-pump, and reconstruction of the arrangements for the heating circulation and the hot-water supplies, provision of steam and condensation mains, and the enlargement of the coal store at the infirmary, Archway Road, Highgate, N. Mr. J. Allan Battersby, clerk, Guardians' Offices, Clerkenwell Road, E.C.

LONDON.—Feb. 26.—For erection of casual wards, clothes store, laundry and other buildings at Gainsborough Road, Hackney Wick. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONDON.—March 4.—For supply and delivery into carsheds in South London of 100 double-decked double-bogie electric tramcars, for the London County Council. Each car is to be equipped with a plough for working on a conduit system, and to be capable of seating about 68 persons. Particulars at the County Hall, Spring Gardens, S.W.

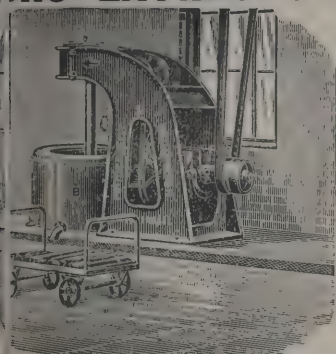
LONDON BRIDGE.—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

LOWESTOFT.—Feb. 3.—For construction of four timber groynes on the South Beach, Lowestoft, Suffolk. Mr. R. Beattie Nicholson, town clerk, Lowestoft.

MANCHESTER.—Feb. 5.—For erection of a greenhouse and potting-shed at Monsall hospital. The City Surveyor, Town Hall, Manchester.

MANCHESTER.—Feb. 13.—For erection of surface condensers, oil separators and hot well, cooling towers and feed-water heaters, at the Stuart Street generating station. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

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MARLOW.—Feb. 5.—For erection of labourers' cottages, outoffices, piers and gates in various electoral divisions of the district. Plan and specification of the works may be seen at the board-room of the Rural District Council.

NEWCASTLE-ON-TYNE.—Feb. 12.—For construction of a railway bridge and approaches over the river Tyne at Newcastle, for the North-Eastern Railway Company. Mr. Charles A. Harrison, Central Station, Newcastle-on-Tyne.

NEW MILLS.—Feb. 11.—For supply of a Lancashire boiler, 5 feet diameter, 14 feet long, single flue, with Meldrum's or other forced-draught furnace, &c. Mr. J. Pollitt, clerk, Town Hall, New Mills.

NEW MILLS.—Feb. 11.—For supply of a horizontal water-cooled condenser, to pass 200,000 cubic feet per 24 hours, with by-pass complete; rotary scrubber-washer, with engine complete, without by-pass connections, to pass 200,000 cubic feet per 24 hours; four 10 feet by 4 feet 6 inches square purifiers, in line, with single valves, connections, covers, and lifting crane complete (Green's patent); double-action steam pump, &c. Mr. J. Pollitt, clerk, Town Hall, New Mills.

NORWICH.—Feb. 5.—For erection and maintenance for six months of a picture gallery at the Castle Museum. Mr. Arthur E. Collins, city engineer, &c., Guildhall, Norwich.

PLYMOUTH.—Feb. 11.—For extension of goods shed and other works at Plymouth (Mill Bay) station, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, W.

PRESTON.—Feb. 3.—For excavations and filling in connection with the waterworks. Mr. J. H. Logan, Hepgreave, Barton, Preston.

RADCLIFFE (LANCS).—Feb. 6.—For erection of an octagonal brick chimney in Dale Street, Radcliffe. Mr. W. L. Rothwell, engineer to the Urban District Council, Radcliffe.

RAWMARSH.—Feb. 5.—For erection of sale shop, with dwelling-house attached, at Sandhill, Rawmarsh, Yorks. Mr. J. Platts, architect, Old Bank Buildings, High Street, Rotherham.

RETTFORD.—Feb. 6.—For erection of a new church in the parish of Ordsall, Retford. Mr. C. Hodgson Fowler, architect, Durham.

RIPON.—For rebuilding the King William the Fourth inn, Blossomgate. Mr. Arthur A. Gibson, architect, 5 Prospect Crescent, Harrogate.

SCOTLAND.—Feb. 3.—For erection of a retort-house, stores and chimney (total about 2,000 superficial yards) at Broughty Ferry. Mr. Forbes Waddell, engineer to the Town Council.

SCOTLAND.—Feb. 3.—For construction of bacteria tank and relative works at Crossgates, Dunfermline. Mr. D. Mackenzie, master of works, County Buildings, Dunfermline.

SCOTLAND.—Feb. 3.—For construction of four filters service tank, with gauge well, tool-house, &c., an aqueduct steel girders and concrete piers over the river Carron, Falkirk, and providing, laying and jointing of about 2,840 yards 14-inch cast-iron pipes, &c. Messrs. Warren & Stuart, engineers, 94 Hope Street, Glasgow.

SCOTLAND.—Feb. 4.—For erection of workshops at Fethiey, school, Perth. Mr. David Smart, architect, Perth.

SCOTLAND.—Feb. 4.—For supply of Lancashire boiler 18 feet long by 6 feet 6 inches diameter, with Meldrum's forced draught arrangement, to work at 80 lbs. pressure. Mr. Ballantyne, manager, Gasworks, Hamilton.

SCOTLAND.—Feb. 7.—For erection of a tramcar depot at Oswald road, Kirkcaldy. Mr. Wm. L. Macindoe, town clerk, Kirkcaldy.

SCOTLAND.—Feb. 10.—For erection of a poor-house at Falkirk. Messrs. A. & W. Black, architects, Falkirk.

SEDGLEY.—Feb. 5.—For supply of four gas purifiers (Green's system), 12 feet by 12 feet, with necessary fittings and connections. Mr. Joseph Smith, clerk, Urban District Council, High Holborn, Sedgley.

SHEFFIELD.—Feb. 7.—For erection of shops, offices, at the corner of Angel Street and King Street, Sheffield. Messrs. Gibbs & Flockton, architects, 15 St. James's Road, Sheffield.

SHENFIELD.—Feb. 3.—For erection of cowbyre and farm house at Sawyers Hall Farm, Shenfield, Essex. Mr. L. H. Marshall, surveyor, Chippenham.

SHOREDITCH.—Feb. 4.—For extensions of the works offices at the electric light station, Coronet Street, N. Mr. Mansfield Robinson, town clerk, Town Hall, Old Street, E.

SHREWSBURY.—Feb. 8.—For erection of headquarters police offices in Shrewsbury. Mr. A. T. Davis, coroner, surveyor, Shire Hall, Shrewsbury.

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**SOUTHALL.**—Feb. 11.—For erection of an isolation hospital, Southall, Middlesex. Mr. G. E. T. Laurence, architect, Buckingham Street, Adelphi, W.C.

**SOUTHEND-ON-SEA.**—Feb. 4.—For erection of a boundary wall at the sanatorium. Mr. Alfred Fidler, borough surveyor, Southend.

**SOUTHEND-ON-SEA.**—Feb. 5.—For providing and fixing wooden piles and construction of steps at Southend pier head. Mr. Alfred Fidler, borough surveyor, Southend.

**SOUTHEND-ON-SEA.**—Feb. 19.—For erection of a chapel in the borough cemetery, Sutton Road. Mr. S. I. Adams, architect, Weston Chambers, Weston Road, Southend.

**STAMFORD.**—Feb. 17.—For erection of an engine-house, and outbuildings thereto, in Albert Road. Mr. J. B. Gerard, engineer, 6 Millstone Lane, Leicester.

**STOCKS.**—Feb. 3.—For construction of a girder-bridge at Chapel House, Stocks, near Slaidburn. British steel, viz. three girders, 6 inches by 5 inches, weight about 25 lbs. per ft.; six girders, 8 inches by 6 inches, weight about 30 lbs. per ft., delivered free at Chatburn Station on or before March 1. Tender for all work and materials (except above girders). Mr. John Eastham, clerk, Rural District Council, Clitheroe.

**STOCKTON.**—Feb. 10.—For erection of the new Wellington Street Baptist church, Stockton. Mr. T. W. T. Richardson, architect, 57 High Street, Stockton.

**STOWMARKET.**—For erection of two labourers' cottages on farm near Stowmarket. Colonel Oakes, Nowton, Bury St. Edmunds.

**STRATFORD.**—Feb. 12.—For painting, graining and repairs to the court-house (Beacontree division), Great Eastern Road. Mr. Frank Whitmore, county architect, Chelmsford.

**SUNDERLAND.**—Feb. 6.—For supply of ten double and four single deck car bodies and trucks, equipped with all electrical fittings for overhead trolley system, gauge 4 feet 6 inches. Mr. J. F. C. Snell, engineer, Town Hall, Sunderland.

**TWEEDMOUTH.**—Feb. 12.—For erection of twenty-four stages at Tweedmouth, for the North-Eastern Railway Company. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

**WAKEFIELD.**—Feb. 4.—For erection of a new stronghold, new staircase and new lavatories at the West Riding Registry

Offices, Wakefield. Mr. J. Vickers-Edwards, county surveyor, Wakefield.

**WALES.**—Feb. 3.—For heating of a temporary block for 100 patients, also a hot-water apparatus for supplying water for baths, scullery, &c., at Parc Gwyllt Asylum, Bridgend, Glamorgan. Mr. W. E. R. Allen, clerk to the visitors, County Council Offices, Cardiff.

**WALES.**—Feb. 3.—For erection of 100 houses at Pen-y-darren, Merthyr Tydfil. Mr. T. Aneuryn Rees, clerk, Town Hall, Merthyr.

**WALES.**—Feb. 5.—For erection of power-station and carsheds at Newport, Mon. The Borough Engineer, Town Hall, Newport, Mon.

**WALES.**—Feb. 5.—For erection of a church at Tonyrefail. Mr. E. M. Bruce Vaughan, architect, Cardiff.

**WALES.**—Feb. 6.—For erection of additional classrooms, outbuildings, &c., to the Nantyllyon infants' school, Maesteg. Messrs. E. W. Burnett & Son, architects, Tondy, near Bridgend.

**WALES.**—Feb. 6.—For additions to engine-house, boiler-seating and flues at Cogan pumping-station, Cardiff. Mr. C. H. Priestley, engineer, Town Hall, Cardiff.

**WALES.**—Feb. 7.—For erection of a house (29 feet frontage) at Crumlin, Mon. Mr. R. L. Roberts, architect, Abercarn.

**WALES.**—Feb. 7.—For erection of eighteen houses at Treorky. Mr. M. Falcon, 33 Bute Street, Treorky.

**WALES.**—Feb. 7.—For altering and rebuilding the Primitive Methodist chapel, Blaenau Gwent. Mr. A. Jones, Rosebery Street, Abertillery.

**WALES.**—Feb. 7.—For erection of two blocks of 12 houses each at Aberaman, and one villa at Hirwain, near Aberdare. Mr. G. A. Treharne, 18 Canon Street, Aberdare.

**WALES.**—Feb. 10.—For erection of business premises in Station Road, Port Talbot. Mr. G. P. Davies, architect, &c., Port Talbot.

**WALES.**—Feb. 10.—For re-erecting the Crown Bridge, which carries the road over the canal at Sebastopol, near Griffithstown. Mr. T. P. Holmes Watkins, clerk to Urban District Council, Club Chambers, Pontypool.

**WALES.**—Feb. 11.—For erection of a gardener's cottage at the Rest Convalescent Home, Porthcawl. Mr. S. H. Stockwood, solicitor, Bridgend.

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**WALES.**—Feb. 18.—For erection of an ammonia still, capable of extracting all the ammonia from three or four tons of liquor per 24 hours. Mr. John Smith, engineer and manager, Gasworks, Bangor, North Wales.

**WATFORD.**—Feb. 12.—For erection of a steel gasholder tank, 110 feet diameter by 20 feet deep, and a telescopic gasholder in three lifts, with guide-framing, inlet and outlet pipes, &c., at the gasworks. The Chairman, Watford Gas and Coke Company, at the Gasworks.

**WATH-ON-DEARNE.**—For erection of four houses at Wath. Mr. J. H. Wright, 3 Cadman Street, Wath-on-Dearne, Yorks.

**WEMBORTHY.**—Feb. 11.—For reseating in oak the parish church of Wembworthy, North Devon. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

**WEST HAM.**—Feb. 11.—For erection of forty-seven double-tenement houses and twelve single-tenement houses on the Rotherhithe Estate, High Street, Stratford. Mr. John G. Morley, borough engineer, Town Hall, West Ham.

**WHITEHAVEN.**—Feb. 11.—For erection of a new infirmary on land adjoining the workhouse at Whitehaven. Mr. Geo. Boyd, engineer, Queen Street, Whitehaven.

**WOLVERHAMPTON.**—Feb. 10.—For erection of a car-shed and offices, &c., at Bilston, Staffs. Particulars may be obtained from the Secretary, the Wolverhampton District Electric Tramways, Limited, Donington House, Norfolk Street, Strand, W.C.

**WREXHAM.**—Feb. 18.—For reconstruction of the main lantern lights along the roof of the butchers' market, &c., and reconstruction of market sanitary arrangements and conveniences. Mr. Thomas Bury, town clerk, Guildhall.

A SERIOUS building scaffold accident took place last week in Sauchiehall Street, Glasgow, by which two painters were injured, one seriously. It appears that the injured men were at work on top of a scaffold supported on high trestles, when a ladder skidded on the damp pavement, and caused the entire erection to fall. Both men were precipitated to the ground, and were picked up in an unconscious condition. They were conveyed to the Royal Infirmary, where one is progressing favourably. The condition of the other is, however, serious.

## TENDERS.

### ANDOVER.

For painting and repairing the Andover Baptist chapel. Messrs. W & G. A. BELL, architects, Andover.  
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### BILSTON.

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Armstrong-Whitworth Co. . . . . 7,900 0  
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British Schuckert Co. (alternative) . . . . . 6,528 0  
International Electric Engineering Co. . . . . 6,225 0  
British Schuckert Co. (alternative) . . . . . 5,976 10  
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British Schuckert Co. . . . . 5,661 10  
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### BIRKENHEAD.

For electrification of the Mersey Tunnel Railway between Liverpool and Birkenhead.  
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### BRIGHTON.

For erection of a shelter for hose-cart and fire-escape at workhouse, Elm Grove.  
SATTIN & EVERSLED, Brighton (accepted) . . . . . £53 0

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THE HAM HILL AND DOULTING STONE CO.

(Incorporating The Ham Hill Stone Co. and C. Trask & Sons, The Doulting Stone Co.)

Chief Office, NORTON, STOKE-UNDER-HAM, SOMERSET. London Agent, Mr. E. A. WILLIAMS, 16 Craven St., ST.

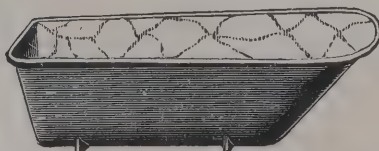
## J. HORWOOD, WHOLESALE IRON AND BUILDER'S MERCHANT.

19, 21, 23 & 25 STRATFORD BROADWAY.

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### BATHS, CISTERNS, AND SANITARY GOODS.

JAPANNED SIENNA BATHS (A9999).



5 ft. 6 in. Japanned Sienna Bath, full size	24/9
5 ft. 6 in. Japanned Sienna Bath, with plug and union	26/6
5 ft. 6 in. Japanned Sienna Bath, with plug and union, and overflow	28/6
5 ft. 6 in. Japanned Sienna Bath, complete with plug and union, overflow, chain, and hot & cold bath cocks	34/6

### CALVANISED OPEN CISTERNS, AND H.W. TANKS.

	Sizes	20	25	30	40	50	60	80	100 gals.
No. A2580. Light Steel...	10/-	11/-	12/-	15/-	16/6	13/9	23/6	26/-	ea.
No. A60. Open Cistern, 16 G.	11/-	12/-	13/-	16/-	18/-	21/-	26/-	28/-	"
No. A61. H. W. Tank, 14 G	18/-	19/9	23/-	28/-	36/-	45/-	—	—	"

### AIR-TIGHT MANHOLE COVERS (No. A 1386).

(GREASE OR SAND JOINTS)



12x12	18x18	24x18	24x24
Light Pattern.			
4/3	5/9	6/3	9/3
Medium Pattern.			
5/-	8/-	8/3	11/-
Heavy Pattern.			
—	10/-	12/-	14/-

Full list of Weights and other particulars on application.

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D. WITT & COMPANY, 168 TO 176 DRUMMOND STREET, LONDON.

Telephone No. 773 King's Cross. Telegraphic Address, "Veneer, Lond."



BRENTFORD.		
For making-up Junction Road. Mr NOWELL PARR, surveyor, Clifden House, Boston Road, Brentford.		
Nowell & Co.	£175	0 0
Belkin & Watson	166	0 0
Wimpey & Co.	165	0 0
A. C. Soan	155	0 0
N. Swaker	145	10 0
Lawrence & Thacker	142	0 0
BALL, Chiswick (accepted)	139	0 0
V Gibbs	131	11 6
Peters	128	0 0

BROAL STAIRS.		
For alterations and additions to Bleak House. Mr. WILLIAM A. BURR, architect, 76 Chancery Lane, W.C.		
	Victoria Stone.	Terra-Cotta.
Denne	£3,978	0 0
Whiteley, Ltd.	3,850	0 0
May	3,816	0 0
Stevens Bros.	3,770	0 0
Martin	3,640	0 0
Brown	3,500	0 0
Paramor	3,485	0 0
GANN & CO., Whitstable (accepted)	2,945	0 0
		2,910 0 0

BROCKLESBY.		
For enlargement of the stand on the race-ground, &c. Brocklesby, Lincs.		
Grey	£187	0 0
Vateman	175	10 0
Thomas	165	10 0
Barrell	135	5 0
ALLISON, Laceby, Grimsby (accepted)	135	0 0

BURNHAM.		
For construction of two iron and steel substructures, including shelters, band-stand and public conveniences at Burnham, Somerset. Mr. W. J. PRESS, surveyor.		
W. J. Pople	£1,179	16 1
Stockham	1,169	0 0
I. W. POLLARD, Bridgwater (accepted)	1,010	0 0

CLERKENWELL.		
For taking-down and rebuilding back front wall of No. 13 Sans Walk. Mr. WILLIAM A. BURR, architect, 76 Chancery Lane, W.C.		
Kirby	£110	0 0
Reason	85	0 0
Stevens Bros.	59	10 0
HOCKING (accepted)	54	16 0

CROYDON.		
For alterations to premises, 145 and 147 North End, Croydon (Croydon Guardian Offices).		
First portion.		
Huntley	£145	0 0
Hubbard	135	0 0
CARD (accepted)	132	10 0
Shirley	122	12 6

DUDLEY.		
For erection of an underground convenience in Stone Street. Mr. JOHN GAMMAGE, borough surveyor.		
M. ROUND, New Street (accepted)	£598	10 0

HOLBORN.		
For alterations and repairs to 304 High Holborn. Mr. WILLIAM A. BURR, architect, 76 Chancery Lane, W.C.		
	For Alterations.	For Repairs.
Langham	£410	0 0
Larke & Son	344	0 0
HOCKING (accepted)	275	0 0
		51 0 0

HULL.		
For alterations and additions to premises in Jarratt Street. Mr. T. BROWNLOW THOMPSON, architect, 15 Parliament Street, Hull.		
THE HULL GENERAL BUILDERS, Lockwood Street (accepted).		
For erection of the new electric-power station.		
GREENWOOD, Hull (accepted)	£8,184	0 0

KINGSBURY.		
For erection of iron hospital wards, with administrative block. J. McMANUS, 237 Hammersmith Road, W.		
(accepted)	£1,450	0 0

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AM, HAND, AND POWER,  
FOR

PASSENGERS  
And GOODS.

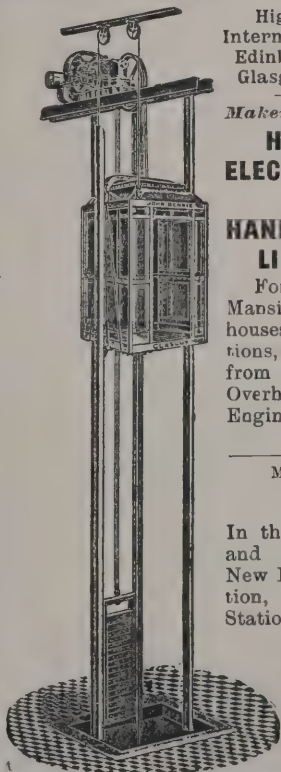
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ailway Companies, Hotels,  
ubs, Public Buildings,  
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Highest Awards:  
International Exhibition  
Edinburgh, 1886, and  
Glasgow Exhibitions.

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ELECTRICAL,  
STEAM, AND  
HAND-POWER  
LIFTS & CRANES

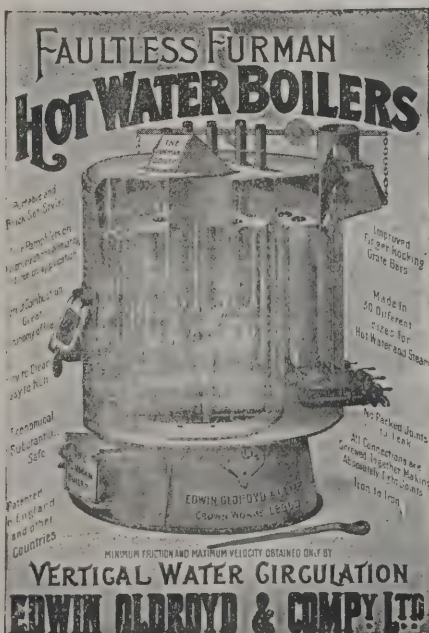
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Mansion Houses, War-  
houses, Railway Sta-  
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from Town's Mains  
Overhead Tanks, Gas  
Engines or Accumu-  
lators.

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LIFTS

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and Hotel, Glasgow  
New Bridge Street Sta-  
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Houses, Glasgow.  
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Street, Manchester.

# HEATING



HEATING AND VENTILATING  
ENGINEERS,  
CROWN WORKS,  
LEEDS.



## KING'S LYNN.

For work at the High School for Girls. Mr. HERBERT J. GREEN, architect and surveyor.

H. W. Barnes . . . . .	£3,862	7	0
W. H. Brown . . . . .	3,757	16	0
P. Banyard . . . . .	3,473	19	7
J. W. Collins . . . . .	3,453	0	0
J. Medwell . . . . .	3,440	1	10
Renaut Bros. . . . .	3,383	0	0
Tash, Langley & Co. . . . .	3,359	10	9
A. F. Foreman . . . . .	3,358	5	0
Robert Dye . . . . .	3,346	0	0
Bardell Bros. . . . .	3,257	0	0
Reuben Shanks . . . . .	3,186	2	0
J. CRACKNELL, Peterborough (accepted conditionally) . . . . .	3,085	7	0

## KIRKCALDY.

For extension of bakery at Mid Street, Pathhead, for the Pathhead and Sinclairtown Reform Co-operative Society, Ltd. Mr. D. FORBES SMITH, architect, Kirkcaldy.

## Accepted tenders.

Menzies Bros., Kirkcaldy, mason . . . . .	£796	14	3
J. Whitton, Pathhead, ironwork . . . . .	289	10	0
D. Wishart, Pathhead, joiner . . . . .	227	17	7
J. Easton, Kirkcaldy, plasterer . . . . .	147	17	6
Blyth & Dougall, Sinclairtown, plumber . . . . .	42	5	0
R. Page, Pathhead, slater . . . . .	19	17	0
Total, £1,524 1s. 4d.			

## LITTLETON.

For erection of a stone, brick and iron bridge across the river Ash at Littleton, Middlesex. Mr. H. T. WAKELAM, county engineer, Westminster.

Pethick Bros. . . . .	£6,927	0	0
R. H. B. Neal . . . . .	6,096	0	0
Wilkinson Bros. . . . .	5,734	0	0
Kavanagh & Co . . . . .	5,592	11	0
Patman & Fotheringham . . . . .	5,573	0	0
H. Morecroft . . . . .	5,133	0	0
Wimpey & Co. . . . .	4,985	11	0
M. Dinnie . . . . .	4,328	17	6
W. CUNLIFFE, Kingston (accepted) . . . . .	4,215	0	0

## LEEDS.

For fitting-up heating apparatus at the new central children home, Street Lane. Mr. PERCY ROBINSON, architect, Albion Street, Leeds.

J. E. BEDFORD & SON, Chapel Allerton (accepted).

## LIVERPOOL.

For erection of the proposed new baths in Lister Drive.

ISAAC DILWORTH, Wavertree (accepted) . £16,400 0

Note.—There were thirteen tenders, the difference between them being very slight.

## NEYLAND.

For repairs and alterations to the Salvation Army Barrack Neyland.

Harries & Williams . . . . . £357 13  
H. CUMMINS, Picton Place, Neyland (accepted) . . . . . 330 3

## PAIGNTON.

For alterations to warehouse and shops for Messrs. Osborne Son. Messrs. BRIDGMAN & BRIDGMAN, architects, To quay and Paignton. Quantities by Mr. VINCENT CATTELL MOLE BROWN, Paignton.

## Builders' work.

G. Webber . . . . .	£620	0	0
W. A. Lethbridge . . . . .	599	0	0
E. Westlake . . . . .	579	0	0
H. Webber & Sons . . . . .	559	0	0
R. HARRIS (accepted) . . . . .	424	0	0

## TEIGNMOUTH.

For erection of a new wing and billiard-room, parquet floors, dados, doors, panelled ceilings of French-polished walnut at Pentland.

A. E. DENBY & CO, Bristol (accepted).

## TOOTING.

For erection of three iron schools, Broadwater Road.

J. McMANUS, 237 Hammersmith Road, W. (accepted) . . . . . £2,290 0

## WALES.

For erection of four houses at Narbeth, Pembrokeshire.

Messrs. GRIFFITHS & JONES, architects.  
BROWN BROS., Pembroke Dock (accepted) . . . . . £840 0

Prevents Dry Rot,  
Fungus, Decay, &c.

**Solignum**

and is a pleasing  
Stain.

Enquiries  
Solicited.

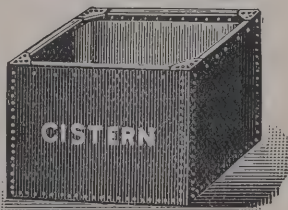
**Wood Preservative.**

Enquiries  
Solicited

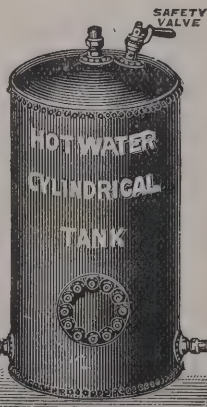
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The original introducers of the Hot Water Cylindrical Tanks.

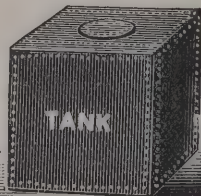
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**FITZROY WORKS**  
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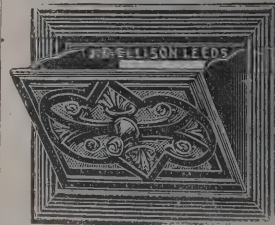
Illustrated Sheet, showing application of our Hot Water Cylindrical Tanks, sent on request.

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THE BEST & STRONGEST BELT FOR DRIVING IN HEAT, STEAM, DAMP, WATER, OR OUT OF DOORS.  
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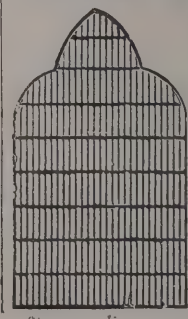
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Special low quotations for Wirework for the protection of Window Skylights.

Estimates and Illustrations free on application.  
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WALES—continued.

For forming, metalling, paving, kerbing and channelling Culum Lane, Cardiff. Mr. W. HARPUR, borough engineer.

J. E. Evans . . . . .	£216	16	1
B. F. Pomeroy . . . . .	215	8	0
C. Davies . . . . .	199	14	5
E. Osmond . . . . .	194	10	2
J. LICH, Cardiff (accepted) . . . . .	150	3	9

WEDNESBURY.

For street works in High Street, Market Place, and Lower High Street Contract No. 1, taking-up existing paving materials, preparing ground for new work, constructing gullies, providing and laying new kerbing and channelling, &c.; No. 2, supplying and laying artificial stone slabs and other works connected therewith. Mr. E. MARTIN SCOTT, borough surveyor.

Contract No. 1.

T. Woodhouse . . . . .	£1,500	0	0
J. Mackay . . . . .	1,392	14	7
Patent Victoria Stone Co., Ltd. . . . .	1,346	2	7
F. J. Smith . . . . .	1,318	0	0
J. White, jun. . . . .	1,155	17	10
Currall, Lewis & Martin . . . . .	1,127	11	1
E. Boore . . . . .	1,110	17	9
A. Cooper . . . . .	1,028	9	6
W. Westwood . . . . .	1,075	10	8
Empire Indurated Stone Co. . . . .	1,011	2	4
H. Weldon . . . . .	943	10	7
G. TRENTHAM, Handsworth (accepted) . . . . .	942	4	8

Contract No. 2.

Patent Victoria Stone Co., Ltd. . . . .	1,109	7	6
T. Woodhouse . . . . .	1,000	0	0
Empire Indurated Stone Co. . . . .	879	12	3
Hard York Non-Slip Stone Co. . . . .	830	0	0
E. Boore . . . . .	827	9	6
H. Weldon . . . . .	821	4	6
Patent Indurated Stone Co., Ltd. . . . .	803	3	9
J. Ellis & Sons, Ltd. . . . .	792	8	9
Currall, Lewis & Martin . . . . .	783	7	3
A. Cooper . . . . .	770	12	9
G. TRENTHAM (accepted) . . . . .	713	0	0
J. Mackay . . . . .	701	2	9
G. A. Watson & Co. . . . .	674	2	0
Abell & Cammell . . . . .	661	5	0

WOOLWICH.

For street works in William Street and Lower Market Street, Woolwich.

W. E. Constable & Co. . . . .	£420	0	0
NORTH OF ENGLAND ASPHALTE Co., 5 Cross Street, Manchester (accepted) . . . . .	262	10	4

For supply of a 10-ton compound roller, with detachable scarifier.

Fowler & Son . . . . .	£440	0	0
Marshall & Sons . . . . .	423	0	0
Aveling & Porter . . . . .	420	0	0
Goddard, Massey & Warner . . . . .	420	0	0
Clayton & Shuttleworth . . . . .	412	0	0
Green & Son . . . . .	395	0	0
BURRELL & SON, Thetford (accepted) . . . . .	390	0	0

WORMWOOD SCRUBBS.

For erection of an iron workhouse infirmary, with administrative block.

J. McMANUS, 237 Hammersmith Road, W. (accepted) . . . . .	£1,050	0	0
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TIMBER TRADES' BENEVOLENT SOCIETY.

THE fifth annual meeting and election of this Society was held on Monday at the Cannon Street Hotel, Mr. D. J. Morgan, M.P., president, in the chair. The report stated that although the past year had been a disastrous one for the timber trade generally, the Society had fortunately not suffered a great loss of income, the subscriptions being only about 4½ per cent. below those of 1900, while they were 15 per cent. over those of 1899. The board had been enabled to add 1,145l. to the invested funds, which now amounted to 13,479l. Two pensioners had died during the year, and three were to be elected that day, which would bring the total up to 16. The amount distributed last year in pensions was 532l. and a sum of 192l. was given in the shape of temporary grants to urgent and deserving cases. The report was adopted, and the meeting proceeded to the election of pensioners.

B. N. SNEWIN & SONS, LTD. MAHOCANY, WAINSCOT, AND TIMBER MERCHANTS, BACK HILL, HATTON GARDEN; & RAY ST., FARRINGTON ROAD, Telegrams, "Snewin, London." LONDON, E.C. Telephone 274 Holborn.

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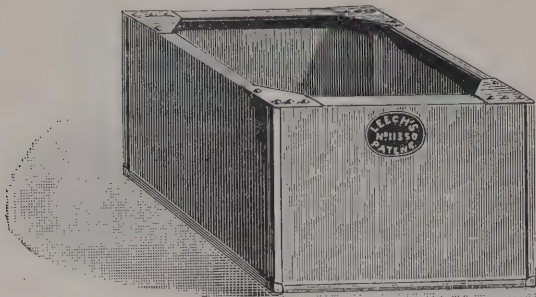
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THE FIREPROOF PARTITION SYNDICATE, LTD., 10 YORK BUILDINGS, ADELPHI, LONDON, W.C.



**LEECH'S PATENT WELTED STEEL CISTERNS.**

WE have recently inspected some specimens of a new patent cistern which the Blackwall Galvanised Iron Company are now placing on the market, and as they possess several points of excellence we think our readers will like to know something about them. Their novelty consists in their being made of smooth black steel, welted by special machinery and afterwards galvanised in the best Silesian spelter.



As the sketch shows they are of very neat finish; they are also of exceptional strength and durability; the method of manufacture insures perfect and unbroken joints; no caulking is needed, as each corner is of quadruple thickness and rounded off on the inside, and owing to this and the fact that there are no rivets, they offer no interstices for the lodgment of dirt or impurities. They also claim advantage from the point of view of cheapness, and they will be stocked in all sizes up to 150 gallons, and in various gauges.

**DRAUGHT PREVENTERS.**

WE have received a communication from Mr. Edward A. Harman, M.Inst C.E., of Huddersfield, in which he says:—

In workshops, messrooms, bathrooms, mills and large factories, the doors into the separate rooms frequently admit a furious draught. Various draught preventers, patent and otherwise, have been tried, but perhaps one of the simplest extant is that of a roller about 2 or 2½ inches diameter, of the

width of the door, attached to the inside of it by means of a lug having vertical slots in them, instead of a circular hole. The small axle of the rollers thereby being allowed to slide freely up and down in the slot, and thus allow for any irregularities in the floor. The contrivance is a very simple one, is capable of being adapted to the doors of outer kitchen, lobbies, sheds, &c., with a considerable reduction in draught space available. It is really like a towel-roller placed on the floor. Care should be taken in fixing it that the permit of the rollers being practically close to the door when fixed and that they rest upon the floor. The author has taken the above arrangement for some years with considerable success and comfort. In some cases the roller may be threaded in several pieces about 3 inches in length on an axle. Manifestly the small reels work more freely than a long one. Though only a trifling detail, yet details are of importance.

**AUSTRALIAN HARDWOOD FLOORS AND DOORS.**

SOME particularly important tests have this week been undertaken by the British Fire Prevention Committee, the occasion bringing together an unusually large assemblage of public officials, architects, surveyors and engineers, including several representatives of the Continent. The visitors were received by Mr. Edwin O. Sachs (chairman) on behalf of the Executive Committee, and Mr. H. H. Collins (district surveyor for the City of London) on behalf of the Council, and among those present were noticed Commander Welsch, who had arrived from Ghent on behalf of the Belgian Government, and Major Fox, of the London Salvage Corps, whilst there was also a specially strong representation of the fire insurance offices.

Preceding the general reception a luncheon was given to the executive, at which, in the course of the toasts, it transpired that a scheme was on foot for utilising the results of British tests abroad. Mr. Sachs, Mr. Collins and Commander Welsch spoke on this subject at some length.

The particular test which occasioned primary interest was that of a large warehouse floor of Karri and Jarrah wood comprising supports of timber, beams of timber and a floor of timber, the whole carrying a load of 200 lbs. per square foot and being subjected to a fire of gradually increasing temperature up to 2,000 degs. Fahr. for a period of two hours.

Another test was with Karri and Jarrah hardwood doors

**MCNEILL'S FELTS** Roofing, Inodorous, Sarking, Dry Hair, Damp Course  
**MCNEILL'S SLAG WOOL** (Silicate Cotton), for Fireproofing and Soundproofing.

AS SUPPLIED TO H.M. GOVERNMENT, WAR OFFICE, ADMIRALTY.

*Lists, Samples, and full Particulars free on application to—*

**F. MCNEILL & CO.,** HEAD OFFICE, BUNHILL ROW, LONDON.  
 SLAG WOOL WORKS, KIRKINTILLOCH, near GLASGOW.

**TUBES**  
 AND  
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**GRAVES' PATENT ROOFING**  
 CONTRACTORS TO HER MAJESTY'S GOVERNMENT.  
 For WORKS, STORES, PAVILIONS, STATIONS, &c.

FIBROUS ASPHALTE FOR DAMP COURSE, AND FELTS FOR LAYING UNDER WOOD-BLOCK FLOORING, SLATES,  
*Experience proves it to be WEATHER-PROOF, ROT-PROOF, and FIRE-PROOF.*  
 SAMPLES, PRICES, AND FULL PARTICULARS, APPLY  
**GRAVES' PATENT ROOFING CO., 14 WATER STREET, LIVERPOOL.**



In BRASS, BRONZE, and other Alloys.

**THE DELTA METAL CO., LTD.**  
 110 CANNON STREET,  
 LONDON, E.C.



ch thickness subjected to a similar fire of increasing severity the period of one hour.

The tests, which commenced at 12.30, lasted until 4 P.M., were favoured with exceptionally fine weather, but, owing to severe frost, the hose-pipes by which water was applied to the end of the large floor-test became frozen, and it was a sure to see how some men of the London Salvage Corps, were in attendance on Major Fox, came to the rescue with 3-pumps in their usual smart way.

### ELECTRIC NOTES.

A meeting of the Hull electric-lighting committee of the Corporation, in reply to an application from the School Board, is stated that the mains to the several schools would be free of charge, and the supply would be at the same rate as that of ordinary customers, the cost of the mains being estimated at 4,000*l*.

The site of the generating station for the Inner Circle when converted to electric traction has been acquired, and the construction of the station will be immediately commenced. The station will be built in Lot's Road, Chelsea. The work of lining the tunnels and installing the plant will not, however, be started for some time—probably two or three months—but all probability it will be finished simultaneously with the generating station, in approximately two years' time.

As the result of the municipal working of the electric trams and the electric lighting of Liverpool it has been found for the year 1901 there are considerable net profits, amounting in the case of the tramway system to 52,000*l*., and that of the lighting system to 24,000*l*. The respective committees have decided to devote 25,000*l*. to the relief of local rates, the result of which will be a reduction in the rating of the city of 2½*d*. in the pound. It is also proposed to reduce the charge for electric light from 4*d*. per unit to 3½*d*.

MR. A. A. G. MALET, inspector of the Local Government Board, held an inquiry at the Hunningley Lane Board schools, Liverpool, into the application of the District Council for permission to borrow 4,445*l*. to complete the works of sewerage disposal. Mr. McCallum, the engineer, was cross-examined by Mr. Jos. Tomlinson, a ratepayer, as to whether or not the boring done ought not to have altered the state of the land, but he argued that it was quite

impossible, from the quantity of boring done, to obtain accurate knowledge of the state of the subsoil.

At Alloa, N.B., on the 16th inst., the bailies and councillors of the burgh, and a large number of ladies and gentlemen, witnessed the formal inauguration of the electric lighting of the principal streets of the town. The first of the massive engines for working the dynamos was started by Mrs. Landor, wife of one of the directors; the second by Mrs. Stewart, wife of Mr. Stewart, chairman of the Electric Plant Company; the arc lights in the works being switched on by Mrs. Arrol, wife of Bailie Arrol. The company afterwards adjourned to the Municipal Buildings, where a cake and wine banquet was provided by the provost, magistrates and councillors.

THE electric current has been credited with being the cause of a large number of fires, and it seems only right it should atone for its delinquencies in dealing out destruction by being also commandeered into service for extinguishing fires. This consummation of ingenuity has been attained by Messrs. Merryweather & Sons, of London, who supply machines actuated by the current that project powerful jets immediately on the discovery of a fire. This system has been applied to Hatfield House, Stanford Hall, Norbury Park, and other country houses. The quickness with which the whole thing can be put into action commends the arrangement as a supplement to or even as a substitute for ordinary fire-extinguishing appliances.

At a meeting of Hamilton (N.B.) Town Council on the 14th inst., the joint committees on streets and electric lighting recommended that the poles in connection with the proposed electric tramway should be utilised, lamps to be fitted on the centre poles, and hanging lamps on the side poles, with the McKenzie base for accessories, at an estimated cost of 83*l*. This was agreed to. The electric-lighting committee reported that they had considered two offers by electric-lighting companies to carry out the electric lighting of the burgh, but in view of the opinion of their engineer, the committee recommended that the Council should carry out the work. In moving the adoption of the report, Mr. Meechan, convener of the committee, argued strongly against giving their territory away to any private company which would compete against the gas-works.

THE Abingdon Town Council having applied to the Local Government Board for approval of the sale of so much Con-

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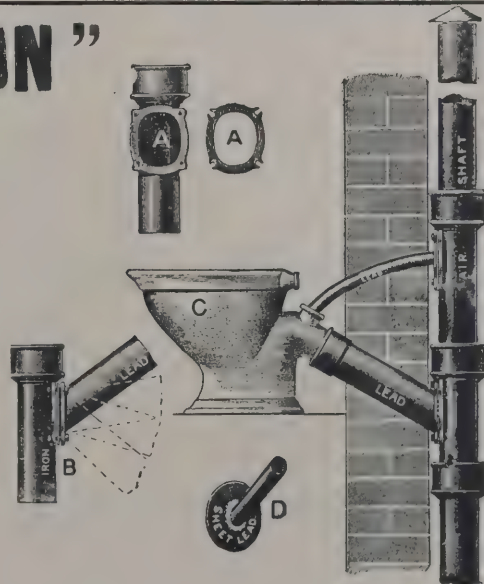
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solidated Stock as will produce the sum of 898 $\frac{1}{2}$ ., and the appropriation of the sale proceeds in defraying the cost of the extension and improvement of the cattle market, Lieut.-Colonel A. C. Smith, R.E., held an inquiry at the Council chamber on the 21st inst. The town clerk explained that the money was required to purchase eight cottages at a cost of 425 $\frac{1}{2}$ ., a piece of ground for 100 $\frac{1}{2}$ ., and to erect additional pens, &c., to meet increased requirements in connection with the market, which had considerably increased since the Corporation acquired the original site some fifteen years ago. The mayor, Alderman Morland, said that the Council contemplated the expenditure for the general good of the town by extending the market, which must bring trade to the town. At the close of the inquiry, at which there was a small attendance, the inspector visited the market.

THE Harrogate Corporation have for some months past had under consideration a sewerage scheme, and had practically decided upon adopting a comprehensive one to do away with the existing farms and treat the sewage on land near to Ribston. At the invitation of the Corporation, Mr. C. Fox Strangways, geologist, has been making a survey of the district, and in face of his report the committee have been reluctantly compelled to abandon the comprehensive scheme, because of the necessity of having to drive a tunnel, there being a probability of interfering with the Harrogate springs. The committee have decided to recommend the Council to adopt a scheme whereby the sewage of the southern portion of Harrogate will be treated near Ribston, and that of the northern at Bilton. This will mean the dividing of the scheme, the abandonment of the present sewage farms, and will not necessitate the driving of a tunnel. The Knaresborough Urban Council and the Knaresborough Rural Council, however, object to the Bilton scheme, and will oppose it.

AT last week's meeting of Plympton Rural District Council the small-pox committee reported having obtained offers for five sites suitable for the purpose of erecting a hospital on terms which they considered would be acceptable to the Council. The committee desired to have power to close with one of these offers after further negotiations with vendors, either to buy or obtain a lease. The committee had also considered the erection of a hospital, and thought a corrugated iron building with twelve beds, nurses' quarters, kitchen, laundry, &c., also mortuary and ambulance shed, should be provided, the cost of which will be about 720 $\frac{1}{2}$ ., exclusive of land, fences and drains. The committee thought this amount might be divided into

three yearly instalments. The committee asked to be empowered to arrange for the construction of such a hospital with the least possible delay. Mr. W. J. Woollcombe, moving the adoption of the report, said the provision of hospital was extremely important, and the Council must find that it could not be postponed. It was necessary that the Council should deal promptly and in a business-like way with the matter. To complete the scheme the cost would be between 900 $\frac{1}{2}$  and 1,000 $\frac{1}{2}$ . Mr. Giles seconded, and the report was adopted.

THE annual return of electricity undertakings provides material for an interesting comparison between company and municipal management. There were 271 urban electric-light businesses last year, of which 181 were under municipal control and 90 under companies, so that, so far as numbers go, public enterprise has much the best of it. The average profit made by companies was 5 per cent., and by municipalities 4.30 per cent. The average charge made to consumers under companies was 4.94 $\frac{1}{2}$ d per unit, and under municipalities 3.82 $\frac{1}{2}$ d per unit. The public therefore makes 70 per cent. less profit than private enterprise, but far more than makes up for this by having to pay 20 per cent. less for its light.

THE Bath City Council have under consideration a report from an inquiry committee which has been sitting with instructions to investigate the past history and future of the electric lighting undertaking, consequent upon the failure last November and the generally unsatisfactory condition of the undertaking. The published report, which includes that of Mr. Manville (Kincaid, Waller & Manville), who was called in to give expert advice, comprises 124 pages. The committee severely criticise the management of the undertaking by the committee which has been superseded. The first cause of accidents which had occurred is the defective system adopted by the old company and perpetuated under the Corporation management. They find further that the whole of the high tension mains laid up to the end of February 1901 are of an obsolete type, the value of the concentric cables having been fixed and established for many years previous to this date. The switchboards were bad in design, and should have been replaced some time ago. The committee find that the failures were a necessary incident of electric-light production, and might have been avoided; but they advanced the proposition "that with properly equipped works and capable management electric lighting is a safe and profitable investment, and is being carried on successfully by numerous public bodies."

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WEY HALL, CORNWALL. CORNER IN DRAWING-ROOM.  
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ious parts of the country." Mr. Manville, in his recommends the Council to reconstruct the works cost of 70,000*l.*, which would also allow of the ing annually of 23,800 more eight candle-power lamps. imates a total income of 18,370*l.* The working expenses be 8,125*l.*, leaving a gross profit of 10,245*l.* The it and repayments on the present loans (amounting to *l.*) is 5,732*l.* annually, and on the prospective loan of *l.* it would be 4,200*l.*, leaving a net profit of 312*l.* This only be when the 23,800 more lamps were connected. Manville advises the Corporation that a further profit be made if they undertook to supply current to the tram-company, to do which a further capital outlay of 6,000*l.* be necessary.

## BUILDING AND BUILDERS.

st week's meeting of the Hull watch committee it was d to advertise for tenders for the erection of the pro- new police-station. The plans have been for some time eted, and the building, which will be on the south side of w street running from the Town Hall to Whitefriargate e, will have a fairly imposing appearance. The cost of the ng will, it is expected, be about 25,000*l.*

IE foundation-stone of a new church at Fairhaven, m, has been laid. The church, which will be known as ul's, Fairhaven, is to be built on a site given by the lord manor, Mr. J. Talbot Clifton, who has also contributed er annum towards the endowment. The architect is Mr. and Taylor, of Manchester. The seating accommodation e for 450 and the cost of the nave, chancel and south aisle to be built) about 6,000*l.*

THE annual exhibition and competition in connection with the Border Counties Master Painters' Association took place last week in the Burns Hall, Galashiels. The prize competitions for apprentices and journeymen were well supported, the work sent in being of a high standard, and in many cases competition was so close that the judges had great difficulty in deciding the prize-winners. The gold medal for general excellence of the work exhibited by apprentices, presented by Mr. Latto, president of the Scottish National Association of Master Painters, was awarded to Mr. J. Archibald, Galashiels.

THE memorial-stone of the new Hutchesontown (N.B.) Congregational church was laid on the 25th inst. The new buildings occupy a site adjoining the old iron church, and they have an attractive frontage in Rutherglen Road. Messrs. James Salmon & Son, 53 Bothwell Street, Glasgow, are the architects, and the style is Gothic, based on the old colleges of Cambridge. The church is situated at the back, and has seating accommodation for over 400 persons, and in the front portion of the buildings there is a large hall, with seating accommodation for 250, and a couple of smaller halls, capable of seating 70 and 50 persons. The total cost of the buildings is estimated at over 3,000*l.*

## VARIETIES.

A NEW mission church erected at Castle Street, Edgeley, Stockport, in St. Matthew's parish, has been opened. The structure has cost 500*l.* It will seat 500 persons.

A NEW Independent Methodist church was opened on the 19th inst. at Stockton Heath, near Warrington, by the president of the Connexion (Mr. John Crumblehulme, of Bolton). The cost is 1,200*l.*

THE Cheltenham general purposes committee has reaffirmed its recommendation to the Town Council to buy the Lloyds Bank site for the erection of municipal offices. The work in connection with the new municipal concert hall has been begun.

As a steam roller was passing over a bridge on the river Brain at Braintree the structure gave way. The driver, hearing a crash below him, shut off steam and leapt out of danger as the roller sank through, carrying timbers and masonry before it. Happily, no one was hurt, but the damage was considerable.

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THE restoration has now been completed of the Yateley Church porch. A new Portland stone floor has been fixed, and two oak benches have been added, one on each side. On the upright beam above the outer arch, an antique wooden figure of St. John the Evangelist carrying a Bible in his right hand has been placed. An oak door, recently put in the Norman archway, completes an excellent restoration of the porch, which has been carried out at a cost of 85*l*.

SIR JOHN NEILSON CUTHBERTSON, chairman of the School Board, Glasgow, recently opened the new Central School, Perth. The new school has accommodation for 620 children, and comprises ten classrooms, apart from teachers' rooms, while it is fitted up with the most modern sanitary, heating and electric-light arrangements. The company afterwards proceeded to the Caledonian Road school, where Sir John formally opened a new workshop, cookery-room, laundry and gymnasium. The total cost of the new school is 12,970*l*., while the cost of the extension at the Caledonian Road school is estimated at about 500*l*.

AT the annual meeting of the Hawick Archaeological Society on Tuesday evening Dr. Brydon, the president, spoke on the archaeology of the district. The Society, he said, had had a very prosperous year. The papers had been numerous and valuable, the attendance at the monthly meetings good, and some interesting contributions had been made to the museum. The district was rich in archaeological remains, and afforded ample scope for antiquarian research. In addition to a group of about fifty hill forts or camps there was the Catrail, extending many miles, besides the Moat, numerous border towers and peels. He was greatly in favour of the Moat being tunnelled with the view of ascertaining its nature.

ON the afternoon of the 16th inst. the new Wesleyan church at Ripponden was formally opened. It occupies a capital position on the hillside, in close proximity to the site of the old building. It is built of stone in the Late Gothic style, and consists of nave 59 feet long by 35 feet and transepts, 20 feet wide. The total width of the church across the transepts is 51 feet. At the end of the church nearest the entrance there is a gallery. At the rear of the church there are two vestries, with lavatories and an organ chamber. The ceiling and the pews are all of pitch pine. The church will accommodate 409 adults, or a mixed congregation of 540 persons. On account of the great slope of the ground, ample space was afforded for a lecture hall 51 feet long under the rear

of the church. Mr. John Mills, of Derby and London, w. architect, and the inclusive cost is expected to work about 3,000*l*.

NEARLY twelve months ago mention was made in notes, says the *Morning Post*, of the reputed corrosive of non-flammable wood on textile fabrics, and it was stated the Admiral-Superintendent at Portsmouth had ordered chests of drawers to be made—one of ordinary wood and other of non-flammable wood—and similar materials placed in each. These chests of drawers were placed in the Admiral Superintendent's office. It was originally intended the test should extend over three months. Eventually, however, the period was extended to a year, and as that time has now expired, and as the chests have been frequently opened during intervening months, and nothing has been heard of any detection of the material—a matter which would be sure to have leaked out—it may be pretty well assumed that no evidence incriminating non-flammable wood has been obtained from experiment. It has been contended by the advocates of material that the trials which have hitherto been given to the Royal Navy have been unintentionally unfair, and that regard to the alleged "sweating" and other defects, the yard authorities are at fault in not having treated the matter properly in the first instance. On this point no one outside a very limited circle can know anything.

### TRADE NOTES.

MACKAY'S patent direct-acting invisible roof ventilator supplied by Messrs. Cousland & Mackay, ventilator engineers, Glasgow and Manchester, have been used for ventilation of the New United Free Gaelic church, Paisley, Glasgow.

THE additions to the County School, Neath, are warmed and ventilated by means of Shorlands' patent Manchester grates, the same being supplied by Messrs. Shorland & Brother, of Manchester.

MESSRS. FOSTER & TIDNAM, timber, slate and general merchants, of Wisbech, announce that the partnership hitherto existing between them has been dissolved by mutual agreement, and that the business will henceforth be carried on in the style of Foster & Sons.

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alterations in connection with the churchyard at the e, which is situated next to the Bible Society in Queen oria Street, have now been completed. In place of the and ugly blank wall, new wrought-iron railings and stone with carved vases have been erected. The wrought-iron s are given by Mrs. Banister Fletcher, in memory of her husband, who was churchwarden. The churchyard has laid out in terraces and covered with turf, exposing one e best samples of Wren's churches to public view, and ng another green spot to London's dingy exterior. The e work may be reckoned one of the public improvements e City of London. There is to be no opening ceremony. work has been designed and carried out under the super- idence of the architects, Messrs. Banister Fletcher & Sons. keys, if required, are to be obtained from Mr. Thomas J. ffen, 30 and 31 St. Andrew's Hill (adjoining), Queen oria Street, E.C.

**SMOKELESS CITIES.**

alluring picture of the city life of the future was n by Principal Lodge at a meeting of the Birmingham iversity Engineer Society, says the *Birmingham Daily*. Dr. Lodge is a reader of the signs of the times, and in of developments in the engineering world he makes an esting forecast of the lines upon which such developments e expected to take place in the future. He believes that as a fuel will largely take the place of coal, that hall thus get rid of the smoke nuisance in towns, that there will be many great improvements in locomo- mainly in the direction of motor-car traffic. Referring to the latter subject he spoke of the overhead electric m as "very well for the present," but thought that the e lay with one or other of the surface contact systems h had been or was about to be introduced. He would like e electric trams treated in some measure as railways, use their speed, if unrestricted by legislation, could easily e high as 30 miles an hour. In Canada electric cars were ed to run up to 15 miles an hour, but they went 10 miles the country, and then, said the Principal, to the amuse-

ment of his hearers, "you have to keep your hair on." It was possible to live 10 miles from a city out there, and yet get in to business in a little more than 10 minutes. In the crowded parts of a city like Birmingham it was necessary to put loco- motion underground, but that was not altogether desirable.

There should be, he thought, a differentiation of traffic according to the speed of the vehicles. Swift vehicles, horses or motor-cars should be required to take certain streets; slow-moving waggons, brewers' drays and the like, which now sauntered down the middle of the road, knowing not nor caring who might run into them, ought to be at least required to keep on their proper sides, and should be as far as possible excluded from the main thoroughfares. If electric trams ran along the side streets they would be as accessible as an underground railway, and could travel a good deal faster than they did at present. Dr. Lodge indulged in some jests at the expense of the moving platform suggestions. They might have a sort of circle railway, he said, with a slow train constantly running round it. True, it would be somewhat of a gymnastic feat to jump aboard, especially for old ladies, but this might be obviated to some extent by having the platform moving also, at a slower rate. It would be very nice to have a travelling sidewalk, so that one might take a tour of the shops standing still, or even sitting on a camp stool. Speaking seriously on the question of the motor car and motor waggon, he thought these had a great future before them, especially the motor waggon. This part of the country was admirably adapted for developing the industry. The motor waggon might well com- pete with the railways in the transport of goods, and it would serve to open up the country districts and redistribute popula- tion.

Great developments might well be made in the speed of railway travelling, especially if the railways were relieved to a great extent of goods traffic. The only thing which prevented very high speeds was the air resistance, and at the present time trains were built up as if air resistance was just the thing in which they most delighted. Nobody would think of building up a ship consisting of a string of square carriages, one tied loosely on to another. The first law of motion was that a body once started went on until it was stopped. What a locomotive was doing, with all its puffing and pretence, after it had started, was not propelling the train, but making eddies in the air—overcoming air resistance. If the train were made cigar-shaped, and the carriages connected up with flexible connections, it might be made to travel at

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tremendous speed with a small expenditure of power. There was a great future in some countries for the utilisation of water power to generate electricity for the driving of trains or for other power purposes. Open carriages could then be put on, for there would be no smoke or dirt from the engines, and railway travelling, especially through grand scenery, would become a real pleasure.

Then the University Principal turned to the consideration of the great fuel question. Incomplete combustion and bad coal were, he said, responsible not only for the grime of railway travelling, but for the dirt and smoke of towns. He held that the heating of towns, and to some extent of furnaces also, could be done very much more conveniently and cleanly by means of gas. The present gas fire was not satisfactory. It often smelt, and was then an abomination. This was mainly because the price of gas was so high that nobody dared burn enough of it to get a good draught. As a matter of fact, a coal fire was a gas fire, except that it also consumed coal tar and asphalt, and sent their fumes up the chimney to poison the atmosphere. When we burnt coal on a fire we were simply making gas on the premises, and making it very badly. It would be much better to make it somewhere else, say at the pit's mouth, where coal was cheap—he was not sure that it should not be made down the pit itself, and then it would obviate the raising of coal, and to save the coal-tar and asphalt. Gas for fuel should be supplied in such large quantities that it could be sold cheaply. The great difficulty would be in the way of mains. Such a revolution in fuel would be a great boon in many ways. There would be no fires to lay and make up, no ashes to rake out and cart away, no coal-cellars would be needed, and the household would be saved all sorts of trouble. Best of all, there would be no smoke. He did not think we at all realised what city life would be if the air were only clear. Picture London without its fogs. They sometimes hung over that city for a week. He was almost tempted to wish they would last longer, for then the citizens would be forced to do something to remove the cause. At the present time the air was only fit to breathe in this country where there was nobody to breathe it. Where the great bulk of the population lived it was polluted with smoke. We were simply breathing bad air and expelling air which was a little better. He hardly dared to think what our lungs were like after inhaling smoke particles for a long course of years. He did not mean to say that, comparatively, Birmingham was very

bad. As a matter of fact, it was much better than many large towns. When we had completely adopted electric lighting and gas for fuel there would be a tremendous revolution in the conditions of life. The day might come when municipalities would pass by-laws prohibiting any such stuff as coal being brought within the city boundaries.

### GREAT CANALS OF THE WORLD.

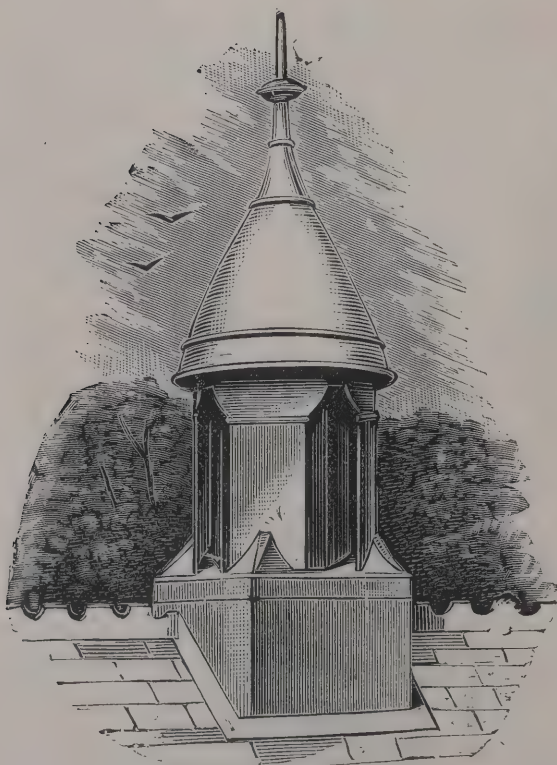
"GREAT Canals of the World" is the title of a study prepared by the United States Treasury Bureau of Statistics for publication in the forthcoming volume of the "Monthly Summary of Commerce and Finance." It shows the commerce, cost, and dimensions of the great canals of the world, especially those connecting great bodies of water, and which may be properly termed ship canals.

Ship canals connecting great bodies of water and of sufficient dimensions to accommodate the great modern vessels plying upon such waters are of comparatively recent production and few in number. The one great example of works of this character which has been a sufficient length of time in existence and operation to supply satisfactory data as to cost, maintenance and operation and practical value to the commerce of the world is the Suez Canal, and for this the available statistics begin with the year 1870, while its new and enlarged dimensions only date from the year 1896. For the Sault Ste. Marie Canal, connecting Lake Superior with Lake Huron, statistics date from 1855, though for the canal in its present form they cover only about four years. Statistics of the Welland Canal date from 1867, but for the canal in its present enlarged form cover only two years of operation. The other great ship canals of the world are of much more recent construction, and data regarding their operation therefore cover a comparatively brief term, and in some cases are scarcely at present available in detail.

The artificial waterways which may properly be termed ship canals are nine in number, viz:—

1. The Suez Canal, begun in 1859 and completed in 1869.
2. The Cronstadt and St. Petersburg Canal, begun in 1824 and completed in 1890.

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The Corinth Canal, begun in 1884 and completed in

The Manchester Ship Canal, completed in 1894.

The Kaiser Wilhelm Canal, connecting the Baltic and the North Sea, completed in 1895.

The Elbe and Trave Canal, connecting North Sea and the Baltic, opened in 1900.

The Welland Canal, connecting Lake Erie with Lake Ontario.

and 9. The two canals, United States and Canadian respectively, connecting Lake Superior with Lake Huron.

The description which is given of each of these great waterways shows that the length of the Suez Canal is about 163 miles, the cost 100,000,000 dols., the present depth 31 feet, and at bottom 108 feet and at the surface 420 feet, and that the number of vessels passing through it has grown from 486 in 1870 to 1,494 in 1873, 2,026 in 1880, 3,389 in 1890, and 3,441 in 1900. The tolls charged are about 2 dols per net registered ton.

The Cronstadt and St. Petersburg Canal, which gives a new gateway for great vessels to St. Petersburg, is 16 miles long, including the deepening of the bay channel, 20½ feet in depth, and the total cost estimated at 10,000,000 dols.

The Corinth Canal, which connects the Gulf of Corinth with the Gulf of Ægina, is 4 miles in length, 26½ feet in depth, 25 feet wide at the bottom, cost about 5,000,000 dols., and reduces the sailing distance about 175 miles. The average tolls charged are 18 cents a ton and 20 cents a passenger.

The Manchester Ship Canal, which connects Manchester, England, with the Mersey River and Liverpool, was opened in 1894.

Its length is 35½ miles, depth 26 feet, width at bottom 100 feet and at the surface 175 feet, and cost 75,000,000 dols. Commerce on the canal shows a growth from 79,204 tons in 1895 to 1,492,320 tons in 1900.

The Kaiser Wilhelm Canal, which connects the Baltic and the North Seas through Germany, is 61 miles in length, 29½ feet in depth, 72 feet wide at the bottom, 190 feet wide at the surface, and cost about 40,000,000 dols. The number of vessels passing through it has increased from 19,960 in 1897 to 25,000 in 1900, of which number 16,766 were sailing vessels.

Tonnage in 1897 was 1,848,458, and in 1900, 4,282,094 tons. An additional canal, connecting the same bodies of water by the Elbe and Trave rivers, was opened in 1900. Its length is 41 miles, depth about 10 feet, width 72 feet, and cost 10,000,000 dols.

The great North Holland Canal, which connects Amsterdam with the sea, cut in 1845, but deepened at a later date, has now a depth of 20 feet and a width of 125 feet at the surface. The Caledonian Canal, which connects the Atlantic and North Sea through the North of Scotland, is 17 feet in depth, 50 feet in width at the bottom, 60 miles long, cost 7,000,000 dols., and is at its highest point 94 feet above sea level. The Canal du Midi, cut through France from Toulouse on the Garonne to Cette on the Mediterranean, a distance of 150 miles, is 6½ feet deep, 60 feet wide, and 600 feet above sea level at its highest point, and has 114 locks—total cost, 3,500,000 dols.

In America the canals connecting the Great Lakes are the principal ship canals, and are three in number—the Welland Canal, originally constructed in 1833, and enlarged in 1871 and 1900; the Sault Ste. Marie, or St. Mary's River Canal, opened in 1855 and enlarged in 1897; and the Canadian Canal at St. Mary's River, opened in 1895. The American and Canadian Canals at St. Mary's Falls are practically identical in location and dimensions, and are used interchangeably by vessels engaged in commerce, as convenience may dictate. The depth of the canals at the St. Mary's River is sufficient to accommodate vessels drawing 20 feet of water. The American Canal was originally constructed by the State of Michigan, but subsequently was taken charge of by the United States and enlarged at a cost of 2,150,000 dols. The cost of the Welland Canal was about 30,000,000 dols., largely due to the fact that twenty-five locks are required in surmounting the rise of 327 feet in the distance of twenty-seven miles. The number of vessels passing through the canals at St. Mary's River has greatly increased during the last few years, while the number passing through the Welland Canal has materially decreased, the number passing through the St. Mary's Canals being—in 1873, 2,517, and in 1901, 20,041, of which 15,837 passed through the United States Canal and 4,204 through the Canadian. The number of vessels passing through the Welland Canal has decreased from 6,425 in 1873 to 2,202 in 1899. The marked contrast between the business of the St. Mary's Falls and Welland Canals is largely due to the fact that the freights originating in the Lake Superior district are chiefly discharged at Lake Erie ports, and those destined for the Lake Superior region are chiefly produced in the section contiguous to Lake Erie, the Lake Superior freights being chiefly iron, copper and grain, and the Lake Erie freights for Lake Superior coal and manufactures. The business of the St. Mary's Falls Canals by far surpasses in volume that of any other canal of the world,

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the freight tonnage of the American and Canadian canals combined being in 1901 24,626,976 registered tons, while the net tonnage of the Suez Canal in 1900 was 9,378,152 tons, and that of the Kaiser Wilhelm Canal 4,282,094 tons.

### THE BIRMINGHAM SEWAGE FARM.

BIRMINGHAM possesses no Thames, no Mersey, no Ship Canal. It has acquired, however, a pretty considerable strip of the Tame valley, and there, says a correspondent of the *Birmingham Daily Post*, the whole of its sewage is very thoroughly dealt with. In this great scheme the city does not stand entirely alone. She is the predominant partner in what made be referred to as the Tame and Rea Drainage District Company, Unlimited, the junior partners in which are Aston Manor, Smethwick, Handsworth, King's Norton, Erdington, Sutton Coldfield, and a collection of villages such as Castle Bromwich, Water Orton and Perry Barr. Included in this district is a population of about 825,000, Birmingham itself supplying 550,000.

The magnitude of the scheme is what most impresses a casual visitor. Mile after mile the farm stretches away from Saltley to Forge Mills, a full seven miles in all. The width of that part of the valley belonging to the Board varies from half a mile to a mile and a half. There, on 2,824 acres of land, the drainage from near upon a hundred square miles of country is purified and disposed of. The normal dry weather flow of sewage into the Saltley works is no less than 25,000,000 gallons. If it could be diverted into such a reservoir as the extensive and familiar one at Shustroke, it would fill it to overflowing in about eight days. But when the heavy rain-storms sweep over this 90 square miles of drainage area, and every drain and sewer is filled with the madly-rushing torrent, then the outfall at Saltley may be increased to as much as 200,000,000 gallons in a day. Remembering that the farm is 2,824 acres in extent, and that the sewage after preliminary treatment has to be distributed over this wide area, it may be imagined that a good many miles of channels and pipes are required. Most people will, however, be surprised to learn that if all these distributing sewers and conduits, with the drainage pipes and effluent channels, could be placed end to end, they would extend from Birmingham to John o' Groat's. Communication with every part of the farm is

secured by means of a very complete system of roads traverse every yard of which one would have to cover—as the works now in progress are completed—a distance great as that from Birmingham to Warwick, for the roadways on the farm have an aggregate length of twenty-two miles. The scheme being of such magnitude may readily be imagined that an enormous expenditure has been expended on purchasing and laying out the land, equipping the works. This is, of course, quite apart from maintenance expenditure, which amounts annually to 88,000*l.* gross.

The bacteriological treatment of sewage has been so discussed of late that the fact that all treatment of sewage except precipitation, is really bacteriological, has been lost sight of. The system adopted at Tyburn is what is really known as the broad irrigation, yet the ubiquitous bacteriologist plays so important a part that he is practically the only guiding agent, all the engineering and agricultural schemes are carried out being arranged simply in order to give the bacteriologist room and opportunity to do his work. The first process through which the raw sewage goes on arriving at the Saltley works at Saltley is the purely mechanical one of precipitation. So many of the streets and roads in the drainage area are macadamised that tons of road dirt find their way into the sewers, and are carried down to Saltley. Solid matter of this kind is extracted by passing the sewage so slowly through enormous tanks as to allow the particles to settle upon concrete flooring. When the liquid has passed away the deposit dries, and being almost identical in composition with the earth, it can be used for making up roads or similar purposes. Sludge of a less solid nature is collected in the second and third chambers of the tank, and is carried away by means of the long troughs on to land in the vicinity and dug in. Gravitation having played its part, the bacteriologist takes the field. From the sedimentation tank the liquid is run off into what are known as septic tanks. Micro-organisms, inconceivably small and numerous, live in the little lives in the foul depths of these tanks. If you took a handful of the liquid you would probably be holding a few millions of them. They attack all the living organic matter contained, and so break it up that the bulk becomes even more liquid than when it entered the tanks. That chemical changes of a more or less violent character are there taking place

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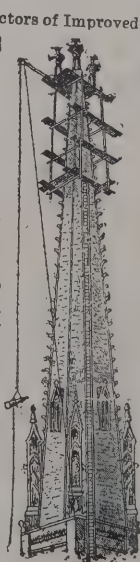
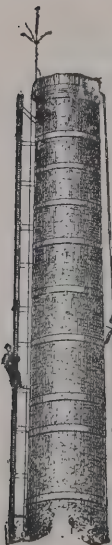
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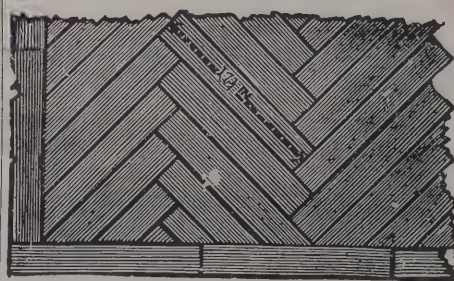
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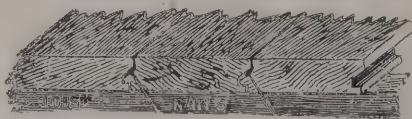
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enced by the continual seething of the mass, and by the that gas is given off in such quantities that under favourable conditions it can be set alight. The inorganic solids are en to the top, where they form a semi-solid crust, upon ch grass and other herbage grows. Many a dog has taken these treacherous surfaces for solid pastures, and has the penalty by dropping through the thin crust, while it is that two or three workmen, whom liquor had made un- ceptive, recently tried a short cut across, with exceedingly easant consequences.

The anaerobic variety of bacillus having done its work in airless, lightless depths of the tank, the liquid is drawn off the distributing mains which carry it to the furthest limits he farm, and flow it out on to the land. It sinks into the only to be attacked by another type of bacteria, the aerobic, ch finishes the purifying work of decomposition, and cons the matter into such elemental fertilising soil constituents can assist in the support of vegetable life, ready to go ough that wonderful cycle of transformations which may nately bring it once more to the outfall works. Thus ave a chapter in the strange story of how nature motes and supports life, and keeps the balance even. what is known as the bacteriological process of sewage osal exactly the same thing happens, but in large ks instead of over a wide area of land. A superficial a of one acre of tanks will do the same work as nty-five acres of land; and looking to a time when the dily increasing requirements will have absorbed all the d available, Mr. Watson is already preparing for the laying n of tanks on the bacteriological plan. When the works resent in hand have been completed the whole of the land he farm which can be utilised will be taken up, but there d be no present alarm on that score. Curiously enough in soil does not carry out the work of purifying so well as hich has been charged with dilute sewage for some time, a long period elapses before the ground becomes so erated that the chemist who analyses the drained-off ent cries, "Hold! enough." It was formerly the practice alley to treat the sewage with immense quantities of lime. s undoubtedly assisted the preliminary process of precipita- g, but the present engineer maintained that it also killed off eat proportion of the hard-working micro-organisms. The e treatment has therefore been abandoned and an annual ng of 3,000l effected.

From the extensive area which the drainage Board has

under their control, it may be gathered that they are farmers upon a pretty extensive scale. The 2,824 acres is split up for this purpose into three farms, each under the care of a bailiff. Agricultural results being only of secondary importance, however, farming is carried on under some difficulties. The anxious bailiff, jealously watching a promising crop, may any morning receive an unwelcome intimation that, owing to a heavy fall of rain over the drainage area resulting in an abnormal flow of sewage, his land must be flooded, and his crop, perhaps, all but ruined. The land, though exceptionally prolific in some directions—as many as six and seven crops of grass are often harvested in a year—is entirely unsuited for cereals, potatoes and some other products. Root crops, cabbages and rye grass, however, flourish in the moisture-charged ground, a good deal of stock is kept to consume the surplus food stuffs, and from the sale of stock and produce the Board last year derived a revenue of no less than 23,000l. The effluent drawn off the land by an elaborate system of drainage is discharged into the river Tame, through which it flows into the Trent, and ultimately finds its way to the sea. The Tame being so insignificant, it is very largely augmented in this way. Its volume is, in fact, practically doubled. At short intervals, along all the effluent channels, openings are arranged, so that a sample of the water can be secured for analysis by the chemist who resides upon the farm. From the analysis frequently taken the engineer is made acquainted with the condition of every field as a purifying agent, and he varies the method and extent of irrigation to suit the object in view—that of securing an absolutely non-putrification effluent. This, we understand, is invariably obtained. There are directions in which science may be further applied on the farm in the near future, for the introduction of machinery to force the sludge to the limits of the farm by compressed air is projected, with also an installation of electric power for driving the pumps required at various points, which is now done by means of portable steam-engines.

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fall. It was recently brought to light that decay had set in very extensively in the stonework, and although questions were asked in the Town Council the answers were indefinite. The latest disclosures have shown a serious state of matters. When the original specifications were issued for the contract it was agreed that the stone should be taken from either of two quarries supposed to be the best in Scotland. They were, however, new quarries, and to some extent it may be said that the stone was experimented with, a fact at which some of the citizens are now inclined to grumble when it is too late. The precaution, however, was taken to impose the condition that the stone before being used should lie for one year in the builder's yard for the very purpose of insuring the building against decay. It seems to have stood that test, but the sad fact remains that decay has set in faster than in any other building in Glasgow. Various advisers were consulted when this was ascertained, and, acting on the recommendation of one of the most experienced masons in the city, it was resolved to cut out the decayed portions and apply silicate solution for purposes of preservation. It was at one time intended to cut out a number of capitals altogether, and even now no proper estimate of the cost can be got. Some idea of it, however, may be formed from the fact that about 7000<sup>l</sup>. has been spent already on one side of the building, and that at the back, facing John Street. The most alarming feature of the misfortune is that the elaborate carving is very seriously affected, and what that means nobody seems as yet to know.

### BERMONDSEY ELECTRICITY WORKS.

THE new electric lighting and dust destructor works which have lately been brought to completion by the Bermondsey Borough Council are situated in Spa Road, at the rear of the town hall and public baths, and they occupy an area of about 1½ acres. The buildings consist of a destructor-house, an engine-room containing the generating plant, a pump and fan-room, an accumulator-room and offices. The destructor-house is specially designed with the view of giving adequate ventilation. It consists of six cells, each having 26 square feet grate area, and capable of destroying 50 tons of refuse in 24 hours. The refuse to be destroyed is brought in by the collecting vans, conveyed along an inclined roadway to a tipping floor at the back of the destructors, and discharged into spacious bins placed over the tops of the cells, from which the latter are fed

as required through rectangular shoots. After passing through the shoots the refuse is deposited on a hearth at the back of the furnace, and is there thoroughly dried before the refuse burning takes place. By these means the refuse is rendered more combustible and the vapours which are given off become innocuous by being passed over the hottest part of the furnace. The gases from the cells pass out at the front and are brought into contact with the boiler tubes, and are thus utilized for the purpose of raising steam. Each cell and its furnace is fitted with forced-draught apparatus. In deciding the system of distribution most applicable to Bermondsey the engineers had under consideration the fact that the district is very concentrated and is filled with factories and workshops, and that the most favourable opportunity occurred for supplying electricity during the daytime for motive-power purposes. The alternate current system was therefore, not deemed so suitable as the continuous current system which has been adopted. The plant at present installed in the generating station consists of three multipolar generators, constructed by the Thames Ironworks Company, coupled to two engines, two of which are three-crank engines. Two sets of generators have an output of 150 kilowatts at 480 to 520 volts, and the other set an output of 75 kilowatts at 480 to 520 volts. There is also installed in the station a balancer and a battery charging motor booster. The battery, which consists of 280 cells, is capable of giving a discharge of 83 amperes at 510 volts for 10 hours, or on an emergency 300 amperes for one hour. The switchboard is an interesting construction, and is mounted on a wrought-iron frame. It consists of panels of polished brass enamelled slate. The board has been designed to control three dynamos, six feeder circuits, eight arc circuits, the hall, the depot and station lighting and power circuits, storage battery, the balancer and the battery charging motor booster. In the borough the three-wire system of mains has been adopted, and the feeder mains are at present four in number. With regard to the public lighting there are at present seventy-one standards erected, supporting ten arc lamps and the incandescent lamps. At two o'clock every night the arc lamps are permanently turned on, and the incandescent lamps lighted. The new stables, which will afford accommodation for sixty horses, are at present only fifty-four stalls are fitted up. The new depot includes workshops, stores, offices and other buildings for municipal purposes.

At the opening ceremony Mr. T. Cox (chairman of



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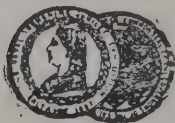
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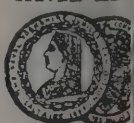


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electric-lighting committee) stated that the charge for electric lighting would be 6d. for the first hour and 3d. for each hour afterwards, based on the minimum demand system. For five-power purposes the charge would be 2½d. per unit. He remarked that the question of the disposal of the residuum from a destructor had occupied the attention of the Council, and an electrically-driven hydraulic plant for the manufacture of bricks from a portion of the clinker had been laid down. That machine would turn out flags at the rate of 25 per hour at a very low cost. The clinker was ground very fine, mixed with a proportion of cement, thoroughly incorporated and then subjected to a pressure of 1,000 lbs. per square inch, and afterwards allowed to dry.

### LEEDS BUILDERS' EXCHANGE.

Members of the Leeds and County Builders' Exchange held their annual dinner at the Hôtel Métropole, Leeds, on Monday night. There was a company of about seventy, and the chair was occupied by the president of the club, Mr. E. M. Peleby. After the loyal toasts, Mr. Paul Rhodes gave "The Lord Mayor and City Council," and referred to the many improvements in the city that had taken place within the past few years. The money thus expended, he said, had not been misspent, but would repay them in the spending. There were one or two eyesores that he wished to be removed. First and foremost there was an ugly corner extending from the Queen's Hotel to Aire Street. When was this to be done away with, and when was the Midland Company going to put up a station entrance here in the city? There was another ugly corner opposite which wanted dealing with speedily. Lastly, there was the neglected dismal pile of buildings opposite one of the grandest halls in the kingdom. If the gentlemen who owned this property had anything like an eye for beauty rather than for a few pence, it ought to be all pulled down and enable us to have a square there fit for the fifth city of the country.

Alderman Carter responded. Mr. Wood Higgins gave "The Building Committee and Officials" of the Leeds Corporation, and, in passing, remarked that work had been given to outside architects, as he was of opinion that there were men in the city who were capable of carrying out any work entrusted to them.

Mr. E. W. Batley, who responded to the toast, said that Leeds as a city was second to none in the position it occupied with regard to its sanitary arrangements and its buildings right in the way through, speculative or not. In his opinion, the speculative builder in Leeds had done good, honest work. Mr. Batley also paid a tribute to the capabilities of Leeds architects, who, he said, were as expert as any outside the city.

A word in favour of the Leeds back-to-back houses was put in by Mr. Batley, who said they were, on the whole, more comfortable and convenient for the working man and his family than the through house. The air space of these back-to-back houses was generally good, and the streets were reasonably wide.

As regarded the Midland Railway station, the Leeds Corporation had determined to do away with the objectionable goit in that district, and thus altogether improve the station and its surroundings. Under these circumstances, it would be only fair for the railway company to improve their station entrance, to say nothing of contributing a sum of money to the Corporation for the improvements effected.

Mr. Towers also responded. The toast of "The Leeds and County Builders' Exchange" was proposed by Mr. W. Bower, who observed that, so far as their Exchange was concerned, they had no jerry builders.

The toast of "The Visitors" followed.

### NEW MUNICIPAL OFFICES, CALCUTTA.

A PERUSAL of the proceedings of the special committee appointed by the Commissioners to consider the tenders received for the above new buildings is, says *Indian Engineering*, interesting in several respects. The members were Mr. Greer, the chairman, Messrs. M. C. Turner, T. R. Wynne and W. J. Bradshaw and Rai Bahadur K. N. Chatterjee, and the tenders to be reported upon were those submitted by Messrs. Mackintosh Burn & Co., Messrs. Martin & Co., Messrs. Burn & Co., and Messrs. Sarat Kumar Roy & Co. The last-named firm submitted the lowest tender, which the Rai Bahadur member recommended should be accepted, but the remaining gentlemen were not to be persuaded to make a leap in the dark, and unhesitatingly objected to entrusting a building of architectural pretensions that should be carried out with every care and artistic accuracy to a firm whose qualifica-

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tions for an important work were that they had built a large mill or two.

There was obviously a difficulty on the very face of the question, for the engineering department of the municipality had declared their inability to satisfactorily supervise the construction whether done on a wholesale contract or by piece-work. It was felt also that the control of an architect was essential to the proper execution of a work of this stamp—and very rightly so—and between this sense of inability and the status created by the contrariness of the tenders, the more thoughtful and far-seeing members of the committee realised the existence of an impassable quagmire which it was imperative should be avoided at all hazards. It is no wonder, then, that Mr. Wynne clinched the situation by the following remarks:—"Why not ask whether the Bengal Government will not undertake to carry out the work under Mr. Banks Gwyther's supervision? You have got a very good case. There is no architect in the Corporation, and this is a building which requires the services of an architect. It is a complicated building, and requires very careful construction. The Corporation must obtain an architect, but they really do not know where to look for one. Mr. Banks Gwyther has designed this building, and it will be most satisfactory if he will carry it through. These points may be pointed out to the Bengal Government, and they may be asked to carry out the construction of this building under the superintendence of Mr. Banks Gwyther." This solution of the difficulty commended itself to the committee, who unanimously accepted the proposal that the Government should be approached as suggested by Mr. Wynne.

There is something in this turn of things that must commend itself generally. But although this is so, we cannot but condemn the policy adopted in regard to obtaining tenders, and the sequel to it as it affects the contractors who tendered. The principle of lump sum tenders was wrong, and under proper advice the mistake of inviting offers on this system would have been obviated. Now, as things are shaping themselves, the four firms named have a distinct grievance, and it would be a graceful act on the part of the Commissioners, if all the tenders are to be rejected, to recoup them for their trouble in taking out quantities preparatory to tendering.

The present position, we understand, is that Government has been addressed in accordance with the resolution of the special committee, and that it now remains for the Lieutenant-Governor to decide whether he will accede to the request of the

Commissioners or not. We expect to hear that Sir Woodburn has agreed to entertain the proposal and to let the construction over to the Public Works Department contribution work.

### FOREIGN COMPETITION.

THE forty-fifth anniversary dinner of the Manchester Association of Engineers was held on the 25th inst., under the presidency of Mr. E. G. Constantine. There was an exceptionally large gathering. The guests included the Lord Mayor of Manchester (Mr. Alderman Hoy) and Mr. Stewart, a representative of the British Westinghouse and Electric Manufacturing Company, Ltd. After the dinner the usual toasts were submitted. The toast of "The King" was proposed by the President.

Mr. Joseph Nasmith, in proposing success to the Association and to the engineering and allied trades, said he was going to show they were not in that parlous condition which many people, and more especially the daily press, would have them believe. They heard a great deal about the German invasion. Well, there was kinship between British, Germans and Americans, and Great Britain need be surprised that from Germany and the United States there should come the most strenuous competition. On that point he had to say for this country, old as it was, and maligned as it was, they were not afraid of any competition. There had been a great deal of talk lately about the American invasion. Well, if eighty millions of people, of the same race and with the same virility, could not produce better results than thirty-five millions, they ought to be ashamed of themselves. At the same time, there was no reason why the old stock should be afraid of what the new stock could do, and he tested against the national habit of self-depreciation which tolled our competitors and to some extent debased themselves this habit of depreciating ourselves and of telling other nations that we were behind in the race did not cease other people would come to believe us, and then there was an end to prosperity. There was no truth in the statement that England could not do things as well as the Germans or the Americans. As regarded engineering work, Englishmen could do quite as well as anybody else; in fact, they ought to do better, because one of the chief features of the American workers was that they went in for quantity and speed rather than quality. T

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ing so, he submitted the time had come when Englishmen could cry their merits as loudly as they had hitherto promoted their demerits.

The President, in his response, endorsed the views expressed by Mr. Nasmith as to there being no cause for fear that England would not be able to hold her own in the commercial war.

The health of the guests was proposed by Mr. T. Ashbury, and responded to by Mr. Stewart, of the British Westinghouse Company. Mr. Stewart said that of the materials used in the construction of the works in Trafford Park 80 per cent. came from the United States, and the remaining 20 per cent. was got from England. Why? Because the goods could be imported for 10 per cent. less than they could have been purchased at in Great Britain. How this was he did not know. That was a question which his hearers were probably better fitted to answer than he was. In regard to English methods of work, Mr. Stewart said he thought English manufacturers made things to last too long. In America they made things to last 10 years, because experience had taught them that there was a revolution in manufacturing forms every decade. As for the future he represented, he had to say they had come over here to see one of the many. "We want to be one with you."

### ELECTRIC LIGHTING IN LEITH.

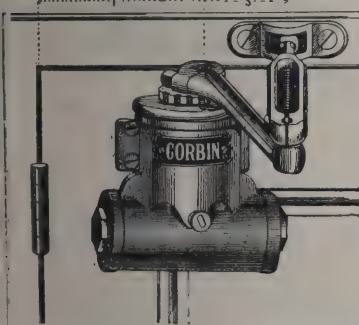
THE addition of a new large engine and dynamo to the Leith electric-lighting station, by which the power of the installation increased 50 per cent., was made the occasion of a public ceremony, which was performed by Mrs. Mackie, wife of the Provost of the burgh, on the 23rd inst. There was a full attendance of the members of the Council and their lady friends, and when the new engine was started by Mrs. Mackie, at the request of Bailie Craig, the convener of the electric-lighting committee, and under the direction of the engineer, Mr. J. Gray Scott, loud and enthusiastic cheers were raised. A few minutes later a very pretty effect was produced by the lighting of a number of lamps, artistically arranged round the new machinery. The company afterwards adjourned to the station, which adjoins the electrical department in Great Victoria Street, where tea was served under the chairmanship of Provost Mackie.

Bailie Craig, in presenting a piece of silver plate to Mrs. Mackie, explained that the new 500 horse-power engine and

dynamo which had been inaugurated that day represented the latest addition to the plant of the station, and it presented special features of a novel character as compared with the original plant. The engine exceeded in size anything they had had before, and it was of the triple expansion type. That was to say, the steam was used successively through three cylinders in place of the old method, where it was used through one cylinder, and then dissipated in the open air. That was a great economy on the power of the engine, and by special by-passes the engine could be made to work at 25 per cent., an expedient which would be found of great value for coping with the heavy load which came on at certain hours in all stations. The installation of an engine of that size proved very clearly the rapid strides they had made since the inception of the undertaking by his friend Bailie Manclark. The street lighting was first switched on on December 23, 1898, and shortly afterwards the public supply was commenced. The original plant consisted of five small engines on the north side of the engine-room of altogether 700 horse-power. It was soon found necessary to make additions to the plant, and a set of 300 horse-power was installed over a year ago, whilst the latest addition, inaugurated that day, had been installed to meet the further increasing demands for light and motive power, so that they had in their station now no less than 1,500 horse-power to generate their electricity. At the commencement of the station the consumers numbered about 80. To-day there were close upon 400. The number of public arc lamps originally was 74. The number to-day was 223. The units generated in the first year were under a quarter of a million. In the second year these increased to half a million, and during the year just ended the output had been three-quarters of a million units. The lamps connected at the outset numbered 15,000. In the second year these increased to 26,000, and at the present time they had connected a total of 35,117 lamps in eight candle-power equivalent. The revenue in the first year amounted to 3,059*l.*, in the second year to 5,839*l.*, and in the year just ended to 9,000*l.*; while in order to popularise the use of electricity for all purposes, the price, which at the outset was 6*d.* per unit for lighting, and 3*d.* per unit for motive power, had been reduced to 5*d.* and 1½*d.*, and at May 15 last these prices were still further reduced to 4*d.* and 1½*d.* respectively, and it was to be hoped this endeavour on the part of the Council to increase the consumers would meet with success. Bailie Craig then handed to Mrs. Mackie the gift which had been subscribed by the members of the Council as a tangible

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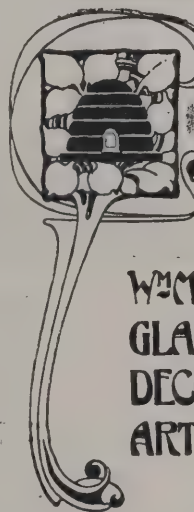
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proof of their regard and the honour she had done them in performing the service of starting the new engine and dynamo.

Provost Mackie cordially returned thanks on behalf of his wife. He took occasion to add that a few weeks ago, when passing up Leith Walk with Councillor Hislop, they found the cable cars dotted all over the place, in consequence of a breakdown, and the electric lamps in the centre seemed to say to them, "Why don't you give us a chance? We would not leave you in that lurch. We would have a constant service for you." There was no doubt the traction for tramways was electricity; and he hoped and trusted before the century was long past the Leith Corporation would acquire the tramways in the burgh, and when they did so they would certainly adopt electric traction.

A few remarks were also made by ex-Bailie Manclark, the former convener of the electric-lighting committee, who expressed his pleasure at seeing the returns going up by leaps and bounds; and by Bailie Kinnaird, on whose proposal a vote of thanks was accorded the Provost. The proceedings terminated with the singing of the National Anthem.

The new engine and dynamo have been supplied by the India Rubber, Gutta Percha and Telegraph Works Company, Ltd., Silvertown, London.

### BRACEBRIDGE ASYLUM.

COLONEL A. G. DURNFORD, R.E., Local Government Board inspector, held an inquiry on the 21st inst. into the application by the Lindsey County Council, the Holland County Council, the Grimsby Town Council and the Lincoln City Council for sanction to borrow 33,974*l.*, 17,000*l.*, 10,379*l.* and 9,532*l.* respectively for the purpose of enlarging Bracebridge Asylum. Mr. C. Scorer represented the Lindsey County Council; Mr. T. C. Johnson, Holland; Mr. J. T. Tweed, Lincoln; and Mr. J. Broadhead, Alderman Wright and Councillor Pickwell, Grimsby.

Mr. W. T. Page, clerk to the Asylum Visitors, stated the construction of the present asylum commenced in 1847, and the building was opened in 1852, the accommodation then provided being for 266 patients. Altogether about 44 acres of land were purchased, and the total cost was about 53,000*l.* In 1858 the asylum was enlarged to accommodate 410 patients, in 1865 to provide for 570 and in 1880 it was further enlarged to accommodate 680. That was the extent of the accommodation for

which the existing buildings made provision, but on January the number of inmates in the asylum was 742—357 males and 385 females—and in addition twenty-five patients were boarded out at Newcastle-on-Tyne Asylum and twenty-five at Leicester Borough Asylum. For many years the number of inmates had been slowly, steadily and persistently growing, and it was needless to say the Commissioners in Lunacy had been slow to remind the authorities of the duty incumbent upon them to provide greater accommodation. Until recently the county of Kesteven and the borough of Grantham were partners in the asylum, and when in 1895 those two authorities agreed to provide asylum accommodation themselves it was some hope that the withdrawal of their patients would render further enlargement of the asylum not so imperative as would otherwise be the case. The increase in the number of patients, however, rendered enlargement necessary, and the initial step—the Commissioners, having regard to the number of patients, requiring an additional area of land—the visitors cast about to obtain the necessary acreage in proximity to the asylum. For many years they had been in the occupation of 100 acres of arable land immediately to the east of the asylum proper, and they had now entered into a contract with Mr. Sibthorp (the owner) to buy 60 acres at 1*l.* per acre. Then, desiring to avail themselves of the expert opinion, they obtained the services of Mr. Gough, and he had prepared the plans which were now before the Commissioners. The plans had been very carefully considered by special committees of the visitors, and by the visitors themselves, who did not give their instructions to Mr. Gough without very much thought on their part as to the nature of their requirements. It would be seen from them that it was proposed to add a large block in the centre of the northern side of the asylum, and by throwing out extensive wings on the extreme eastern and western sides, accommodation would be provided for 1,000 persons, including those attendants who occupied apartments in the asylum. The Lunacy Commissioners occupied several months in considering them, and had paid Mr. Gough and the visitors the high compliment of returning them, contrary to their usual practice, without a scintilla of adverse criticism. The formal sanction, too, had been received of the Secretary of State. As to the payments by the various authorities, the portions were worked out according to the terms of agreement and had been approved of by the Councils concerned.

Mr. Gough gave evidence as to the proposed additions, and the inquiry, which was entirely formal, then closed.

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# The Architect.

## THE WEEK.

ter which has been just issued by the Home reveals that already the shortcomings of the and Workshop Act of 1901 are perceived in 1. In sub-section 3 of clause III. it is enacted ere a workshop or workplace, not being a domestic , is occupied by day as a workshop and by night ping apartment, the Secretary of State may by der modify the proportion of cubic feet of space d in this section, and substitute therefor any ures, and thereupon this section shall have effect ed by the order." The Act had only been in for about a fortnight when it was realised that the ace was altogether inadequate. The Home has therefore made the following order:— a workshop other than a domestic work- occupied by day as a workshop and by a sleeping place, the proportion of cubic pace prescribed in sub-section (1) of the said all be modified by substituting 'four hundred' undred and fifty,' and accordingly such workshop the purposes of the law relating to public health, d to be so overcrowded as to be dangerous or to the health of the persons employed therein if er of cubic feet of space in any room bears to the f persons employed at one time in the room a less than 400 cubic feet to each person." This is sufficient to demonstrate that we were not ing when we said that the majority of factories o be taken down and rebuilt. No band of white- an increase cubic capacity from 250 feet to 400. r cases will follow in course of time, and the cannot be adapted to meet modern sanitary con- without heroic operations.

controversy was at one time excited about the at could claim to have originated wood-engraving. ple process was known to the Egyptians for the a of stamps, and it has been asserted that the rnted from blocks of pear tree as early as the ury. The independent origination of the art has ally credited to Germany among modern nations. logne district a *St. Christopher*, which has often duced, was cut in 1423, a *St. Sebastian* in 1437, *Madonna* has been dated 1418. Playing-cards were, n use in France in the middle of the fourteenth d the figures were impressions from wood blocks. able for France to dispute the priority of Ger- many attempts have been made to claim the art French enterprise. M. HENRI BOUCHOT, of the ue-Nationale, now declares that a part of a block resentation of a *Crucifixion* has been discovered ry town of France. The costumes are evidently d in the middle of the fourteenth century, and it d that the wood block belongs to some time 1340 and 1350.

w of liability for injuries to third parties arising ding operations is in a rather indefinite position. as any probability of injury the building owner ade liable. But much will depend, of course, extent and character of the knowledge. If, for n an adjoining house there is a beautiful marble ith which people living in the neighbourhood inted, if only by hearsay, then any building is about to have alterations or rebuilding of a one side should take special measures that no can arise, as from the crystalline character of the slight jar in the lower part may extend through its. But when a contract is let, and the circum- a not supposed to be exceptional, the contractor is ble. It is generally felt, however, that it is better to ance doubly sure by obtaining an indemnity from ctor. A case which was tried at Bedford on y shows how, from the indefiniteness of law on the building owner, as well as a contractor, can at will

be made responsible. The circumstances were as follows:— While the site for a Board school was being cleared the outer walls of a cottage fell on two women who were passing along the public way, and both sustained injuries. Action was taken against the School Board and the contractor. The Board claimed that they were free from liability, which devolved upon the builder. The builder stated that the accident arose through a violent gale, which could not have been anticipated. Mr. Justice GAINSFORD BRUCE left the following questions to the jury:— (1) Was the builder guilty of negligence in executing the work of pulling down the cottages, and was it owing to his negligence that the plaintiffs received their injury? (2) If so, what compensation was due to the plaintiffs separately? (3) Was the work of pulling down the cottages to be done by the contractor employed by the School Board, work from which injurious consequences might reasonably be expected to arise to the public, unless means were adopted by which such consequences might be prevented? (4) Did the defendants, the School Board, see that any special precautions were taken to protect the public passing along the highway? All were answered in the affirmative. It was also found that there were dangerous elements in the work, and the School Board had neglected to take proper precautions. Damages amounting to 300*l.* and 70*l.* were awarded, and it was directed that judgment should be entered for each plaintiff for the amounts as against both defendants.

THE town of Maynooth, or as it should be called Magh Nuadhaid, in county Kildare, is known far and wide by its college for the education of Roman Catholic priests. Most of the buildings were designed by PUGIN, who seemed to be desirous of suggesting the privations which were before the students. Maynooth is also famous in Ireland from being the site of "Carton," the residence of the Dukes of LEINSTER. The name in Irish was Baile-an-Cairthe, which meant "The Town of the Pillar stone," for the majority of the old Celtic names are more or less poetic. In course of time the name was changed to The Carthyn, and later on it became Cartown, as it was still called by the people until the latter end of the eighteenth century, when the present name was adopted. About the year 1739 Carton became the residence of the Earls of KILDARE, who at that period added to the house built in the seventeenth century by the TALBOT family, and made it much as it appears at the present time. At about the beginning of the seventeenth century Carton was the residence of the famous Duke of TYRCONNEL, who was the chief representative of JAMES II., and whose weaknesses are exposed by MACAULAY in his "History." The mansion, like many others of the eighteenth century, consists of a central part united with pavilions by a colonnade. The FITZGERALDS, who are represented by the Duke of LEINSTER, were among the followers of STRONGBOW who invaded and conquered Ireland in the twelfth century. They became so powerful, they were able in the sixteenth century to ignore the authority of England for a time, but their rebellion was suppressed and some of the chiefs were executed at Tyburn. The late Queen VICTORIA visited Maynooth in 1849, and it may be the scene of a royal visit during the present year.

READERS of the "Musketeers" cannot fail to remember the Rue Picpus in Paris, leading out of the Faubourg Saint-Antoine. It originally formed part of a property called Piquepusse, outside the boundaries of Paris. A tablet has been found on one of the houses which recalls the ancient apprehensions about the growth of the city, or, rather, of its suburbs. It is dated 1726, and it was fixed at a corner of the street. It announced that by command of LOUIS XV. building was prohibited beyond the house on which the tablet was placed. In the course of years the tablet was so affected by time as to become imperceptible, but it has been at last discerned by archæologists and brought under the notice of the Commission of Old Paris. The tablet will be cleaned and restored to its former position, for it is interesting not only as a landmark, but is a relic of the severity of former building regulations in Paris.



### "SLANE IN BREGIA," COUNTY MEATH.

IN the last number of the *Journal of the Royal Society of Antiquaries of Ireland* there is a paper on "Slane in Bregia," by Mr. T. J. WESTROPP, M.A., a gentleman who has served the Society with pen and pencil during several years. Slane is a name which for the English tourist in Ireland does not conjure up much, if any, historic or legendary interest. It may be taken as one among many hundreds of similar old-world sites that never can be considered as favoured by archaeological importance. But on that account it is not undeserving of notice. Skilled painters in modern times are ambitious to make pictures out of unpromising subjects, and a great many writers of books are under the sway of a like power. It is possible, therefore, for anyone who is a skilled archaeologist to utilise Slane as well as many other localities that have been long undervalued. Each of them can be made, as it were, a microcosm, and will enable us to have glimpses of the life of men during many centuries.

The tendency of much of the modern inquiry into the past is unfortunately affected by commercialism. Frenchmen and Germans, as well as Englishmen, are always on the look out for foreign fields of exploration. But the desire is to get hold of places which will yield spoils having a market value, or likely to be a commercial asset. There is no systematic plan adopted for revealing what Greece, or Egypt, or an Eastern country was at any time. The endeavour is, in short, to enrich a museum with objects which will be more esteemed than any to be found elsewhere. Commerce has no country, and if it could be assumed that in South America hoards of novelties were likely to be unearthed, those who undertake explorations would willingly abandon Europe, Asia and Africa in order to carry off the novelties which gain renown for collectors and possessors. There is no denying that in the course of the scramble much is sacrificed which in a later and a wiser time would be valued by archaeologists far beyond trinkets or the dust of cosmetics.

This love of what is foreign is nowhere advantageous to native archaeology. What the Russian writer, TURGUÉ-NEFF, well says is particularly applicable in such inquiries:—"The cosmopolitan is a nonentity—worse than a nonentity; without nationality is no art, nor truth, nor life, nor anything. You cannot even have an ideal face without individual expression; only a vulgar face can be without it." Now Ireland has suffered grievously through a modish cosmopolitanism. Gentlemen of property during more than a century sought a home anywhere rather than on their own estates. The social consequences we need not here trace, but there is no doubt that archaeology has been a loser through it. In the *Journal* there is an article on Inchiquin Castle, which, judging by the remains, must have been a fine building, but owing to the absence of the owner it was allowed to be used as a quarry. It is said that out of mischief one of the door-piers was smashed with a sledge-hammer, when the greater part of the tower collapsed. The explanation which the writer has to offer reveals to us that in Ireland absenteeism or cosmopolitanism was a greater evil than religious vandalism in other countries:—

It is rather difficult to understand, he says, how it came to pass that a family like that of the O'Briens of Inchiquin, rich and powerful down to the middle of the nineteenth century, when their line came to an end, could allow the ancient and beautiful home of their sires to run thus to rack and ruin without raising a finger to prevent it. To let it crumble into dust in natural decay by the cruel hand of time was reprehensible enough, but that they could stand by and see it made a common quarry by every lout who required a lintel for his pigsty, passeth all understanding. Such a thing could not have happened in any country under the sun where the native gentry retained true pride of race. Residence out of Ireland, together with continuous intermarriage with strangers, by which they became more English than the English themselves, hindered any thought of maintaining those memorials which threw the greatest lustre on the history of their race.

There are signs, although it is now almost too late, of the approach of a more appreciative spirit. The study given to the ancient Irish language and literature by German philologists and the admiration of a scholar like MATTHEW ARNOOLD have caused the Irish people to give some slight

attention to things which they and their forefathers did. Everywhere they have materials which repay investigation. The names given to divisions of land, to rivers and lakes, all evidence of the diffusion of a poetic spirit in the days. What is more, there is hardly a parish through the country which does not afford traces of life in conditions very different from the present, and the archaeologist, without travelling beyond his own county, can create vistas of the past which, if not historic in the same degree as the annals of a court, are still interesting.

Slane, as we have said, is just such a subject as may be classed as normal in an archaeological sense. It is a little town or village in the County Meath, about 15 miles from Dublin, but as remote from the life of the capital as if it were an islet in the Atlantic. The Boyne runs by it, and the battlefield on which was fought the fate of the STUARTS in England is not far off. The skirmishes with the outlying reserves took place on the south side of the river opposite Slane. Meath is a county, and around Slane the land is prized by tourists. On account of the character of the region, from its not being close to the coast, several settlements were established in Meath. In the poem ascribed to ALFRED, who was afterwards the great monarch, he is made to declare—

I found in Meath's fair principality  
Virtue, vigour and hospitality;  
Candour, joyfulness, bravery, purity,  
Ireland's bulwark and security.

Assuming ALFRED to have visited Meath in the ninth century, what would he have found at Slane? He would have seen a prehistoric fort or tumulus, the top of which was an irregular circle of nearly 300 feet in circumference. The sides were very steep, and at the foot was a ditch from 16 to 18 feet wide, excavated in rock, and there near the surface. There were other mounds of smaller size, and they were evidently used by the primitive race as positions from which the approach of enemies could be perceived, and as a final refuge in case of attack. There are various references in old Celtic tales to dark caves in Meath, and one is said to be at Slane. A concealed cavern was several years ago opened, but as the exploration went there was nothing remarkable in the cavity. It has been suggested that the mysterious New Grange was the one referred to. It is well known by reputation because of the abundance of ornaments which is found within it. Slane had a notoriety for its works, and there were legends about a terrible slave who had ditches excavated in order to bury the remains of whom he could find no other use. Slavery indeed is a very ancient institution in Ireland.

ALFRED, as a Christian, would of course, be interested to learn the association of Slane with St. PATRICK. One of the great events of the missionary's career was his visit to Teamor, or Tara, where the Irish kings, princes and nobles were accustomed to assemble. He may have visited Slane, for his earliest disciple lived there as a hermit. This was St. ERC, the site of whose hermitage has been pointed out, but the remains belong to a much later period. As mention is made of the following abbots of Slane about ALFRED's time, viz. COLMAN, son of the Briton, died 746; FEADACH, son of CORMAC, died 784; OILIOLL, son of CORMAC, died 797; CONGAL, son of MOENAGH, died 801; SUIBNE MACMONY, died 806. It may assume there was an abbey. ALFRED would be interested to learn the learning of the Irish monks, and no more likely to shelter them than Slane. An archaeological problem would have been solved if any other traveller of that time, had alluded to the tower. The Irish antiquaries of the eighteenth century insisted that they were of more ancient date than even St. PATRICK, but in the following century there was a reaction, and they were said to be of the thirteenth century. There is a belfry tower attached to the remains of the Franciscan priory, but it is not of early construction.

It is characteristic of Ireland that the existence of churches and ecclesiastical buildings can only be ascertained by records of attacks upon them which caused their destruction. In the tenth century



tain there was an abbey of Slane because it was undered. There are similar occurrences recorded in 1102, 1156, 1161, 1170. In 1176 there was another and a ferent sort of contest, one between races, when no person escaped alive from the castle. This, says Mr. WESTROPP, is a crushing blow to Slane, with which its importance and that of its abbey passed away, and its episcopate was merged with other small sees to form the diocese of Meath. The fury of the combatants in wrecking harmless works in Slane seems incredible; for we learn that the cross on the tower of Slane was cast up into the air, and its fragments dispersed to Taitlen, Tara and Fennor, a remarkable incident for days when explosives were unknown.

Crosses and buildings used to be set up as soon as possible by the philosophic survivors, but much was lost in the process. Only one small piece of Celtic interlaced ornament is now to be found at Slane, although similar carving may have been abundant. The Franciscan monastery, of which part remains, is not believed by Mr. WESTROPP to be older than 1512, although it may contain relics derived from an earlier building. In the sixteenth century there was no need to apprehend incursions by neighbouring tribes, but the monastery was doomed to be subject to the usual law of mutation which always prevailed at Slane. In 1540 the prior surrendered to the commissioners of HENRY VIII. a church, belfry, dormitory, garden and two closes containing 1 acre. They were given to JAMES FLEMMING. In 1620 the learned Archbishop HANMER said the rectory was worth 24*l.* 5*s.* 10*d.* According to him the church and chancel were in repair, and there was "a fair stone house or castle and some houses of the reasonably well repaired; a haggard and backside. Of recent times there belonged to the rectory a college and 10 acres or thereabouts and some twenty houses for the maintenance of four priests, four clerks and four choristers. The walls of the college are yet standing and adjoining to a parsonage house, all which of long time have been in possession of the Lord of SLANE, but it is not known by what right." In 1631 the monks returned, but they were expelled by the Cromwellians, and the church fell into a ruined state.

Another interesting block of buildings has been named St. Mary's College. It had a south frontage of 102 feet 6 inches, and "formerly displayed a row of four windows in the upper storey; each was divided into four by stone shafts and transoms, the lights having semicircular or very slightly pointed heads, like those in the south wall of the church." Another wing enough remains to show that each room had a fireplace, a recess, a window and garderobe, the last being in a projection.

From Mr. WESTROPP's description it will be evident that Slane deserves a visit from archaeologists. Hitherto it may be said to have been almost neglected. The information that has reached Mr. WESTROPP's labour is now forthcoming must be regret that numerous other places in Ireland have not received the like attention.

### HIGH BUILDING CONSTRUCTION.\*

THE renowned Herr TEUFELSDRÖCKH had his speculum, or watch-tower, on the attic floor of the highest building in the Wahngasse of Weissnichtwo. From it he could look down on the wasp nest or beehive below; or, as he sometimes said, the Egyptian pitcher of tame vipers, struggling to get his head above the others, whilst he, Herr Teufelsdröckh, was serenely alone with the stars. There he was able to arrive at sundry novel conclusions, among which, that tattooing and painting had priority to clothing, and that the first spiritual want of a barbarous man is decorations, indeed, we still see among the barbarous classes in the most civilized countries." The Professor of Things in General had never found an infinitely finer observatory if he could have lived in a modern American city, such as Chicago or New York. He would have attained a much loftier elevation and have had beneath him more numerous specimens

of the human apparitions that were passing from eternity towards eternity. He would have blessed science which made such standpoints possible. But the poverty-stricken Professor would not be regarded as an eligible tenant for the smallest or the most inaccessible of the rooms. He would, however, have been willing to acknowledge that science had created in the tall building the materials for a new chapter on the famous Clothes Philosophy. For what is one of those lofty structures but a vesture or raiment in stone and marble and coloured substances, covering a skeleton of bones and concrete which it would be inconvenient to exhibit? "The benignant efficacies of concealment," said the Professor, "who shall speak or sing?" And in an American office building concealment is complete. Then, too, was there ever such a symbol of developed man? "Did not the whole Hungarian nation," asks TEUFELSDRÖCKH, "rise like some tumultuous moon-stirred Atlantic when Kaiser JOSEPH pocketed their iron crown—an implement, as was sagaciously observed, in size and commercial value little differing from a horseshoe?" But what is an iron crown in comparison with an immense caisson, grillage, girder, column or bracing of the exalted structures in American streets? From his watch-tower in the Wahngasse he could only see signs of a deceased or expiring society, but from a twentieth or thirtieth storey in New York he might discover the beginning of one that is new, but not, however, independent of the past; for if, as we are told, TUBAL CAIN was the maker of the tailor's needle, may we not with equal reason give him credit for the elaborate framework of American buildings? Thebes, it is said, was built by the sound of the lyre of ORPHEUS or AMPHION; but the Professor held that the transforming of sandstone rocks into Doric and Ionic pillars, squared ashlar houses and the noble streets of Weissnichtwo was also a similar feat; for without the music of some inspired ORPHEUS no city was ever built, no work that man gloried in was ever done.

The new American buildings may be as much of a surprise to us as they would be to any of the Knickerbockers or other Dutch settlers of New York. But they can claim to be called into existence by imperative necessities and not by fashion or whims. Instead of posing as a Venetian or Florentine financier or a merchant of the Renaissance age, and constructing a building that would be a copy of one he admired abroad, the modern American business man is content to accept the most convenient arrangements with which invention can supply him. Time is money with him, and in the new buildings we see the utmost respect for it. To Europeans it seems incredible that seven complete tiers composed of materials weighing between 7,000 and 8,000 tons were raised within nine weeks. A gang of twenty men, with the aid of derricks, are able to erect twenty bays a day, each being 24 feet square. The metal framework of a seventeen-storeyed building in Chicago from basement columns to finished roof was set up in nine weeks. In another building the entire skeleton, above the first floor, of nineteen storeys and an attic was erected in twenty-six days without overtime or night-work. The steel framing of an eighteen-storey building was put up in two months. The following cases will suggest how continuous was the expedition:—

The skeleton or "vener" type of construction possesses great advantages in economy of time required for erection, as work can be pushed on the walls at different storeys at one and the same time. Thus on the Manhattan Building, Chicago, the main cornice of terra-cotta was completed before the wall was built up beneath it. On the Unity Building the granite base-wall was being built at the first and second storeys, the pressed-brick face was being placed at the twelfth-floor level, while the hollow-tile arches were being set for the fifteenth floor all at the same time. The rapid progress made in the erection of the New York Life Building, Chicago, is shown by the following:—

- July 17.—Old building torn down to grade.
- July 31.—Laid out new footings.
- August 17.—Started setting basement columns.
- August 31.—Started laying granite.
- September 5.—Started setting tile arches.
- September 18.—Started laying terra-cotta facing.
- September 29.—All steel set.
- November 9.—Tile floors all set.
- November 11.—Terra-cotta all set.
- November 12.—Started plaster.

\**Architectural Engineering. With especial reference to High Building Construction, including many examples of Prominent Office Buildings.* By J. Kendall Freitag, B.S., C.E. (New York: John Wiley & Sons. London: Chapman & Hall, Ltd.)



December 2.—Steam plant completed. Turned steam on in building.

Of the 671 individual columns in this building, but a single one required "shimming." A thin steel-wedged plate was used, forged to fit. The columns were tested for alignment at frequent intervals. An average of 25 working hours was required to set the steelwork for a complete storey. The following dates will serve to show the time required in the erection of one of the latest New York office buildings, viz the eighteen-storey Atlantic Building, corner of Wall and William Streets (Clinton & Russell, architects):—

May 9, 1900.—Tearing down started.

June 15, 1900.—Caisson foundation started.

September 1, 1900.—Steel framework started.

October 8, 1900.—Brickwork started on street fronts.

December 10, 1900.—Building topped out.

January 1, 1901.—Steam turned on.

January 22, 1901.—First hydraulic elevator started.

March 1, 1901.—First offices ready for tenants.

The mention of only a single column needing shimming is enough to suggest one of the reasons for the despatch. The framing, whether columns or beams, was carefully executed elsewhere, and they came to the site like the different parts of a watch. Nor can it be objected that the facility with which the buildings are raised is a cause of danger. Opinions may differ about the wear of steel and iron and about the action of lime, cement and concrete, but the risks would not be diminished if the uniting of the materials occupied a longer time. The principal object to be attained is the securing of the numerous pieces of which such a building is made up. The by-laws in towns are careful in enacting rules on the subject, and in discriminating between loads which fall upon the frame and those which are borne by masonry. The buildings may be condemned as being unusually monotonous in appearance, but the expeditious construction which takes place every day would be impossible unless there was correspondence between the parts. The extent to which the preparation of parts is carried is shown by the following passage:—

For the successful erection of the frame much depends upon an accurate alignment of the column bases. These should be carefully tested both as to position and level. The bases are either grouted with cement or bolted to the foundations, but where cast column bases rest on masonry piers or footings any considerable grouting is not advisable. The only grouting that should be permitted in tall buildings would be in levelling up the tops of the concrete footings to receive the masonry courses, or in a very thin layer between the column pedestal and the masonry bed. The cap-stones should always be brought to the most accurate bed possible, with grouting used as a thin cement and not as a leveller. Accurate redressing of the cap-stones after setting is much to be preferred. All rivetting and punching of the steel members is done at the shop, besides the usual coat of oil or paint. This leaves only the assembling and field rivetting to be done on the ground, including the adjustment of the laterals or wind bracing, the placing of separators and tie-rods and the field painting. The columns are now generally made in two-storey lengths, or occasionally in three-storey lengths, and this practice aids much in saving time and expense in erection.

It is an advantage of American books on technical subjects that they appear to be written as if the author expected his statements to be immediately tested by practice. Mr. FREITAG'S book is an excellent example. He describes all stages of the work from its inception, and his volume can therefore be utilised not only in architects' offices but on ironworks and in the erection of the building. Unlike in England, there is no fear in America of diffusing a knowledge of novelties in construction, and Mr. FREITAG has been able to draw upon several well-known architects who have had experience in erecting high buildings in the United States for the results of different methods. It should also be remarked that the volume advocates no particular system, and throughout impartiality is shown.

Mr. FREITAG is of opinion that in the American towns the normal loads on floors are taken too high. In Chicago and Boston the live load is 100 lbs. per square foot, while in New York it is 150 lbs. for the first floor and 75 lbs. for the upper floors. A few years ago experiments were made in 210 offices in Boston, and it was found that the weight of people in them, with the office furniture, ranged from 16.2 lbs. to 17 lbs. per square foot. For ten heavy offices the

weight was 33.3 lbs., and one reached 40.2 lbs. 35 lbs. to 40 lbs. would therefore appear to be an assumption. Mr. SHANKLAND, who has had a wide experience in Chicago, says that "the weight of the tenants and furniture of a typical office have been found by experiment to be only 6 lbs. or 7 lbs. per square foot; it certainly does not exceed 12 lbs. The average weight of the partition walls is 25 lbs. per square foot of floor." He takes the live load between 60 lbs. and 75 lbs. per square foot for the floors of a building, and between 75 lbs. and 100 lbs. for the first and second floors, which in America may be for shops and banks. Not only is the weight allowed by the municipal laws too high, but in Chicago it is ordered that every part of a floor should be able to support a load of 100 lbs. per square foot, in addition to permanent fixtures and mechanisms. By this arrangement the beams must be strong enough to be independent of the columns. There is likewise a want of uniformity in the regulations in different towns. A warehouse in New York is supposed to bear a load of 100 lbs. per square foot, while in Philadelphia it is 120 to 150 lbs., and in Boston 250 lbs.

Mr. FREITAG also points out the absence of agreement as to the most economical arrangement of floor-beams, as well as in their proportioning. The utmost demand according to him, should not exceed  $\frac{1}{360}$  of the clear span. It is recommended that as few sizes of floor-joints and girders, and as few weights of beams and channels, as possible, should be specified as is practicable, for any way delay will be avoided. In America standard connections for uniting beams can be obtained; this is a great convenience, but they should not always be used with a blind confidence that their strength is uniform. Mr. FREITAG says:—

For the connections of beams to beams, or beams to columns, connection-angles made after the standards adopted by the Carnegie Steel Company or the Peacock Iron Works are almost universally employed on good work. The adoption of such uniform "standards" is certainly a great help to the mills and bridge or iron shops, as well as to the designer in the hands of the careless or ignorant designer, is an element of weakness. From careful observation of the methods, as practised in general, the writer is convinced that faulty details constitute an even greater part of the error in the general run of buildings than arises from poor workmanship or imperfect general features of design. "Standards" are therefore to be used with caution, and the careless designer to use them under all circumstances, whether they be adequate or not. They are standards, and they must be all-sufficient.

In America it is usual for the manufacturer to supply the detailed drawings, a practice of which Mr. FREITAG does not approve, but it is not always the case. An expert in steelwork is to be found in an architect's office, one who is able to facilitate economy in price. Slight shortcomings in drawings may mean the addition of respectable sums to estimates in order to provide for contingencies.

"Cage construction" steel frames are now generally adopted. They have the advantage that the weight is thrown on the columns, and the stone or concrete is not required for it, is little more than a veneering which is required to do more than look efficient. The system leads to an increased use of terra-cotta, for the manufacturer "design their pieces with especial reference to tying or suspending them from such a framework; so that the building becomes nothing more nor less than a vital skeleton of steel, with an architectural and decorative wrapper of terra-cotta, tile or brickwork, inside and out." All this may seem unworthy to be called architecture, but as TEUFELSDRÖCKH exclaims, "Who is there to clutch on to the wheel-spokes of Destiny, and say to it, 'Turn back, I command thee?' Well, it is that we yielded to the inevitable and inexorable, and accounted even this the best."

It is found that when fires occur brick and stone veneering is far safer than any slabs of masonry. Chicago by-laws stone appears as if it were without structural value, and the iron or steel framing is protected by brick, terra cotta or fireclay tiles. In such cases should be used in facing it is only regarded as a



ditional thickness to the other materials. It will suggest economy of space which is the result of steel construction when it is stated that in a building in New York, which is 141 feet high, the enclosing walls are no more than 12 and 16 inches thick, instead of 6 feet, which would be demanded by most building laws. In the treatment of windows and other parts remarkable ingenuity is exercised in adapting the materials to the requirements. In all cases cast-iron, although it would be more convenient, is avoided.

Cast-iron columns are employed in ten to sixteen-story buildings. Mr. FREITAG, however, is opposed to their adoption, and he wonders why architects should insist in using them, even at the request of an owner. Experiments made by the New York Building Department in 1896 and 1897 demonstrated that GORDON'S or GOLD'S formula is not to be relied on, for columns are under half the calculated stresses. According to Professor BURR, the use of cast-iron columns cannot be justified on any reasonable ground.

Mr. FREITAG gives much attention to the subject of columns, of which several varieties are produced. Columns made of latticed angles and channels should, he says, be confined to moderate loads and upper storeys. A Z-bar column he reckons one of the most advanced, but if more sectional area is required the box column is better able to sustain vast loads. In the two best buildings in Chicago and New York box columns are used. The number of sections of columns adds much weight to this part of the volume. Cast-iron base-plates are in use, but for heavier loads shoes of steel plates and angles are preferable. Care is taken in America to prepare load sheets showing by tables the load which is sustained by every column on the different floors. The boldness of American designers is proved when we find that in the Schiller Hotel at Chicago there are columns of the length of 10 feet 10 inches, each weighing 25,000 lbs., and at the Chicago Board of Trade there are columns 90 feet long and a diameter of 3 feet 3 inches. Bracing is an important part in American building, as winds appear to be more of a force than with us; the various expedients for security are given at length.

The Americans have to take many precautions with foundations in order to insure the stability of the high buildings. The following are the safe loads recognised by the New York Building Code:—"Soft clay, one ton per square foot; ordinary clay and sand together, in layers, wet and springy, two tons per square foot; loam, clay or fine sand, firm and dry, three tons per square foot; very firm sand, stiff gravel or hard clay, four tons per square foot, or as otherwise determined by the Commissioner of Buildings having jurisdiction." In Chicago the highest loads recognised are 4,500 lbs. per square foot. It is necessary therefore to devise remarkable methods to overcome the shortcomings of the natural foundations. The expense is sometimes inevitable, as is exemplified by a building in San Francisco which is 75 feet square. Below the level of the site, at a depth of 25 feet, is a concrete platform 100 feet by 100 feet, and 2 feet thick. On this is a layer of heavy rolled girders, making a continuous beam 96 feet long. Above are alternate layers of concrete and girders, the area thus constructed is 70 per cent. greater than the actual floor area of the building. By this costly arrangement it is calculated the pressure on the earth's surface will not exceed 4,500 lbs. per square foot.

The publication of Mr. FREITAG'S "Architectural Engineering" is opportune. In large girders and bridge-work the Americans have of late contrived to gain advantage over us, especially in contracts with the Government. It will not be for want of endeavours on their part if they will fail to carry off contracts for girders and columns to be used in buildings. They have the advantage that their work is openly recognised, whilst with us, owing to the prevalence of dilettanteism and the ignorance of statical conditions, the use of the material is thought to be inartistic, or at least only one of the necessary evils of modern architecture. The Americans have market sections which are used for general use. In consequence they are always able to produce beams and columns which are equal to the loads at a very short notice. There is also much more confidence in the judgment of manufacturers than is

allowed with us. All this and much more will be gleaned from Mr. FREITAG'S volume. We have a careful representation of American practice, which we must respect, although nothing is done which is not feasible in England also if like conditions prevailed among us. Mr. FREITAG can speak with authority of the development of constructional steel in many buildings, and his book deserves serious consideration by all who are directly or indirectly engaged in that mode of construction. It is a practical book in the best sense of the term, and the information it affords will well repay a purchaser. We hope it will lead to a wiser recognition of iron and steel, with an increase of metal construction among us. For, as TEUFELSDRÖCKH, the first philosopher of skyscrapers said:—"Produce! Produce! Were it but the pitifullest infinitesimal fraction of a product, produce it."

### THE BIRMINGHAM SCHOOL BOARD AND THEIR ARCHITECT.

AT the meeting of the Birmingham School Board on February 1, Mr. Bethune Baker presented the report of the sites and buildings committee, who recommended that "three months' notice be given to Messrs. Martin & Martin, architects and surveyors to the Board, to terminate their engagements, all work which they have now in hand for the Board to be completed by them on the existing terms; that the Board advertise for an architect to be the architect to the Board at a remuneration of 600*l.* per annum, and that a further appointment be made by the Board, in consultation with the architect, of a skilled draughtsman and an assistant, who together shall be paid a sum not exceeding 300*l.* per annum, such officer to devote his whole time to the duties and to work in the Board office, all necessary office furniture, stationery, &c., being provided by the Board. Both appointments to be for three years on the understanding that the architect shall finish work on which he is engaged at the time of the termination of his appointment, and that both appointments shall be subject to three months' notice on either side at any time during the three years. Further, that the Board advertise for a land surveyor at a commission of  $\frac{3}{4}$  per cent. on the purchase money, and also a quantity surveyor, at a rate of remuneration of 1*½* per cent. on the tenders. These two latter appointments also to be for three years, subject to three months' notice at any time on either side." Mr. Baker at the outset said he desired to make an alteration in the wording of the resolution, as under it they would have two architects running for three months, but on the suggestion of the Chairman he agreed to move it as a rider to the original resolution. Mr. Baker then went on to explain that the task of moving the resolution was not a congenial task, because it did not exactly commend itself to his judgment neither from an economical point of view nor yet from the probability of their getting the best results architecturally. He felt, however, that weight was due to the long experience of the minority of the Board, and that, coupled with the fact that certain members on his side favoured the resolution, prevented him from opposing it as he should otherwise have done. He felt that under the arrangement proposed the Board would spend more money for their work than they had hitherto done. Why were they going to pay more money? Was it because the present architects had managed somehow to get wind of the pending rearrangement, and had taken the bull by the horns and asked the Board to reconsider their terms, on the ground that the present terms did not pay?

The Rev. Joseph Wood seconded the resolution, and said he was not particularly in love with it any more than the chairman. It represented part of the policy of change for the sake of change which had been pursued more or less during the last fifteen months. He was not in sympathy with the chairman of the committee in his remarks, and still less with his proposed rider. The Board in any case would not pay for the same work twice. He quoted figures and contended that they were going to pay about the same amount under the new arrangement as they had in the past, providing the same amount of work was done, but if there was more work the new arrangement would be cheaper. He seconded the resolution because it represented a sort of compromise they came to in committee.

Mr. Pentland opposed the resolution on the ground that he would like to see the matter thrown open to competition, and moved that the whole matter should be referred back to the committee.

Mr. Ansell said he was anxious to do what was right, but had no guidance as to what course he should pursue.

Mr. Kenrick pointed out that the new arrangement became a necessity because the architects were not willing to go on at the old terms. The matter had been gone into thoroughly in committee.



The Chairman said there was a time when he thought it would be a good thing to have architects competing for plans, but as the result of inquiries he found that when plans were competed for one firm was successful year after year, and that proceeding simply involved a waste of money. When architects were paid partly or wholly by commission it could hardly be possible, human nature being what it was, that they should make economy their principal study, or even their serious study at all. The Board wanted to arrive at some arrangement whereby the architect should have no interest diverging from that of the Board. Personally, he anticipated a great saving from the scheme providing it was coupled with some such rider as Mr. Baker had indicated.

Mr. Baker then proposed the following as a rider to the resolution:—"That until Messrs. Martin's notice has expired the new architect of the Board be paid according to work done by a special arrangement between the Board and himself, and after that at a fixed salary."

The Rev. Allen Bell seconded the rider.

The original resolution was put first and carried, the whole of the members with the exception of Mr. Pentland, who voted in the negative, and Messrs. Ansell and Baker, who abstained from voting, being in favour of it. It was therefore carried. The rider was then put and carried, seven members supporting it, five voting against it and two remaining neutral.

The following letter has been addressed to the chairman by Mr. William Henman:—

To the Chairman of the Birmingham School Board.

My Lord Bishop,—You are reported in this day's *Post* to have said at yesterday's meeting of the School Board:—"When architects were paid partly or wholly by commission it could hardly be possible, human nature being what it was, that they should make economy their principal study, or even their serious study at all." May I be permitted to point out that such a statement, particularly from one holding the position you do, is a serious slur upon the integrity of a body of men whose training, studies and the conditions of membership of the Royal Institute of British Architects and allied societies inculcate a high standard of honourable practice; and also that it is inconsistent with the action of the School Board, supported by your vote, in appointing a land surveyor and a quantity surveyor on commission.

I am not fully acquainted with the duties such land surveyor may be called upon to perform, but, if he has to estimate the value of land to be acquired by the Board, he might just as reasonably be accused of putting an excessive value thereon to augment his commission as that an architect should be charged with failing to exercise reasonable economy for the same purpose. As regards quantity surveyors, the cost of a building depends to a greater extent upon their work than it is in the power of an architect to control after his design has been accepted; yet I should be sorry to say that any responsible quantity surveyor would wilfully draw up his schedules in a manner to increase cost for the purpose of adding to his commission.

As one of the deputation who had the honour of making representations to your Board against the appointment of a salaried architect, I desire, now that the definite proposals are known, to direct attention to the questionable advantages likely to result on the score of economy.

It is generally recognised that an architect's expenses for office rent, assistance, stationery, &c., average one-third of his commission, yet your Board have decided to provide assistance to the amount of one-half the salary of the architect's; and office rent, furniture, and stationery will probably cost at least 200*l.* a year, or a total of five-elevenths instead of one-third of the architect's gross remuneration, from which some deduction in the way of expenses may have to be made; or, in other words, on an annual expenditure of, say, 1,100*l.*, the remuneration for thought, intelligent control, inventive and constructional ability and experience is reduced by quite 150*l.* a year below what is generally considered to be a very reasonable payment for such services; and it may with propriety be asked why it is that the chief educational authority of the city so far undervalues mental abilities and at the same time puts a premium on routine and mechanical services.

I may also point out that as the resolution appears in the *Post* it is far from clear who is the "officer" who is "to devote his whole time to the duties and to work in the Board office." Three officers are mentioned, viz. the architect, the skilled draughtsman, and the assistant. If the architect is referred to, are the draughtsman and assistant to be allowed to undertake outside work? If it is the draughtsman or the assistant, how can the architect, who presumably can engage in private practice, exercise that constant control and supervision which is so essential to the effective carrying out of architectural work?

Although not an advocate for indiscriminate competition, I have recollection of at least three architects having been employed by the School Board as a result of competition. May I, therefore, ask for a list of schools for which architects have

competed, the dates thereof, and the names of the architect employed, so that it may be realised if you have been informed that "one firm was successful year after year?"

I am sending copies of this letter to the Press, and you will not object to any reply with which you may favour having equal publicity.

The Bishop of Coventry has replied as follows:—

St. Philip's Rectory, February 3,

Dear Mr. Henman,—My statement that architects' commission could hardly make economy "their study" was not a reflection upon an honourable profession, many members of which I have the advantage of knowing among my friends, but upon "human nature, being what it is." Given on the one side the ratepayers' purse, the desire to produce artistic results, and a percentage on the costs, on the other side a conscientious and pious wish for economy, strain upon "human nature, being what it is," is excessive.

As to the inconsistency, which you point out, of paying and quantity surveyors by percentage, I admit that; but if methods of payment were possible I should prefer them to the present, and am not aware of them.

As to your calculation of the cost of rent, furniture, stationery, you are probably not aware that we have Board premises unused office room quite sufficient for our purpose, and the advantage at which we aim is that of more directly under our control the designing of repairs and alterations, which must be very expensive items to the ratepayers' years to come. Designs for repairs so expensive as to be prohibitive of their adoption must occur where architects are outside the Board offices. Yet architects paid by commission must be paid for these unused designs. This is an unnecessary leakage and a hindrance to the work of repairs which we are anxious to avoid.

As to the proportions in which the architect and his officials are to be paid, taking your reckoning that other expenses consume one-third of the architect's salary, bearing in mind that the Board proposes to take on its own expenses, the salary which we offer is, by your reckoning, equivalent to 800*l.* to the architect out of about 1,000*l.* will be the whole cost to us. We are therefore paying the architect exactly in the proportion which you believe to be fair and equitable.

As to your further question, it is the draughtsman and assistant who are to give their whole time to the Board, not the architect.

What I said about one firm being successful year after year was said of other towns, the chief instance in my mind being Leicester.

## WOLVERHAMPTON ARCHITECTURAL ASSOCIATION.

THE first annual general meeting of the Wolverhampton and District Association was held at the Law Rooms, Wolverhampton, on January 16, and was well attended. The annual report of the Council for the year 1909 was read and adopted, and the accounts passed and approved. The following officers were re-elected for 1909:—President, J. Lavender; vice-president, G. H. Stanger; council, F. Lynes, T. H. Fleeming, S. H. Eachus; hon. treasurer, J. Weller; hon. secretary, W. Edwards, 25 Dale Street, Wolverhampton; auditor, W. J. Oliver.

The President delivered an address, in which he said:—

May I very humbly offer you a few thoughts on the architect's duties—to his client, to his contractor, to his art.

The client should have first demands on our consideration for two reasons:—(a) He pays our fees. (b) He gives us the opportunity of showing our skill. I will confine myself to the former of these two reasons.

*He Pays Our Fees.*—Do we always sufficiently realise the fact that consequently our best, our very best talents, on such work belong to him, and that it would be simply dishonest of us not to give our best to his work? As a rule he puts confidence in his architect and tells him how much he wants to spend. It is for us, then, to honour that trust and see if it is possible. I admit it often is not that our design does not lead to extra cost; but it often happens that the accommodation for is utterly impossible to give for the sum he names. We should tell him so at once and not give him reason that he can do the work for the sum named when we cannot. It is no excuse for us to say, Well, if he wants to have to pay for it. I reiterate, the client has the best talents, and one of them is that we know better than a building will cost, and to keep this knowledge from him I say unhesitatingly, dishonest. It may be said, "But he will lose the job." Very well; better so a thousand times than to mislead. But we may see that the building can be built for the money without lavish architectural treatment. Then let us relinquish our own wish for architectural display.



is to our client. Then as to preparing very careful drawings and specification, we should mind this, for in this way we spare our client many extras. Our best must be given, so should consider well every little detail, and not leave it to cleared up as we go on, and put in an extra for it. Incompetence, too; we must remember we are being paid for this, and should not shirk a journey or two, nor say to the client, "I leave it to your judgment." He is not paid for it; we are.

*His Duties to the Builder.*—Has he any? Most decidedly. Men think what gracious men the builders must be that practically place their profits or loss in the hands of the architect. The architect orders this and it must be done, the architect says that is wrong and it must be undone. The architect is despotic—he has enormous power, but the evidence thus willingly placed in his hands should be respected. Some architects (of course present company excepted) I know are most arbitrary—they are, in other words, big, too high and mighty. I have specified so and so and carry it out. Are architects infallible? Very often the architect considers it is part of a builder's principle to be unprincipled, and that he will take him in if possible, and he is so far as to warn the architect to be on his guard, "for architects are rogues." Now, what should we do without architects? My experience leads me to say that on the whole architects are honourable men, and willing to do all that is reasonable. There are exceptions, which to my cost I have dealings with; but, as a rule, I find builders most obliging and honourable, and the rogues few and far between. A word about detail drawings. I think a very important duty of an architect to the builder is that he is prompt in supplying the details he asks for and requires. It is not fair to expect the builder to fulfil his contract if we keep him waiting for details, yet I am afraid this often happens.

*His Duty to his Art.*—Our art has a noble and ancient history. Architecture is the most ancient of all arts, its birth being almost coeval with the creation of man upon this earth. Then the architects of to-day are the representatives of this ancient art, we owe a great duty to it. When we consider the buildings of the Egyptians, the sublime grandeur and sensitive delicateness of the Grecian, the exquisite proportions of the Roman buildings, then the graceful and soaring architecture of the Middle Ages, surely the responsibility of our art appears in all its urgent demands, but how are we doing our duty in the face of so magnificent a heritage? Are we faithful to our high and great legacy? One reason to my mind of those past great achievements in architecture was that the architect (as Longfellow tells us) "built his great heart into sculptural stones." Art was first, fees second. Is it with us? I am afraid we often think of fees and then our art. We make our art too much a commercial transaction; our heart should be in our art if we emulate our great predecessors. It is no answer for us to say, Ah! but we have no cathedrals to design and build. That matter? The great Architect Almighty has given us care and put as much design and work, perhaps more, in the little butterfly as He has into the monster elephant or the whale. And in our small work there is as much need for care and attention as in cathedrals or municipal buildings. I say it is our duty to see that we do not neglect these smaller things. There is to-day a great tendency for novelty for the sake, and you say, Well, our client will have it. Ah! it is our duty to our art demands that we shall not give it. Art and I feel confident if we stick to this determination the public will yield, and we shall not drag our noble art in the mud and filth of idiotic ignorance and vulgarity. You may say, What lines would you go upon? I say at once, utilitarian lines of the last century lines clothed with the purity of architectural beauty.

We have been tied and bound too long; do not be copyists, and stick too fast to modules and such like; architecture knows no laws or rules that would hamper invention. I say again, whatever use demands in building architecture can give. And it is for us, who wield the pencil, to work out how it is to be done. Were the old architectural designers ever hampered as we allow ourselves to be in addition had to be made to a building, though a hundred years had elapsed since its erection? Did they go and search and copy every detail of moulding and carving that they might match? We know just the opposite. Hence the great beauty which we now admire in Gothic buildings, especially those which show to us various styles in one building. Were they fools? Did their employers say they did not like their work? Why then are we to be tied down by spurious ideas that in our new buildings we must be so careful that our mouldings, &c., are what we please to call them? I admit that there is appropriateness in the choice of one kind of moulding with a certain style or order of architecture; but surely there is a limit. Now if an architect is building to erect and sticks a portion of the façade of the Horse Guards to it, it goes for architecture. I grant it is a good copy, but not art. The honour of it belongs to

Kent, the architect of the Horse Guards. But to my mind the architect of the little villa down the road who has first made his plan to suit his client and then clothed it in elevation with the cloak that will fit it is by far the nobler man, and has taken up the mantle fallen upon him to more purpose than the robber of other and dead men's brains. But you may say, If we don't design according to ancient models the public will say we are ignorant. I don't believe it for a moment. Art is art, and if it is true, common sense, original architecture it will demand and receive its reward. What a bugbear and hindrance it is to us, the public prejudice for old designs; but we have a duty to our art and to future generations of architects which behoves us to break free from these trammels. A word on the fashion of trying to be odd and eccentric in our design. This is to my mind one of the worst sins of the present-day architect. If because we want a pretty corner in a room on our plans it necessitates a peculiar jutting gable or hip on an elevation, this is legitimate, but to my mind it is a libel upon architecture to make an awkward corner in a building simply to create an odd appearance outside. True architecture, I take it, is first necessity, and utility in plans and arrangement; then architecture is so pliable that it will clothe elegantly if the architect has the ability to do it. Again, why should you run up a gable just for appearance? I was in a neighbouring town a short time ago, and was greatly surprised to find a most elaborate gable erected over an otherwise good building; it was utterly useless, and had to be tied up with an iron rod, as I saw from a distance. Poor, poor architect, to stoop to such defilement of this art. Do you say, then, I do not agree with architectural effect for its own sake? Most certainly I do, but a sham in any form I abominate, and especially in architecture. A gable is the natural and architectural finish of a span roof, but it is not architecture to form a span roof—a false roof—just to put up an elaborate gable. There are means for architectural embellishment which even to the uneducated eye proclaim the fact at once, but it is degrading to our art, and shows great lack of architectural talent in the architect to erect constructional features simply and only as ornaments. Let us have purity by all means. I have no quarrel with those who like elaborate or ornate buildings—as much of ornament as you like, only for our art's sake let it be ornament, not constructional features falsely used. Neither let us be odd for oddity's sake. Be true to your art and your art will serve you in all emergencies.

### HARTLEBURY CASTLE.

AT the last meeting of the Worcester Diocesan Architectural and Archaeological Society the Rev. D. Robertson, M.A., read a paper upon the history of the parish and castle of Hartlebury, Rev J. B. Wilson presiding.

The Chairman, introducing Mr. Robertson, said that perhaps no one living knew so much about Hartlebury as the rector (Mr. Robertson). Hartlebury Castle was particularly interesting, and in recent times it had become more interesting than ever. Therefore it was with great pleasure they looked forward to Mr. Robertson's paper.

It dealt at great length with the history of the episcopal palace and the notable bishops who had lived and laboured there, and with the church and the rectors of the parish. In conclusion, Mr. Robertson spoke on the proposition to abandon the castle as the episcopal residence of the diocese. He said they would dishonour the memories of all the former bishops of the see if they put up for auction their venerable and beautiful home for 800 years. A proposal would be made to the Ecclesiastical Commissioners to sell the castle—to sell the place where great benefactors of the Church, where martyrs such as Hooper and Latimer, confessors such as Lloyd, archbishops such as Whitgift, and divines such as Bentley and Stillingfleet and Sandys had lived and laboured—to sell the chapel consecrated for centuries by the toil of worthy and illustrious Churchmen. It would lower the prestige of the see, and break up the whole history of the diocese to part with all the sweet and holy associations that hung around the walls as though they could order down new ones from Whiteley's or the stores. Precious heritages such as those might be taken from them by the enemies of the Church, as other things were taken from them in the days of the Commonwealth, but let them have no hand in parting with them. On the contrary, let them do their best to preserve them.

The Chairman said they were very much obliged to Mr. Robertson for his paper, and particularly for his earnest words on the terrible catastrophe that was looming before them with regard to the episcopal palace, which many of them had been dreading. He thought the majority of Churchmen in the diocese would join in deprecating such a step as was proposed. They hoped that none of them would ever live to see such a catastrophe as a parting with Hartlebury Castle as the residence of the Bishop of Worcester.



### NOTES AND COMMENTS.

THE International Historic Congress which is to be shortly held in Rome will be of unusual interest. No other city has so enduring a history, for it exemplifies Classical antiquity, the Dark Ages, Mediævalism, the Renaissance, as well as modern history. The Vatican by itself would be sufficient to afford materials for the consideration of several congresses. A preparatory meeting will take place in Venice on April 10, and the meetings in Rome will probably begin about the 14th. It has been decided to have sixteen sections, viz. ethnology and classic archaeology, numismatics, Eastern and Classic peoples, antique literature, ancient law, the Middle Ages and modern times as exemplified in diplomatic and other archives, Mediæval and modern literature, Mediæval and modern art, modern law, political and social economy, philosophy and teaching, religion, geographical discoveries, mathematics and experimental science, music and dramatic art, historical methods. With the exception of medicine, it will be seen that almost the whole circle of knowledge comes within the scope of the Congress. It was understood that the King of ITALY was to preside over the section of geographical discovery, but the chair will be filled by Prince LOUIS OF SAVOY, who has taken part in several explorations. A great many authorities in history as well as archaeologists have announced their intention to be present. The secretary is Professor GIACOMO GORRINI, of Rome.

PEOPLE who wish to see the Salon this year should not delay their visit. The building in the Champs-Élysées, in which the rival societies are to display their works, will be required some time in May in order to exhibit the results of the visits of M. DE MORGAN to the East. We have already alluded to some of his discoveries. It was first contemplated to display them in the Louvre, where, no doubt, a section will find a permanent home, but the large number of objects demanded more space than was available, and it was therefore resolved to utilise the Grand Palais. It is possible that the pictures and the antiquities may be accommodated, and the contrast between ancient and modern art under the same roof might be a novel attraction for visitors. But as the Government has more interest in the results of M. DE MORGAN'S expenditure than in the works of the members of the two societies, it is not unlikely the latter will have to succumb.

EVERY experienced surveyor must often be horrified when he observes the careless way in which boundaries of property are indicated on plans, especially on those which solicitors have prepared in law-writing offices. Colour is laid on as if it were only intended to be an ornamental border to fields. As a consequence law suits are continually arising over disputes about boundaries. At one time the spectacle was to be witnessed of one of the high roads within the metropolitan area in which only one-half was cleansed or kept in repair. The authorities on one side believed that the boundary of the parish was in the middle of the road, and kept their part in order, while the authority on the other side believed no portion of the road was in their parish. Until the question was settled at great expense in the law courts much inconvenience was felt by the inhabitants of the district. The case of the Earl of CRAVEN *v.* PRIDMORE and Others, which was heard in the Court of Appeal on Saturday, turned on the question whether a fence belonged to plaintiff or defendants. The fence had a ditch on one side, and therefore it was assumed that the ditch as well as the fence was the property of the plaintiff. It was remarkable that in some of the parish maps the fence and not the ditch was distinctly marked as the boundary, and it was argued that the boundary of the parish and of the properties must coincide. Mr. Justice RIDLEY, when he tried the case, decided in favour of the defendants on that account. The Court of Appeal, however, took the opposite view. It was considered that according to custom the boundary between the properties ran along the edge of the ditch, and the fence would therefore belong to the plaintiff. The view was confirmed by one estate map. In cases of the kind, when it is almost impossible to be definite in marking the boundaries unless the plan is on a large scale, the difficulty

could easily be surmounted by drawing a small section the ditch and fence, and indicating the boundary upon it. It must be allowed, however, that the determination of boundary is not always practicable, and a surveyor obliged to make the best of the information he receives although he is convinced it is only one-sided.

THE committee of the Liverpool Cathedral must at this time have discovered that, no matter what site may be selected, opposition to it is certain to arise. Whether funds suffer in consequence is doubtful. It may be able in competition tactics to endeavour to scare architects who propose to contribute designs, and by that means reduce the number of combatants. But the men who would accept the risks of so vast a work as is proposed in Liverpool cannot be very numerous, and they are not likely to pay much attention to the would-be disinterestedness which has been manifested in connection with the project. What is more pitiful is to find the project converted into a political move. It has been stated that there is a very close connection between the majority of the Cathedral Council and the cathedral committee, both representing the same party. As far as we can make out, the aim of church committees everywhere is to utilise the parties in order to attain the object in view, and there has been no official utterance by the cathedral committee which can be accepted as a war cry. When the scheme was first brought forward we pointed out that Liverpool was in a different condition to any of the Mediæval cities. In the twelfth and thirteenth centuries the Church continued to be powerful, and was able to obtain the most suitable site for a building in which all the people were intended to have a share. But when cities, as is the case in Liverpool, have acquired a certain fixed arrangement which was determined by secular affairs, all that can be accomplished is a sort of compromise. Some allowance should be made for devotional needs. The St. James Mount site is free from all undue noise and disturbance; it is spacious, accessible and prominent. Having these advantages, architectural display, which can only be an individual, must be a minor consideration.

M. PIERRE LOTI, although a naval officer on active service, is recognised as one of the most charming of living writers of French prose, and he has deservedly gained the chair in the Académie Française. It may surprise some of his admirers in this country to learn that he is also a painter, although the attention to colour and form which marks his writing should be taken as characteristics of a votary of the fine arts. In one of the Coptic churches in Constantinople there is an altar-piece from his hand, which represents St. BASIL, one of the early Fathers, whose writings exercised much influence upon the Oxford school of the nineteenth century. M. PIERRE LOTI, or rather M. JULIEN VIAUD, while on service in the Bosphorus, received lessons in the Coptic language from the monks of the church, and out of gratitude he painted the altar-piece.

### ILLUSTRATIONS.

MARQUETRY PANELS, S.S. "ORONTES."

ST. MARY'S CHURCH, ECCLESTON, NAVE, LOOKING WEST.

DEMLOSKIN, DUNBREEK, N.E.

ST. ENOCH'S SUBWAY STATION, GLASGOW.

THE GREEN, CLEY-BY-SEA, NORFOLK.

ABBESS GRANGE, HANTS: DRAWING-ROOM. LIBRARY.

THESE illustrations refer to the house, drawings of which we have already published. The interior has been panelled either in oak or pine throughout. The library is panelled nearly the whole height, and the place, overmantel and marble mantel is of the design illustrated. The ceiling is of anaglypta, and is of the same character. The drawing-room panelling is carried out in pine and painted ivory white, the panels being faced with silk and is of a special design as shown. The architect's fireplace is of red Verona marble and the sides lined with green glazed tiles.

The panelling throughout has been carried out by J. P. WHITE, of Bedford, to the detail drawings of the architects, Messrs. BANISTER FLETCHER & SONS, 29 Bridge Street, Ludgate Circus, E.C.



# THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last at Conduit Street, Mr. W. H. Seth-Smith, president, in the chair.

The following gentlemen were elected members:—Messrs. Christie, A. L. W. Sampson and R. S. Wilkinson.

The total amount of subscriptions towards the New ses Fund amounted to 3,694*l.* 6*s.* 6*d.*, including donations from the Worshipful Company of Merchant Taylors, 105*l.*; I. Garbutt, 10*l.* 10*s.*; Mr. A. T. Walmisley, 5*l.* 5*s.*; Mr. Parkes, 2*l.* 2*s.* "A.A. Student" collected 1*l.* 16*s.* 6*d.*, V. E. Hewitt 1*l.* 1*s.*, and Mr. D. A. Forster 1*l.*

R. C. HARRISON TOWNSEND read a paper entitled

## "Originality" in Architectural Design.

deplore the inefficiency of the presentment of to-night's at, the more that I feel it to be quite one of the most tant that you could meet to consider. For it does not se to add to minds perhaps already largely stored er item or series of items of knowledge, but it offers for deration what to do with the sum total of all the learning ave up to now acquired, and will in the future acquire. t suggests the subjection of the isolated facts of learning ynthesis that shall resolve them into one organic whole. eatures on styles, papers on materials, demonstrations on ds, these and the daily experiences of your work, all o fill your minds with the data of certain indispensable ledge. Yet even profiting to the full by these opportuni- and bringing to them even the most unflagging industry he most retentive of memories, you are then face to face the question of how to get the most complete outcome this mental equipment. And the doubt arises whether a of facts and a mass of knowledge are all that go to the ing of an architect. Does the fact that you are—even ously and widely—educated, that you have at your finger- any amount of knowledge of materials and construction, hat you possess a full acquaintance with the historical ins of architecture handed down to us from other days— all this do more than make you ready to be an architect? it, as a matter of fact, constitute you one in the proper of the word? And, unless something breathes these dry rs of knowledge and tradition into life, is their possessor o than a skilful "practitioner"—a thoughtful and cultivated essional man?"

am here by no means raising the tattered banner on which rcribed the wearying question, "Is architecture an art or ession?" I care little whether it be an art or a pro- on, or, for the matter of that, a trade. Whichever we it, however, a man's fitness to be and claim to call himself rchitect are not to be estimated and gauged by the uring-standard of what he has learnt. It is not hat he knows, but by what he does with what he es that he shall be judged. It is for him to throw the crucible of his own nature all his learning and his knowledge, there to be fused and made one, out of that melting-pot to draw an ingot that is to be pped and shaped as his own personality, his own in- ualism shall determine. As Marcus Aurelius says, "Is it grievous thing that an architect shall respect the course ysteries of his profession more than the proper course ondition of his own nature?" That is to say, that too e a regard for that course and those mysteries, or, to put it wise, the attachment of undue importance to formulæ and causes a positive atrophy of the imaginative and creative y, by which an artist—the architect as well as the painter sculptor—should claim to be appraised.

To follow foolish precedents, and wink  
With both our eyes, is easier than to think.

et precedents and traditions must need exist and endure ery art, and it would be presumptuous to claim to be in bsolutely free, and to have shaped oneself rather than to een made by the great thoughts and the great men were of old time before us. There is no logical stand- for him who disclaims and disavows all reference to, all ndence upon, all reverence for the past, and whose ideal e substitution of his own ignorant lawlessness for the ns handed down to him from other times. Such a one, I ine, would, without remonstrance, accept and adopt the "anti-historical" applied the other day in one of our ly papers to express the aims in art of one of those archi- whose views I am trying to put before you to-night, and t not consistently rejoin that he claimed to be individual pression—not original and creative. Nor could he er maintain, as that criticised architect would, that he was t more truly historical and following more closely along nes of architectural evolution than the many mimics of rms into which architects of distant countries, or of ne days, have cast their thoughts and their ideals. ere, let me ask, is there justification for alleging that any,

or, at all events, let me say that any considerable number of architects have in set terms foresworn allegiance to tradition, and have claimed the right to apply the word "original" to their works? I think not. Individual in method of expression, yes; non-resurrectionists of long-since dead and buried styles, yes; haters of mimicry of earlier forms that were expressions of earlier wants and needs, again, yes. I know those who are glad to come under those categories, and I venture to think that in their hands lies the future of our art.

Yet, remember, that in thus doing your best to make your architecture speak To-day rather than the Past, you are not to strive, of set purpose, to be what you or others may call "original." As Lowell says in one of his letters, "When a man aims at originality, he acknowledges himself unoriginal." You will find it both grand ideal and hard task enough to try to let your work reflect you yourself, and to give it a personal and individual character. If it thus bears your own impress, what more "originality" need it have or can it have?

But this quality must come of itself, it must result not from the attempt to do what other men have never yet done, but from your wish to shape your work so because it seems to you the best solution of the problem before you. And, having worked out this—your own—solution you neither adopt nor, on the other hand, repudiate it, because others have arrived at this result before you.

We have in architecture, as I have said above, a speaking living tongue, and if the thick mists of custom and conventions allowed us to see it, nothing can be more illogical than for us of to-day to borrow the language of Byzantium or Florence, or Amsterdam, in which to give our message in this year of grace 1902, or to rely upon a thirteenth or fourteenth-century vocabulary as a means of expressing architecturally our own religious needs and aspirations. While our language, as we now read or speak it, comes to us enriched by that of other days, it yet has the distinct stamp and impress of its time, and to express our wants or tell our tale one to another we do not, in book or conversation, deliberately adopt the spelling or the speech of Chaucer, or of John Florio, or even of Addison.

Yet is not this precisely what we do in architecture? Is not the measure of praise bestowed upon a modern building in exact proportion to the faithfulness with which its designer has worked on the lines of other times, Mediæval, Elizabethan, Georgian or what not; or to the closeness with which he has imitated the architecture of I know not what country, Holland, Italy or France? Is a man ashamed, as he should be, when he is told that his building (his, mind you, finished to-day or yesterday, in 1902, in 1901) is "so faultlessly Elizabethan that it might well be taken for an old building of that date?" Does he feel insulted, as he should, when he is assured that "in general design, as in every detail, his church is conceived and worked out in a thirteenth-century style?"

I know it will here be said that there are less extreme cases than these, and I shall be reminded that there exists that vaguely qualifying phrase, "a free treatment" of such-and-such a style, which is supposed to represent a saving grace, and to oblige us to approve a design which is not, like those others, all copyism, but one with, say, 75 per cent. of imitation and 25 per cent. of "free treatment." This seems to me to be a distinct concession towards the point of view I am speaking of, and even this modicum of freedom is to be welcomed, and we ought to be thankful for, at any rate, such proportions as I have suggested. Yet these might conceivably be reversed if the architect's mental attitude when face to face with a problem of design were different to, and, as I think, more logical than the usual one, and one might then hope to find, let us say, 75 per cent. of spontaneous individual personal feeling in the design, and the 25 per cent. residue, if it did happen to be reminiscent of other and preceding work, would not, at all events, be so because of an avowed desire to recognise closeness to the designs of earlier men as the ideal towards which one should strive.

An architect may (and I am, as I have said before, glad to say he usually does) tone down the rigid exactitude of a sheer copy by more or less admixture of his "free treatment." But how often does he not sit down at his drawing-table with the acknowledged intention of producing a "Gothic design"—a "Renaissance design" (both of them with—or without—that wonderful "free treatment")—or, indeed, as it sometimes happens to-day, a design in which all architectural graces are to be laboriously and effectually omitted altogether? And selecting from a well-stored memory—I refrain from suggesting dependence upon Kodak, or reference to sketch-book—a certain form, or fashion, or style, does he not proceed to clothe his building with the particular material his mental pattern-book suggests, and to rely for his design more upon the achievements of the past than upon his own invention and his own imagination of the present?

I have said more than once he may refer to and ask the past to help him to a solution; he must not depend on it to find him that solution.

In literature, a few years ago, we were all keenly touched



to hear an American critic of much note tell us that "all the tales have been told." He was more wrong than even most makers of epigram, and we felt that while men and women are, and while lives are happy—or are sad, and while hopes are hoped—or frustrated, and while hearts are blithe—or breaking, there are still at each turn, and every moment, tales, comic and tragic, both, unwritten, it is true, but there, and only waiting the writer.

And in our own art, are all the tales exhausted, and are we at best to repeat—in perhaps slightly, very slightly different words—those that our fathers told, with here a change of adjective, and there an added or a diminished emphasis, with this trifling omission, that small addition? Did our tales, ours as architects, stop short a hundred years ago, leaving us tongue-tied and silent, unless we speak a Georgian speech, and talk in the eighteenth-century words of our great-grand-fathers? I do not stop here to ask if even their architectural utterances were the best to which they might have attained, and if they—and their fathers in turn—were not, at most, speaking in a kind of dog-Latin—or dog-Roman rather—more false and unnatural even than the would-be Classic pastorals and eclogues of their literature. That would be to discuss what their aims might and should have been. I am considering what ours of to-day should be.

As their language helps us of to-day to speak, so their architecture is an element in our education; and education should merely fit us for that design for which we too often find it substituted. If, in a given building, we have, for instance, to carry a weight, let us admit that our beam or bressummer need not necessarily be borne by a column modelled, with more or less faithfulness of copy, upon what the Greeks, or the Romans, or the builders of the Middle Ages have done before us. It is our weight, to be carried in our way, and it is for us to think out the problem of how best to make and shape and fashion the column to do our work, not to solve our difficulty by borrowing their method.

Sydney Smith's profane one, who was, like Talleyrand's *père de famille, capable de tout*, and who even went so far as to speak "disparagingly of the equator," was, I imagine, the most orthodox of persons compared with him who, in this room and to this audience, ventures to breathe a doubt as to the supremacy and all but sacred character of the Corinthian column, and whose architectural agnosticism looks with the same unorthodox eye alike upon the "Five Noble Orders of Architecture" and the various "Periods" under which archaeological architects have tried to catalogue Gothic architecture.

Such a profession of want of faith is sure to be met—I have heard it over and over again—by what is supposed to be a crushing *ad hominem* rejoinder. The sceptic is told that till he shall, in the first place, himself produce, or, in the second, shall put forward evidence that it is possible for himself or others to produce a column that shall approach even within measurable distance of the Greek model, it were better that he held his presumptuous tongue, and—like his interlocutor—were content to recognise that the Corinthian order gives architects the best and highest and final expression of the column possible. And, further, that thus recognising it, he should feel happy and grateful for so good a thing to copy. (Of course, by the way, he need not adopt the actual word "copy," but may use the more refined method of expressing the same thing, and refer to it as his "precedent" or "the source of his inspiration.") In answer to which I would urge that, while no art is entirely and absolutely "upon all fours" with another, and admitting that analogy is generally a somewhat specious method of argument, I think it quite a fair and legitimate request to ask you to put to yourselves for a moment this problem of dependence upon the great achievements of the past in the terms of another art. Let us see, for instance, how it looks when presented to us, not as an architectural but as a literary question.

There were great Greek architects—say, for example, Callimachos or Scopas or Ictinos—who wrought with their highest power and skill upon a certain factor in design common to them all—the Corinthian column—and produced examples of this beautiful feature which are recognised as reaching the highest possible point of attainment of which it is capable. They obeyed at the same time all the necessary conditions—their column has base, shaft and capital, it has proportion, it suggests strength where that quality and expression are called for, and elegance where æsthetic claims demand it. The result beautiful beyond question.

Well, let us now, as our parallel in literature, turn to poetry, and taking the sonnet, let us posit for the sake of my illustration that Shakespeare, Wordsworth and Keats have written the finest and most perfect verse, in this particular form, of which our language can boast. And, for the further purposes of my argument, I take these, the three greatest writers of sonnets, as the equivalents in literature to those who created the most perfect productions of Greek architecture. Then, if we regard both these great architects and these great poets from the same logical standpoint, it is no straining of argument

that puts us into the position to paraphrase what we all say to the modern architect, and to cry to the would-be sonnet writer, of to-day, "Hands off! The most supreme sonnet in which you feel your thoughts could mould themselves is for you. Do you forget that through Shakespeare, or Wordsworth, or Keats the greatest sonnet that the world has has already come into being? With perfection thus attained, why ask us to be satisfied with less? Are you then so sumptuous as to offer us your own poor thoughts in your halting words simply because they are yours, and because you feel that only thus can you speak your own message? The best is written, and for you remains at most humbly reverently to offer us more or less imitative variants of great work."

Do not misunderstand me on an important point in connection with this illustration. I am taking the sonnet—a common to all poets—as the parallel to the column in general, a feature common to all architecture. You cannot allege my position is the ridiculous one that because great men used them we ought to abandon the sonnet form in poetry, the column in our own art. My point is that in architecture we copy—whether we call it so or not—what we consider very finest example of the past, calling the result architecture, and it would be but a mere "parity of reasoning" if we in the same way to copy absolutely the most perfect sonnet Shakespeare and to call that result our poetry. It should influence every poet; no poet should copy it. The column Ictinos should influence every architect; no architect should copy it.

Or let us imagine again a poet of the past who has breathed into his verse the fullest and most satisfying expression of mystery and beauty of the dawn, and whose noble lines relate to us in highest degree its very soul and essence. Is, let us ask, the wonderful and supreme beauty of this achievement of former days to silence, as if it were sacrilege, the voice of poets who also hear what nature has to say when another is born? Are they to be told that it is for them presumptuous to try to sing the dawn, and that its spirit and sentiment, charm and beauty have been, once and for all, seized hold of and cast into so perfect a form that it is rank profanation to touch the theme again?

It is only in bricks and stone that we express our wants and ideals by means of borrowed Elizabethan phrases rather than in our vernacular; only in our churches that we imitate the archaism of Chaucer—an "English undefiled" it is true, his of the fourteenth century, not ours of to-day.

No Madonna that, say, Botticelli or Raphael ever painted has daunted a later artist from attempting the subject. Neither their work, nor that of another, whatever be its perfection, be looked upon as being so far the completest sublimation of all that man can say of woman's beauty and mother's love that he must regard that realisation of the subject as so perfect that neither he nor another should dare, without presumption, put forward their own conception of it. Unlike the architect he does not rest content with the low aim of copying that work again and again, with such strict accuracy, or such slight deviations as his nature may suggest, or to which his technical skill be equal.

I am not contending that copyism does not find its way into other arts than ours, but I do urge that at most they copy methods, the technique, the principles of other men and other schools; they do not, like us architects, copy the actual work. Our only invention is in the rearrangement of other men's thoughts; our only thought how to redispose other men's inventions. And even if in some degree imitation and copying exist in the other arts, ours is the only one based upon it.

We do not and we will not call it copyism or imitation, we use a hundred and one qualifying expressions to soften down those words. We talk of our "precedent," our "source of inspiration," of the "freedom with which such-and-such a style has been treated," of the "fresh and clever way in which the architect has dealt with his limitations of style," and so on and so on. But all these phrases do is to express that the work is not a strict copy, that it is but in part imitation, that the pretence is dropped at times and it is not all mimicry. They do but mean that, here and there, the architect is tempted to think for himself. As a matter of fact, these occasional lapses into heterodoxy are regarded with a good deal of suspicion natural to the orthodox, and the regular practitioners are pained and shocked at any departure from the recognised and traditional formulæ which they themselves have christened architecture.

Yet, for myself, I welcome these lapses, and would fain see them more frequent and their scope wider, till at length the "free treatment" spread over the whole building.

You will remember that I spoke above of designs which were so far daring as to show a quarter of individual and spontaneous thought, as compared with three-quarters dependence upon recognised style. I advocate no impossibility or unattainable ideal when I plead for at least a reversal of those proportions, and that your work shall show



your own personal thought and individual ideas as by far the larger element in the design. Approach your problem with all your education and your knowledge at your back, but with the intention to compel that education and knowledge to work your will, and not to submit to their leading you away their captive and their slave. Face your design—your plan or elevation or tower or door or cornice—as your own work which you must do in your own way, resolving to infuse it with the qualities you feel it ought to possess to represent you, and not with those that memory points out as being necessary to some selected style.

I am no despiser and contemner of that accumulated experience we call tradition, and in asking for our release as architects from the necessity to conform to the styles of other days and countries, I recognise as much as anyone the need of education, and that acquaintance with the highest achievements of other men that best fits us to express ourselves also to our best. As Sidney Lanier puts it, "Once for all, in art to be free is not to be independent of any form; it is to be master of many forms."

I am not asking you, as I said before, to try to be original," but I am begging you not to copy. And to start intending to shape an architectural design upon the lines of any style must of necessity imply copyism on a greater or less scale.

It is in placing individualism, fully equipped by education, before stylism that one sees the possibility of architecture becoming once more a speaking tongue, by the means of which man's wants and ideals of to-day shall be clothed in the outward shape those wants and ideals ask, and not in the worn-out trappings of the past or the mouldered ceremonies of men for ever dead.

Let me conclude with one of E. Wharton's apologies:—

"There was once a man who had seen the Parthenon, and he wished to build his god a temple like it.

"But he was not a skilful man, and, try as he would, he could only produce a mud hut thatched with straw. And he sat down and wept because he could not build a temple for his god.

"But one who passed by said to him, 'There are two worse lights than yours. One is to have no god; the other is to build a mud hut and mistake it for the Parthenon.'

To which I add this as rider:—"Nay," said another passer-by, "You would have built a better temple to your god ad you had an ideal of your own, and so no need to copy—even the Parthenon."

Mr. H. T. HARE, who proposed a vote of thanks for the paper, said he agreed with Mr. Townsend that mere copyism in art must be demoralising. The development of architecture as a matter of generations. Schools arose and declined, and each school depended upon those that had gone before. He was therefore inclined to think that the Victorian age would not be regarded as one of mere copyism, as it seemed to be to-day. All architecture was based upon tradition, and in every generation the majority of men had only mediocre capacity. The translation of their studies into work could produce more or less mere copyism of the work that they had studied. But there would always be some men who would produce architecture which would have individuality and originality in it which would pass beyond mere copyism. Every architect had not the power to express original ideas, and it seemed safer for the majority of men to work on traditional lines rather than try to strike out a style for themselves.

Mr. F. G. HOOPER seconded the vote, supported by Mr. F. ISHMAN and Mr. ALEXANDER WOOD.

It was announced that at the next meeting on February 14 paper would be read by Miss Ethel M. Charles, A.R.I.B.A., entitled, "A Plea for Women Practising Architecture."

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. John Slater, vice-president, in the chair.

The decease was announced of the late Mr. W. Green, of York.

The following were elected as Fellows:—Messrs. John Parker, A. N. Prentice, J. R. Moore-Smith and F. H. Tulloch.

As Associates:—Messrs. C. T. Adshead, S. W. Bensted,

G. Besant, A. B. Botterill, C. A. Broadhead, D. J. Brundrit,

Busbridge, R. S. Cockrill, W. J. Devlin, W. E. Dobson,

Ewing, E. L. Gaunt, A. E. Gibbins, F. R. Boyd Haward,

E. Hemingway, A. E. Hughes, A. T. Hussell, E. W. Lees,

B. Norris, L. R. Oakes, H. F. Ponton, C. E. Power, W. B.

ees, C. H. Reilly (M.A.), E. G. Rodway, Andrew Sharp,

L. T. Sharp, W. Slater, F. D. Smith, W. S. Tucker, A. H.

erststage, E. P. Wheeler, J. A. Woore and E. L. Wratten.

The Chairman announced that the Council of the Institute proposed to submit to His Majesty the King the name of Mr. J. F. Bentley, the architect of the Westminster Cathedral, as a fit recipient of the Royal Gold Medal, 1902, for his work as an architect.

Mr. JOHN SLATER read the following

### Address to Students.

The architectural student of to-day, if he takes an intelligent interest in the history of his art, must be much impressed and somewhat puzzled to notice how very fluctuating and short-lived have been the various fashions of architectural taste during the last hundred years or so. If he looks to ancient times, when the world was young, and what Lord Leighton calls "the spirit of spontaneous, unquestioning joy in production" was paramount, this was not the case. The styles of architecture which the early building peoples evolved for themselves to suit the vicissitudes of climate, the varying necessities of their public and private life, the nature of the building materials found in the country, and various other local conditions—whether you turn to Egypt with its colossal and gloomy avenues of sphinxes and columns, or to Assyria with its glazed tile decorations and mural tablets depicting in realistic fashion all the daily occupations of its kings, or to Persia with its lofty tapering columns and pillared halls such as we see at Persepolis—these styles, I say, persisted with slight variations for centuries, and only died with the decay of the nations themselves. When we come to Greece, we know that at the beginning of the sixth century B.C. the splendid temples of Artemis at Ephesus, and of Heré at Samos, were commenced, and we can only imagine what a length of time must have elapsed from the erection of the earlier and simpler Doric temples before these two magnificent buildings could have been possible. The Doric and the Ionic styles flourished contemporaneously, and the latter merged into the Corinthian, the earliest example of which is the Choric monument of Lysicrates, which was built in B.C. 335. When the Greeks began to plant colonies along the Italian littoral, numerous temples sprang up there, and the Romans became familiar with Greek architecture, which they naturally adopted, with modifications and variations, and this variant of the Classic style prevailed during the continuance of the Roman Republic and under the emperors, not only in Rome itself, but in the numerous colonies which she founded, and the ruins of the Roman edifices served as the pattern for the debased Classic buildings which were erected during the earlier centuries of the Christian era. Passing through the Romanesque, we find Pointed or Gothic architecture fully developed in England and on the Continent, except in Italy, where the Classic traditions lingered longest, by the end of the twelfth or the beginning of the thirteenth century, and from then down to the middle of the sixteenth century this style with its developments and modifications held the field until the revival of letters led to that renaissance of Classic taste which stamped its mark on the architecture, the literature and the painting of the next 200 years. Since then all has been changed. In 1830 Quatremère de Quincy published his work on the lives of the most celebrated architects, and he uses these words in his introduction, "As we only recognise as the true architectural art that which—alone among all known methods of building—owes its origin, its progress, its principles, its laws, its theory and its practice to the Greeks, and which, handed on by the Romans, has become that of the greater part of the civilised world, we must forewarn our readers that no mention will be found in our treatise of any work or of any architect of the kind called Gothic."

In 1827 was published a work illustrating the recent buildings erected in Regent Street, and on the outskirts of Regent's Park, and speaking in terms of no unstinted praise of the excellence of the designs. Yet in 1836, when the Houses of Parliament were in course of erection, we find the Gothic style to the fore. In 1867 the competitive designs for the new Law Courts were sent in to the number of eleven. Every one of these—except one alternative design submitted by Mr. Garland—was in the Gothic style, and Mr. (afterwards Sir) Gilbert Scott in his report claimed for the Gothic style that it afforded the greatest facilities for the developments suggested by modern requirements, modern materials and modern modes of construction. A generation later what do we find? You are all of you acquainted with the storm which was raised a few weeks ago against the Liverpool Cathedral competition, and I need not quote the opinion of a distinguished modern architect as to the competency of the Gothic style to meet the requirements of to-day. Now I think it very probable that all this may lead an architectural student to exclaim:—"A plague on both your houses. Why should I bother my head with learning anything about Classic or Gothic, Romanesque or Renaissance? All art is ephemeral, utilitarianism is the only guide. These styles are now all dead, and will give me no help towards designing a town hall, an infirmary, or a modern



residence." Now I do not think it can be too strongly impressed on those who may be disposed to hold such views that they will be utterly wrong if they take this line. What is it that stirs the emotions even of the unlettered man when he gazes down a vista of columns, gigantic and awe-inspiring, in an old Egyptian temple, or looks upon the perfect grace of the Parthenon, or the stupendous relics of mighty Rome, until, as Byron says,

the place  
Becomes religion, and the heart runs o'er  
With silent worship of the great of old ;

or when in some old Mediæval cathedral, where

The blessed saints are smiling dumb  
From the rich painted windows of the choir  
On aisle and transept,

he looks up to the springing arches and intricate ribbed vaulting—what I say, stirs the emotions, but the feeling that, different as may be the forms which present themselves, there is such fitness in the purposes of each and in the connections of all the parts with each other, such perfection in the combination of form and colour that the net result in every case is beauty? And if this emotion is excited in the untutored breast, even though it may fail to find expression, is it not more so in that of the artist, and ought he not to study reverently and carefully the older styles, not with the idea of slavishly imitating them, but with the desire to enter into their spirit, to see what were the aims with which the old masters of the building craft worked, and upon what the beauty of the result depends? The buildings which have attracted and which will attract the most universal admiration are not those at the sight of which we exclaim "How enormous" or "How wonderfully clever," but those which are beautiful; and whenever you meet with a building, large or small, new or old, which attracts you as being beautiful, study it carefully, not in the mechanical spirit of the anatomist who is dissecting a dead body, but with wise and loving sympathy and reverent tenderness. I am old-fashioned enough to think that an architect ought to try to make his building beautiful, and that a protest should be made against what appears to me to be the cult of ugliness which has been growing of late years. There is too great a tendency nowadays to mere eccentricity and originality among the younger men. There have been several buildings erected lately the cleverness—I had almost said the infernal cleverness—of which cannot be denied for one moment, but are they beautiful? There is far too much straining after effect, too great eagerness to achieve something not attempted, or at any rate, not achieved before; and, as has been well said, "When the achievement becomes obvious, is it not by way of becoming uninteresting?" I am not arguing in favour of a dead level of monotony which is uninteresting, even if the level be a high one; I have no love for the stereotyped style of art which the continental methods of education and study too often result in. If a man be a true artist his individual emotions, the bent of his mind, all the idiosyncrasies of his character are bound to come out in his work; but do not let your main idea and aim be to display your idiosyncrasies. In this connection I cannot do better than quote some words recently used by Sir Edward Poynter in addressing the students of the Academy. He said:—"The desire to be original is a constant besetment of the young artist, but unless founded on a solid base of knowledge and study it is apt to lead to mere eccentricity, and to show a desire to astonish rather than to command that legitimate admiration which sensible people would give to all well-considered and thoughtful work; and there is perhaps nothing more distressing to the intelligent observer of a work of art than an evidence of the desire to be original at all costs, where there is neither genius nor knowledge to support it." These words cannot be too closely pondered on and taken to heart by every artist, and especially by architects to-day, who are too apt to think that the rays which fall from the new electric lamp of eccentricity have extinguished all the beams of the old seven lamps. A real genius may be original because he has the knowledge and the power to work out his original ideas, but what can be more contemptible than to see the weak jejune and spiritless attempts to copy what may be admired as an original work of genius, while the copy only shows the lack of genius in its exponent? In literature we admire Carlyle because of the intense earnestness which is everywhere to be found behind the rough and somewhat uncouth language which he employs; but of those who have tried to imitate Carlyle what shall we say? "Non ragioniam di lor, ma guarda e passa." Your buildings are the vernacular in which you have to express the architectural ideas which are in you, and depend upon it the simpler and more direct that language is, the more eloquently will it appeal to the world. Be assured, therefore, that the time you may spend in studying old work will never be wasted, that such study will but brace your pinions and fit you better to soar into the heights which science is opening out for you. And further, the study of old

work will teach you another most important lesson—never lose sight of the nature of the material in which you are working. In the best old work the material is never tortured: one for ornamentation and enrichment is suitable for stone, another for brick, and another for wood; and this has always been the sight of when art became debased, with the result that a *tour de force* is attained from which, however much we admire the skill which produced it, we turn with relief to simpler, truer and more legitimate methods of treatment.

Before I leave the subject of what I may call your intellectual equipment for the career which you have chosen, let me urge you to cultivate an easy, terse and literary style. When you get into practice you will have to write reports and to carry on daily correspondence of all sorts of subjects, and you should endeavour always to make your own meaning as clear as possible to those whom you are addressing. It often occurs to me how lamentably deficient in literary style are the majority of letters which one gets from architects. And here I cannot but express my regret, which is shared, I believe, by all members of the Council, that we have been unable to award the Poynter prize this year. Here is an opportunity, which I should like to see more widely embraced, of carefully studying some subject given to you, digesting it, and then producing in your own words a dissertation on the subject, which should not be a mere *réchauffé* of what you have read, but an attempt to explain to reason upon the theme which has been set you. I hope next year we shall get a much larger number of competitors for the prize. Also I would urge the younger members of this Institute not to neglect any opportunities you may have to practice public speaking. If any subject is treated in this room which you have knowledge, I am confident your attempt to impart it will always be received sympathetically by the members of this chair, whoever he may be, and you will find it an enormous advantage to be able to express your ideas in public. I very much wish more of the younger men would take part in our discussions here. When you once get started in independent practice there will be hosts of matters coming before you on which you will only have your own judgment to guide you. You are sure to make some mistakes, but do not be unduly discouraged by them; you will learn more from your mistakes than in any other way. I must just say one word on the vexed question ever since I took any interest in the Institute—I mean competitions. Whatever may be my personal views on competitions, I do not for one moment suppose we shall ever get rid of them. From the point of view of the promoters, I do not think the best method of getting the most suitable design is by competition, because, however fully you may draw your conditions, you can never embody them all the small points which ought to be and would be considered by the designer if he were in constant touch with those whose requirements he is trying to meet; but from the competitor's point of view—painful as must be the aggregate waste of time and energy—it seems to me that it was a great deal of force in the remarks made by Mr. Wills a few weeks ago in this room. He said that a man starting in practice cannot possibly have his time fully occupied, and that he had better waste his time going in for competitions than in other ways, there is no doubt you may learn a great deal by endeavouring to work out actual problems of design; but you ought to work them out conscientiously, and not slur over difficulties, or you will be apt to get into slovenly ways of work, and there is always the danger of being led to telling bits of design into the elevations without looking at the construction. And if you do go in for competitions, when the award is made I cannot help thinking the losers would best consult their own dignity by accepting their defeat in silence. Of course, I am assuming a conscientious assessor and promoters who mean loyally to accept his award. Words can be too strong to stigmatise cases in which assessments are upset for no intelligible reason except nepotism; but I hope such cases are growing rarer, and the Institute is, I feel sure, always desirous of doing its best to keep competitions clean, fair, and above board.

The field of an architect's practice is ever widening, and in fact, it is now so extensive as almost to deter men from entering on it. All the new discoveries of science, which at first were simply laboratory experiments, are gradually made to subserve our daily needs and requirements, and as soon as this is taken place our clients expect us to advise them with reference to all new inventions, and you will find it to your great advantage to keep *au courant* with the times by noting and, if possible, investigating the utility of new inventions affecting architecture. But the powers of any individual are limited, and I feel sure that the near future will see a good deal of dilution of the manifold duties undertaken by architects. I see no reason why this should turn out to the detriment of the architect. On the art side he can be associated with the sculptor, the painter and the mosaic worker, and on the scientific side why not with the engineer? Quite recently



stitute urged the desirability of associating an architect with an engineer in bridge design, and I am confident it would be desirable to associate a professional civil engineer with an architect in the case of large buildings where difficult problems of support or construction have to be considered, the best arrangement of electric wiring, and so forth. I would be the last to undervalue the great assistance which an architect receives from what I may call the specialist manufacturers with whom we so frequently have to consult, but personally I am disposed to think the better plan would be to put their work under the direct supervision of a professional engineer, who could draw up the specification embodying the conditions under which the work is to be carried out. But this is a question which scarcely comes within the limits of an address to students. The very wideness of the field covered by an architect's practice, with all its manifold responsibilities, has, however, its compensations. As your practice increases you need never be haunted by the dread of monotony. Your work will probably take you afield into various parts of the country, and every fresh building which you have to design will present new difficulties as to site, aspect, accommodation, &c., which it is a never-ending pleasure to try to overcome. Architecture is so many-faceted, and touches so many planes of modern life—ecclesiastical, municipal, commercial and social—that an architect ought above all other men to be broad-minded and to avoid anything like cliqueism or a haughty bearing towards his fellows. Remember that, however fascinating and lofty may be your designs, the effect of your building when finished depends not upon yourself, but upon the builder who carries out your designs, the foreman who looks after the work, and even the individual carpenter who fits a moulding or the labourer who mixes the concrete, and if you cultivate broad sympathies you will find all through your life that you will remain a student and will be learning lessons every day, and this will tend to keep your brain clear and your mind receptive.

In these few remarks I have endeavoured merely to touch upon some of the matters of interest to students as to which word of advice or caution may be useful, but you must fill in the details yourselves, always remembering that so honourable and inspiring a profession demands that those who practise it should always uphold a high standard of honour among themselves.

In conclusion, let me heartily congratulate those of you who have come here to-night to receive the prizes which you have so thoroughly deserved. Mr. Hare will give you some detailed criticisms on the work which has been submitted, and I will only say that I think the collection of drawings which has been on view the last fortnight is a really remarkable one, and shows an aggregate of labour, study and skill which cannot be too highly commended. And you who have not been fortunate enough to win prizes are also to be congratulated, for you have shown a steady perseverance in working out your designs which will certainly not turn out to be lost labour, and you will learn a great deal by observing how others have got over the difficulties which perplexed you. Do not be unduly depressed by your failures nor elated by your successes, but let each only stimulate you to further endeavours. I heartily wish you all possible success in your future careers.

Mr. H. T. HARE gave his

#### Review of Work Submitted for the Prizes and Studentships, 1901.

He said:—One cannot, in looking round the exhibition, fail to be struck by the vast amount of care and labour which the students who are competing have expended on their work, and it behoves the critic to weigh well his words that he may not in the one hand omit any beneficial criticism, or on the other discourage or misunderstand an earnest and meritorious worker. It is also to be borne in mind that the designs are the work of students and must not therefore be judged with so great severity from a practical standpoint. With these considerations before me, and remembering the many brilliant men who in former years have occupied my present position, I approach my task with some trepidation; being conscious that, though I have been accustomed to form opinions on the works submitted for these prizes, I have not hitherto had occasion to formulate those ideas in such a manner as shall make them intelligible to others.

The subjects included in the prize list of the Institute cover a very wide field, ranging from the literary side, as instanced by the essay, to the eminently practical, as evidenced by the Grissell medal. The study of old work is encouraged in the competitions for the Pugin studentship and the Institute medal, of colour in that for the Owen Jones prize; while design, the ultimate end and aim of all these studies, is avoided in the subjects given for the Soane medallion and the Tite prize. Any student who had taken, year by year, one of these subjects would, I venture to think, when the list was exhausted, have passed through a course of study which would be of infinite value to him in after years, and would

equip him with a fund of knowledge which would stand him in good stead in the stress of practice, when little time or opportunity is left for theoretical study. The standard of work submitted has always been a high one, the prize designs and drawings usually being among the most notable published during the year, and this occasion forms no exception. Except in one or two particulars, I think the work may bear comparison with the best of former years; indeed, some of it seems to me to be a step in advance.

I will take what is usually considered the most popular competition first in order. I refer to the Soane medallion. The subject given, a large public swimming-bath, with two or three accessory rooms, has attracted sixteen competitors. Although this is a rather less number than last year, it may be considered a satisfactory response, and it is gratifying to be able to say that the quality of many of the designs is much higher. Last year the Council felt compelled to withhold the medal, a course which must always be reluctantly taken; but this year there are several designs, any one of which might have received the award. The site given being an open one, untrammelled by any restrictions, it is curious to note that out of the sixteen competitors no fewer than twelve should have preferred to arrange their main frontage and entrance at one end, the remaining four only utilising the side, the length of which I should have thought would offer the most architectural possibilities. The end frontage and entrance have tempted many competitors to duplicate the accessory rooms asked for in order to balance the grouping, a license which was hardly contemplated and is barely legitimate. It is never intended that the schedule of accommodation should be strictly and rigidly adhered to, but it should not be necessary to materially vary it in order to produce a satisfactory design. These remarks apply with the greatest force to the prize design, that submitted by Mr. Fulton under the motto "Iona"; indeed, to such an extent has he exceeded the prescribed limits, that the selection of his design was seriously jeopardised on this ground alone, and it is only owing to its undoubted superiority in other respects that it receives the award. This design is an extremely fine one from the architectural point of view, exhaustively thought out in every detail, brilliant in draughtsmanship, and though a little wanting in some respects in reticence and inclined to be overdone, still, taken all in all, a masterly composition reflecting the greatest credit on its author. Two designs receive medals of merit, those by Mr. Moodie ("Tepidarium") and Mr. Detmar ("Balneum"), both of which are very excellent sets. Of the two I prefer the former, the management of the plan with the two enclosed courtyards being extremely satisfactory. The interior is also well designed with an evident appreciation of architectural effect. In Mr. Detmar's design the planning of the octagon hall cutting into the bath appears awkward and the reason obscure. There is a touch of genius, however, in the open arch, with group of statuary between the hall and bath. "Io" (Mr. Vincent Harris) receives honourable mention, and is a clever set of drawings. The interior of the bath, however, though well-designed generally, appears to be insufficiently lighted. There are several other designs which may be examined without uneasiness, but it is impossible to particularise all that are worthy of note. I may, however, mention "Amphibious," a clever design of Spanish character, "Silhouette" with a wonderful coloured interior view, and "Roma." Several competitors do not appear to have realised that the treatment was intended to be architectural, and have regarded the problem as one to be solved by engineering rather than architecture, a mistake which ought not to be possible, for the one should comprise and be necessary to the other. Few of the authors have successfully grappled with the difficulty of the dressing-boxes, which ought not to have been impossible of treatment if not regarded from a too practical standpoint. The chimney-stack has also proved a serious stumbling-block, and not a single author has attempted the solution by twin towers, which in a Classical or Renaissance design would, I think, have been a legitimate treatment. It is also difficult to see why so few of the best designs have introduced lighting from the roof, which is almost an essential in a swimming bath, and is surely not beyond the wit of man to compass without much sacrifice of appearance. One notices with some interest that the most successful designs are those which have drawn their inspiration from the Baths of Caracalla, a motive which bids fair to prove a sort of universal recipe for many of our problems, from a cathedral downwards, and one is fain to admit that a worse model might have been selected.

The drawings for the Tite prize are this year disappointing, as, though the number of designs submitted is large, there is no single one among them which unmistakably excels; indeed, I may say that there is not one which can be regarded as quite satisfactory. The subject, a Royal Mausoleum, is a purely architectural one, calling for the highest development of the art, and the conditions supplied a plan which was one of Palladio's unworked-out sketches. Competitors were thus at



liberty to devote the whole of their thought and study to the architectural treatment of the subject, and it was fully expected that at least one or two very fine designs would have been elicited, especially as so much attention is at present being devoted to Italian architecture. I should here like to explain that the Tite Bequest was made with a view to promoting the study of Italian architecture, and by that time should be understood the architecture of Palladio and his contemporaries and followers. This does not appear to be clearly realised by many of the competitors, and year by year the Council are compelled to pass over a number of very excellent designs because they did not fulfil this essential condition. The design which receives the award this year, "Lion Heart," by Mr. C. Gascoyne, may be said to owe its position rather to negative than positive merit. While it fails in dignity and impressiveness, it is the design against which the fewest objections can be urged on a careful examination of its details. The dome cannot, however, be said to be strictly Italian, and its outline is not very pleasing, and the entrance portico or porch is open to criticism for the manner in which the columns are introduced on each side of a narrow rusticated pile. The drawings are well thought out, and the design of the interior is satisfactory. "In Memoriam," by Mr. Andrew Nutton, receives a medal of merit, and is the most striking design submitted, the perspective being decidedly powerful. There is a great deal of very clever work in this set of drawings, but the dome and ovum are disproportionate to the substructure, and the entire composition is overpowered and crushed. The author has evidently considered that light is not essential in the interior of such a building, and the central space under his dome would be gloomy in the extreme. Three designs receive honourable mention—those submitted by "Marble," "Shamrock" and "Rex." These, while being excellent in some particulars, all fail in some important respects. "Marble" has a well-proportioned exterior, though the architecture is not quite Palladian. The interior is, however, not up to the standard of the exterior, and is in many respects weak in design. "Shamrock" has the best interior of the series, but the introduction of rustication internally may be questioned. The exterior does not appear to have been sufficiently studied in its proportions, resulting in a somewhat clumsy outline; and although in this competition one does not look too critically into questions of construction, I may be permitted to point out that no effort of engineering could ever induce the dome to stand as shown in the section. "Rex" has a well-executed set of drawings illustrating a design of good and pleasing proportions. The introduction of the two towers or campanili in such close proximity to the dome cannot be considered a satisfactory composition. The dome and other portions of the building are reminiscent of St. Paul's, but the details are weak, and the whole somewhat lacking in vigour and originality. There are several other designs worthy of note, but which time prevents me from mentioning more particularly. It is curious to observe in looking round the designs how many, which are in other respects clever and meritorious, have failed in their general proportions, the tendency being to exaggerate the size of the dome and ovum. This is specially noticeable in the case of "Gibbs," which but for this fault would have occupied a high place in the competition. Many of the authors have drawn upon the buttresses and other features of Sta Maria delle Salute—a rather dangerous source of inspiration, in spite of its extreme picturesqueness in its own particular position. The Grissell medal has this year attracted six competitors, the design being for the roof over a picture gallery. The competition being for construction only, one does not necessarily look for exceptional merit in an artistic sense. It is, however, interesting to find that the best design constructionally is generally also the best artistically, which tends to show that the practical mind can sometimes descend to consider the pleasing of the eye. Or should I reverse the remark? Of the six designs two only have adopted what is generally accepted as the most satisfactory method of lighting; that is, by continuous skylights along each side, leaving the central portion solid—a rather difficult method to treat successfully. The selected design, by Mr. L. W. Grace, is shown in a set of careful drawings, which would no doubt result satisfactorily in execution. I did not, however, notice any complete drawing of one of the roof trusses, which seems a rather serious omission. Nearly all the other designs are worthy of notice, though one or two have manufactured difficulties in order to surmount them, not always with conspicuous success. It is hard to imagine why "Groined Barrel" should have made his roof of elliptical section, both inside and out, in solid concrete. Surely a slope on the outer surface would have been much simpler and easier to construct and to cover. Or, again, why "Fleur-de-Lys" should have used an inner and outer roof principal, both entirely independent of each other. On the whole, however, all the designs reach a high level of merit.

Turning now to those competitions which do not involve

design, but which are devoted to the study of old buildings, I am pleased to note that excellent work is again submitted by all competitors. There is evidence of an amount of enthusiasm and love of their art which leads us to look forward hopefully to the future at the hands of those who will shortly be engaged upon active practice.

Twelve competitors have entered for the Pugin scholarship, the award being made in favour of Mr. Wontner, who sends an admirable series of sketches and water-colours. The subjects treated are of a comprehensive nature, embracing both Renaissance and Gothic work in England and on the Continent. Mr. A. Muir receives a prize of 5*l.* 5*s.* and Mr. J. Gibbons honourable mention. All these drawings are of a high standard of merit that it is difficult to particularise.

The competition for the silver medal is one of the most valuable of the series, in that it insures the careful measurement and delineation of interesting old buildings, thus forming a permanent record which may become of great importance in the future, when the originals shall have succumbed to the hands of the vandal or the ravages of time. For the student, too, there is no work which can give so thorough an insight into the details and methods of the masters of the past as the actual measuring and plotting of the buildings. Sketching is good, but measuring is better. Twelve sets of drawings were submitted, all more or less good, and all of great interest—certainly worthy of much more study than I was able to give them. The medal goes to Mr. Gregory, who has an excellent monograph of Bolsover Castle. Mr. Wynn Owen and Mr. Stanley Towse receive 5*l.* 5*s.* for drawings of Lindisfarne Abbey and Houghton respectively. Among other drawings I note a very interesting study of Emmanuel College Chapel, which is certainly one of the most charming buildings in Cambridge, and which I can remember to have seen illustrated before. I trust that these drawings will receive publication in some form.

The interest in the Owen Jones studentship is fully maintained this year, and it is pleasant to recognise that so many of those competitors who have been unsuccessful in former years now come forward with better results. The standard of the work is a high one, most of the drawings being admirably executed and showing considerable mastery over the brush. While the colouring is not in some cases formed rather by a desire to produce a pictorial than a truthful effect is open to serious question. I suppose colour is a thing which no two people see alike. I am also struck by the fact that the large majority of the studies are of mosaic, Della Robbia and kindred materials, that there are practically no drawings of painted decorations, which would probably be of much more practical service. A vast amount of labour has been expended in showing minute details of each separate tessera of a floor or roof, and while one can but admire the patience and care devoted to the work, it is impossible to avoid a feeling that some of this energy might have been better employed. Seven sets of studies have been submitted, the studentship being secured by Mr. G. N. Bennett, while Mr. Percy Nobbs receives 10*l.* 10*s.*, and Mr. McLachlan 5*l.* 5*s.*, all of whom are to be congratulated on their work.

The essay is for some reason never a very popular competition, and this year only four were received. The subject was "The employment of the Order in Renaissance and Modern Architecture," a theme which at the present moment should be an attractive and inspiring one. It is unfortunate, however, that it has not proved the case, and more unfortunately still, that none of those submitted should be of sufficient excellence to merit the award of the medal. That submitted under the motto "Serlio," Mr. J. J. Waddell, has, however, been awarded a prize of 10*l.* 10*s.* With the essay my task is finished, and I have only in conclusion to thank you for having listened patiently to my perhaps too lengthy remarks. To those students who have been successful I would say: "Regard this as but one step on the long road you are travelling. You have achieved something. There still remains much more than you will ever accomplish." To those who have not been awarded the spoils of victory:—"There is no discouragement. The fact of having prepared these studies, and of having seen how others have attacked the problem, places you in an infinitely better position for the future, and should serve as an incentive to yet another effort."

The Chairman then distributed the prizes.

Sir L. Alma-Tadema, R.A., moved a vote of thanks to John Slater and Mr. Hare.

Mr. J. Burnet, of Glasgow, seconded the motion.

A site has now been purchased from Viscount Portman for St. Cyprian's Church, Dorset Square, N.W., a condition of sale being that the church is built and ready for consecration by June 1, 1904. The architect is Mr. J. N. Comper, of the firm of Messrs. Bucknall & Comper. An appeal was first made thirty-seven years ago to build the church, but it was impossible to obtain a site until recently, when the leases expired.



### THE LIVERPOOL CATHEDRAL SITE.

THE following statement of the arguments in favour of the adopted site, St. James's Mount, has been issued by the committee of the Liverpool Cathedral:—

#### *Public Decision.*

At a public meeting held in the Liverpool Town Hall on June 17, 1901, the Lord Mayor, presiding at the opening until the election of the Earl of Derby as chairman, the St. James's Mount site, which had been recommended by the Lord Bishop's committee after prolonged and careful consideration of Monument Place and all other available sites, and with the assistance of the most able professional advice, was determined on by an overwhelming majority.

#### *Criticism.*

There has been, however, as is only natural in the case of a great and important undertaking, much criticism, and in certain quarters a good deal of opposition, since the St. James's site has been definitely and finally decided on.

Criticism, when duly accredited and thoroughly competent, should be welcomed as a valuable aid to progress, nor can a fair and openly-conducted opposition be productive of anything but good. But it is only right that both sides of a case should be heard, and heard fully and impartially.

#### *Objections to St. James's Mount.*

It has been objected to the St. James's Mount site that it is neither (1) central, nor (2) accessible, nor (3) commandingly prominent, and (4) that it has no vistas; (5) that its occupation would interfere with a public recreation ground; and (6) that it would practically mean a contribution by the ratepayers to the cost of the cathedral.

#### *Its Advantages Maintained.*

The committee hold that each of these six statements rests on an entire misconception, and has no valid foundation whatever; and that the advantages are distinctly on the side of the St. James's Mount site; and further they maintain that this site (7) is exceptionally suitable owing to its freedom from noise, (8) that it is spacious, (9) that the foundations are quite satisfactory, and (10) that it affords a unique architectural position which renders it on its own merits, and apart from all question of cost, a finer site than that at Monument Place. On these points the committee's conviction may be stated as follows:—

1. The St. James's Mount site cannot be reasonably considered otherwise than central, and will become more and more so as the years go on. As a matter of fact, the sites are both fairly central, and there is only a distance of 1,233 yards between them.

2. It is accessible. Tramcars run already on three sides, and on two of these the distance is about 160 yards, which is quite near enough. The site is only 500 yards from St. James's Station; practically as near to the Central Station, Exchange Station and the Pierhead as the Monument Place site; and only 600 yards further away from Lime Street Station. It is therefore, quite easy of access from all parts of the diocese of Liverpool.

3. It is prominent. St. James's Mount has the advantage of being some 24 feet higher than Monument Place. The cathedral would, therefore, be much more commandingly prominent than if built on Monument Place. A cathedral built on St. James's Mount could be viewed locally from a distance of the north and east sides of 200 yards, on the south and south-east of 300 yards, and on the west from an average distance of about 33 yards. Moreover, the Mount, as the Dean of Ely reminds us, "was originally the crest of one of the sandstone ridges which form the background of the sloping hill on which Liverpool is built, and it still remains a lofty eminence on which, as seen from the river—and that is the place from which the most characteristic view of the city must always be visible—the mass of a cathedral building, with its towers and spires and lantern flèche, and the long line of the roof would stand up grandly, giving dignity and distinction to the already picturesque skyline of the city." The Monument Place site can claim no such commanding views.

Nor is it without vistas. Indeed in this respect it compares favourably with the Monument Place site. Mr. J. A. Drisdale Scott, himself an eminent architect, and nephew of the late Sir Gilbert Scott, says:—"The site in itself is a particularly fine one, and one which any architect would take delight in dealing with. It is very peculiar, as the plateau stands some 15 feet above the flanking road. This would give a splendid effect to the principal façade, which would have a wide open space about 500 feet in depth leading up to it. . . . This site, like the other, is very high, and the cathedral would be well seen from the river and other more distant points." At Monument Place the greatest distance that the west end could be seen from would be the corner of Commutation Row and London Road, a distance of 470 yards. On the other three sides the cathedral would be facing on to London Road, Pembroke Place and a proposed new street, which would each be only 20 yards wide, and even if the cathedral were set back

another 20 yards, the view would only be across a space of 40 yards wide, compared with the vista of some hundreds of yards at the St. James's Mount site.

#### *Public Rights Respected.*

With regard to the question of interference with public ground, it should be remembered that by no means the whole of the site is a recreation ground. There are six houses and two cottages upon the Mount which are leasehold from the Liverpool Corporation, and these houses, with the gardens attached, and the back road belonging thereto, extend for a distance from north to south of 500 feet. These houses it is proposed to buy from the Corporation and present leaseholders. The only rights the public have over this part of the Mount are confined to the length of a space called St. James's Walk, which is 20 feet wide. Very little of the space now allotted to the public as a recreation ground will be required for the cathedral.

#### *Contributions by Ratepayers.*

Furthermore, the St. James's Mount site has cost the ratepayers of Liverpool for land and all improvements, such as laying it out, walks, railings, &c., a little over 10,000*l.* And as the cathedral committee have offered this sum to the Corporation for the site, the ratepayers of Liverpool will not be contributing to the cost of the cathedral, and, moreover, will probably for all time to come still have the benefit of nearly the whole open space of St. James's Gardens.

#### *Devotional Requirements.*

The arguments in favour of the Monument Place site are in the main precisely those which might be employed in the case of a building designed for purely secular purposes. Such arguments, even if they were in themselves convincing, which is very far from being the case, would still take no account of the devotional requirements which are of the first importance in a place of worship. The ideal cathedral site should be central, accessible and prominent, and yet at the same time should stand a little apart from the noise and din of heavy traffic.

The Monument Place site is anything but a quiet spot. The roar of traffic is continuous. Electric cars, on Sundays and weekdays alike, run past it on the two longest sides, and the noise and clamour (as is now the case in the cathedral church of St. Peter) would, in spite of the greater thickness of the walls, be exceedingly disturbing.

St. Paul's Cathedral has been quoted more than once as a parallel case as regards conditions, and it has been claimed that there the traffic is no disturbance. However this may be, the cases are not parallel, for at St. Paul's (1) the road traffic is practically on one side only, the other being blocked by a bar which is seldom opened, (2) the road is laid with asphalt instead of granite setts, and (3) there are no electric cars.

The St. James's Mount site possesses the great advantage of being free from all undue noise and disturbance.

#### *Available Space.*

In addition to this there is the advantage of a large free and open space. The St. James's Mount site affords plenty of light and air, and gives an entire open area of 22 acres, against the 8 acres of the Monument Place site, the ground available for the cathedral itself being 1,020 by 248 feet, that is to say 5 acres, as against 4 acres at Monument Place, and situate in a clear space nearly a quarter of a mile long and 200 yards wide.

#### *Foundations.*

The foundations at the St. James's Mount site will rest in solid rock, which in some places shows on the surface. They have already been proved, and would probably cost less than on other sites. At the Monument Place site there is a railway tunnel underneath one corner, which might prove a source of very great inconvenience.

#### *Architectural Possibilities.*

The architectural possibilities at St. James's Mount are thus eloquently set forth by three gentlemen whose names are held in high and deserved regard in our midst. Mr. Geo. Bradbury, diocesan surveyor, and past president of the Liverpool Architectural Society, speaks as follows:—"The architectural effect as regards situation would in my opinion quite equal, if it does not surpass, anything we have in England. The cathedral would probably stand on a level platform about 13 feet above St. James's Road at its north end. The nave floor would, therefore, be about 150 feet above the level of high-water mark, and about the same level as Hope Street, facing Gambier Terrace. The view of the cathedral for the whole length of that part of Hope Street, viewed across the pretty hollow of the cemetery, would be something almost unique in England, and of great magnificence. The St. James's Mount site is in my opinion the only one in the whole of Liverpool that meets the conditions of a Liverpool cathedral." Sir Edward Russell, dealing with the subject at the public meeting



of June 17, 1901, spoke on this point as follows:—"I have been somewhat affected by the glorious prospect . . . of the great church on the heights of Montmartre near Paris, which is in many respects almost identical in its effect with that which we shall have if we use the St. James's Mount site for the cathedral. It is impossible to imagine a more inspiring sight than that afforded by that great church in the vicinity of Paris." The Dean of Ely, a native of Liverpool, and a resident in the city as boy and man for many years, and a well-known authority on cathedral architecture, makes the following emphatic statement:—"I cannot at all understand how any citizen of Liverpool who really knows and loves his town, much less how any architect or artist with the least spark of poetic imagination, can be blind to the picturesque and romantic possibilities of 'the Mount' as a site for the mother church of the city."

#### *Further Objections to Monument Place Site.*

In addition to the satisfactory nature and distinct advantages possessed by the St. James's Mount site, it is due also to consider, further, certain grave disadvantages, besides those already named, attaching to the Monument Place site, from which disadvantages the St. James's Mount site is either wholly or almost entirely free. Among such objections may be enumerated:—

#### *The Housing Question.*

If an attempt had been made to get an Act of Parliament sanctioning the purchase of Monument Place site, there would certainly have been a clause inserted in the Bill compelling the promoters to provide houses within a reasonable area for all the working classes displaced. There are upon the site no less than sixty-three such dwellings, and when it is remembered that the rehousing must take place near to the original spot, and that in the nature of things, owing to modern methods and modern sanitary requirements, the new houses must take up a greater space than the old, then the task will be seen to be one of enormous, if not of prohibitive, difficulty.

#### *Landlords and other Interests.*

It is obvious that to satisfy these, when regard is had to the high value of land and property in the neighbourhood of Monument Place, a totally disproportionate and excessively large sum would be required in comparison with the St. James's Mount site.

Moreover, the large and numerous trade interests which exist on the Monument Place site and in its neighbourhood would call for heavy compensation in the event of the site being acquired for a cathedral.

Again, it must be noted that the Monument Place site being an extremely valuable property with high rentals, the rateable value naturally rises in proportion, amounting in fact to 6,784*l.* net assessment, and if the site were acquired for such building purposes as those under consideration, there would ensue a loss to the ratepayers of the annual sum of about 2,250*l.*—an enormous loss compared with that at St. James's Mount.

The net rateable value of 6,784*l.* per annum at thirty years' purchase represents a capital sum for the site of no less than 203,520*l.*

Another difficulty would arise in connection with rights of light. These rights would be considerations to be seriously reckoned with in the case of such a lofty building as a cathedral, with transepts perhaps 100 feet in height, reaching out on each side towards adjacent property, and rising above it so as to overshadow it, to say nothing of the tower or spire, which might reach a height of 300 feet. The comparatively free and open space at St. James's Mount reduces this difficulty to a minimum.

The foregoing is for the most part a plain statement of facts. To the unprejudiced inquirer these facts cannot but carry conviction. It is not claimed that the site is perfect, but it is claimed that it is remarkably and exceptionally good, that it possesses in great measure all the necessary qualifications of the ideal site, and that it is by far the best in Liverpool. The decision to adopt it, as the Dean of Ely justly remarks, "is a wise one, not only on grounds of economy, but on grounds of utility and art." It is an accident, though a fortunate one, that the cost promises to be but small. No thought of mere economy has influenced, or would ever be allowed to influence, those on whose shoulders rests the weighty responsibility—deeply felt and recognised as such—of erecting for the people of this important and populous diocese a cathedral church which shall be in every respect worthy of this great community, with its manifold associations and interests, its mighty wealth and influence, its untiring industrial activities and its world-wide commercial relations; and shall stand as a witness, both in our own and all future ages, to the true spirit of devotion and worship amid the turmoil of life, wrought out and expressed in the most noble and enduring form, by the builders of the twentieth century.

### GENERAL.

**The King** has been pleased to appoint Mr. Guy Francis Laking, M.V.O., to be Keeper of the King's Armoury.

**Mr. W. Emerson** has returned to England after spending several weeks in Calcutta as the guest of Lord Curzon, in connection with the designs for the All-India Victoria Memorial Hall at Calcutta.

**The Late Mr. W. F. Porter**, architect, has left property valued at 39,801*l.* 14*s.* 11*d.* The late Mr. W. Henry Martineau's property is returned at 31,953*l.* 8*s.* 4*d.*

**The Union Centrale des Arts Décoratifs** have arranged for the inauguration in the spring of the museum containing the collections in the Pavillon Marsan.

**The Court of Common Council** has sanctioned the construction of a public subway between the Bank station of the Central London Railway and the Lombard Street station of the City and South London Railway at the level of the booking offices.

**The Victoria Memorial** in Sind is to take the form of a colossal statue of Her Majesty in Carrara marble, the work of Mr. Hamo Thornycroft. The statue, which is to be erected opposite the Frere Hall at Kurrachee on a specially prepared site, is estimated to cost 6,000*l.*

**The Salle Adolphe Rothschild**, in the Louvre, containing works in precious metals presented by the late M. Rothschild, will be opened on Monday, the 17th inst.

**The Parliamentary Committee** of the County Councils Association have drawn up a resolution expressing the desirability that county councils should have, with regard to main roads, vested in them powers to make by-laws prescribing the line and level of all new buildings abutting on such roads, and that a clause to the above effect should be embodied in the Highways Bill to be introduced into Parliament.

**The Government** has promised to present to Cape Town a site and a pedestal for the King's statue to be erected there. The funds for the statue itself will be raised by public subscription.

**The Cardiff Tramways Committee** have been considering tenders for supplying generators for the new electric tramways. The tenders were divided into two classes, "English" and "Foreign." A member of the committee at once proposed to exclude the German tenders, although they were the lowest. This was agreed to, and the English and American tenders were considered. The committee recommended the acceptance of an English tender, that of Messrs. Dick, Kerr & Co., although it was not the lowest.

**The Authorities** of the 'Rhine' province and the Moselle valley in Germany have been ordered to prohibit the exhibition of advertisements likely to spoil the views of the landscapes in their respective districts.

**The First Commissioner of Works** has stated that arrangements have been in negotiation for the acquisition of properties necessary for the isolation of the National Gallery, and provision for the purchases is made in the estimates for 1902-3. As soon as possible after April 1 next the purchases will be completed. It is hoped that possession will be obtained and the premises demolished this summer.

**Mr. Andrew MacCallum**, the painter of forest scenery, died at Holland House studios, London, a few days ago. He was born in Nottingham, and was at one time director of the School of Art at Manchester.

**Messrs. Spottiswoode & Co. Ltd.**, have brought out another edition of their List of English Clubs in all parts of the world. There are many additions, and over 800 golf clubs are included in this edition. It will be invaluable to travellers and men who have business in foreign States or in the Colonies.

**M. Gervex** is now engaged on a portrait of Prince Napoleon who will be depicted in his study engaged on the preparation of his work entitled "Memorial de Saint-Hélène."

**The Portsmouth Corporation** have decided that the statue of Queen Victoria to be erected as a Coronation memorial will be without the three medallions of local celebrities first suggested. Mr. Drury, the sculptor, is of opinion that the town hall square would provide an ideal site for the statue. If the statue were placed by the town hall the building would dwarf it. A sub-committee has been elected to confer with the roads and works committee as to the site and to carry out the work.

**M. Pierre Langier**, of the Théâtre Français, has presented to the Musée Luxembourg the bust of his uncle, Etienne Arago, who was at one time conservator of the gallery. It is the work of the late Carrier-Belleuse.

**The Manchester Society of Architects** will hold its fifth sessional papers meeting in the board-room of the Chamber of Commerce, No. 44 Mosley Street, on Thursday evening next, February 13, when Mr. Charles M. Hadfield A.R.I.B.A., will read a paper entitled "English Architecture of the Fifteenth Century," which will be illustrated by lantern views.



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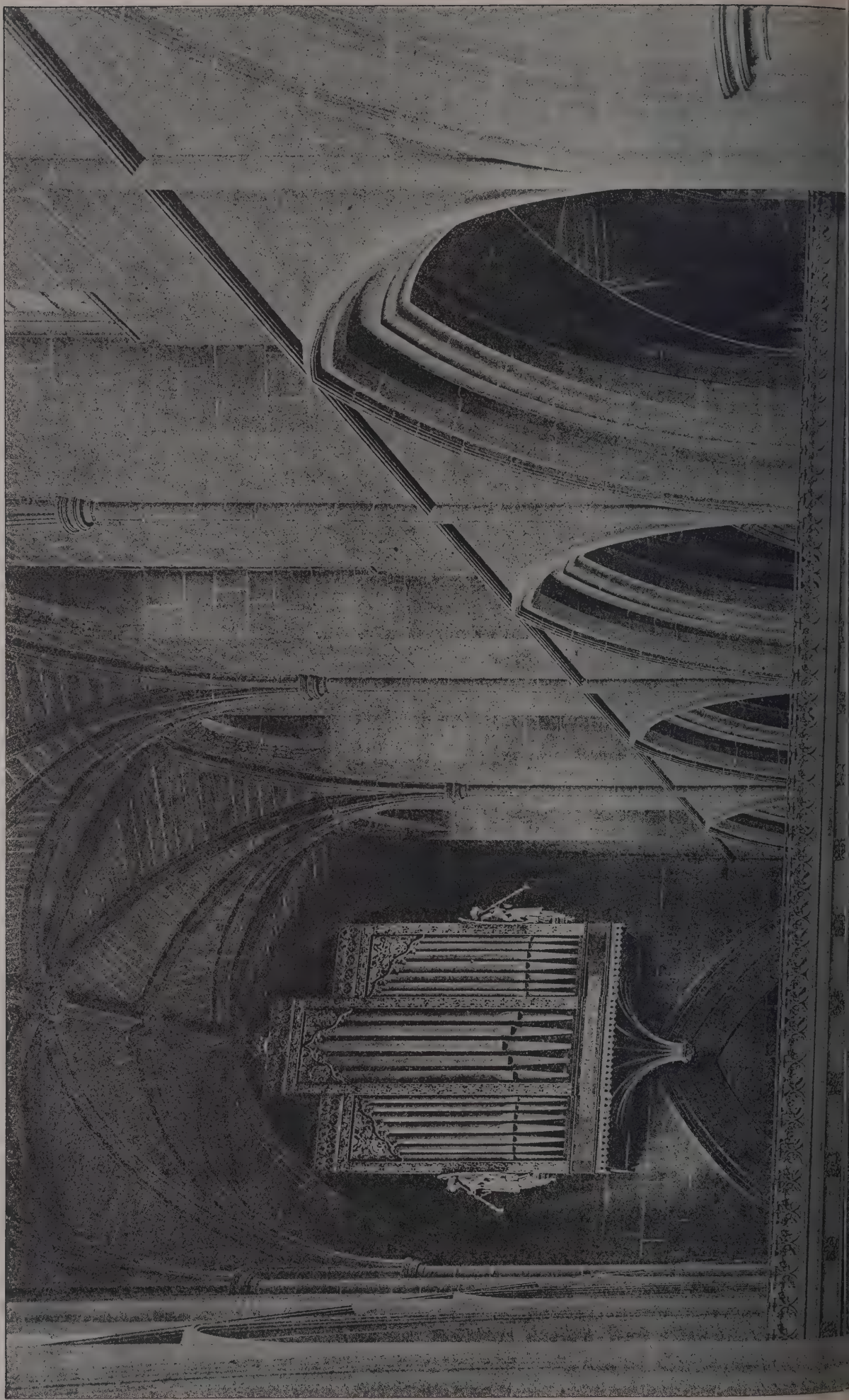
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Die Architektur, Feb 7<sup>th</sup> 1902.







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# THE Architect and Contract Reporter.

## EDITORIAL NOTICES.

Of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

## TENDERS, ETC.

A great disappointment is frequently expressed at the non-observance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

WIMBORNE.—March 1.—Plans are invited for laying-out a pleasure ground about 6 acres of land in the centre of the town. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

WIMBORNE.—March 29.—Competitive plans are invited for the proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for the first, second and third best plans. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

MELBOURNE.—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West Melbourne.

WIMBORNE.—May 14.—Competitive designs are invited for the proposed town hall, the cost of which must not exceed 40,000l. Premiums of 150l., 100l. and 75l. are offered for the three best designs. Mr. F. Bagshaw, borough engineer, Municipal Office, Harrogate.

IRELAND.—Feb. 26.—A premium of £20 is offered for the best and cheapest report, plans, specification and estimates, &c., for providing the town of Kanturk with a wholesome supply of water. Mr. Mt. Timothy Guiney, clerk to the Kanturk Rural District Council, at the Boardroom of the Workhouse.

LANGHO.—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200l., 150l. and 100l. respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

MONTROSE.—Feb. 15.—Suggestions are invited for an ornamental fountain to be erected in the Mid Links of Montrose in memory of the late Provost Scott. Price must not exceed 150l. Mr. A. Middleton, solicitor, Montrose.

NEW MALDEN.—March 5.—Designs, &c., are invited for public offices, fire-station, cart sheds, stables and mortuary to be erected at New Malden, Surrey. Total cost of buildings not to exceed 5,100l. Premiums of 25l. and 10l. respectively are offered for the best and second best design. Mr. C. T. Lewis, clerk to The Maldens and Coombe Urban District Council, 7 Market Place, New Malden.

## CONTRACTS OPEN.

ACCRINGTON.—Feb. 17.—For erection of shops, offices, stores and assembly-rooms. Messrs. Haywood & Harrison, architects, Post Office Chambers, Accrington.

ALDRETH.—Feb. 14.—For erection of a bridge at Aldreth, over the West River. Mr. Herbert Leete, county surveyor for Isle of Ely, Ely.

ASHTON-UNDER-LYNE.—Feb. 18.—For extensions to the county police station at Hurst, near Ashton-under-Lyne. Mr. Henry Littler, architect, County Offices, Preston.

AVONMOUTH.—Feb. 17.—For construction of a new dock having a water area of about 30 acres, with an entrance lock and entrance channel from the river Severn, a graving dock, embankments, sea-walls, &c. Mr. W. W. Squire, engineer, Underfall Yard, Cumberland Road, Bristol.

BARTON-ON-HUMBER.—Feb. 11.—For pulling-down of present classrooms, &c., and erection of new Wesleyan schools. Mr. J. Gibson, architect, Stalybridge.

BECCLES.—Feb. 12.—For erection of cow-houses (for twenty-three cows), root-house, open hovel, piggeries and other additions and alterations to existing farm buildings, Ashtree Farm, Worlingham, and for erection of three labourers' cottages on the Worlingham Hall estate. Mr. Arthur Pells, architect, London Road, Beccles.

BIRKENHEAD.—Feb. 25.—For supplying and fixing machinery required in the tramways repair shop at the Laird Street depot. Mr. Alfred Gill, town clerk, Town Hall, Birkenhead.

BIRMINGHAM.—Feb. 12.—For reconstruction of Bournbrook Road bridge. Mr. John Price, city surveyor, Council House, Birmingham.

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BOURNEMOUTH.—Feb. 12.—For supply of steel poles, overhead line, section boxes, arc lamps, arc lamp-poles, carriers, &c. Mr. F. W. Lacey, borough and tramway engineer, Municipal Offices, Bournemouth.

BOURNEMOUTH.—Feb. 21.—For supply of a motor generator. Mr. F. W. Lacey, borough engineer, Municipal Offices, Bournemouth.

BRACEBRIDGE.—March 3.—For alterations and additions to the present buildings of the Bracebridge Asylum, near Lincoln. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, S.W.

BRADFORD.—Feb. 11.—For alterations to entrance lodge and laundry at the City Hospital, Bierley Hall. Mr. F. E. P. Edwards, city architect, Chapel Lane, Bradford.

BRADFORD.—Feb. 12.—For erection of wool and cloth warehouse at the Albion Mills, Eccleshill. Messrs. Kendall & Bakes, architects, Calverley Chambers, Victoria Square, Leeds.

BRADFORD.—Feb. 18.—For extension of the Rawson Place markets. Messrs. T. C. Hope & Son, architects, 23 Bank Street.

BRADFORD.—Feb. 20.—For erection of Eastbrook Mission Hall and adjoining premises in Leeds Road. Messrs. W. J. Morley & Son, architects, 259 Swan Arcade, Bradford.

BRIDGWATER.—Feb. 24.—For construction of collecting trenches and other works upon the Willoughby estate. Messrs. E. D. & Henry Marten, engineers, Cheltenham.

BRIGHTON.—Feb. 10.—For supply of ten electric motor cars. Mr. Francis J. Tillstone, Town Clerk, Town Hall, Brighton.

BURY.—Feb. 19.—For supply of laundry plant, disinfectant and cooking apparatus at the infectious diseases hospital, Bolton Road. Mr. John Haslam, town clerk, Corporation Offices, Bank Street, Bury.

CANNOCK.—Feb. 26.—For providing and laying about 6 miles of 3-inch and 4-inch cast-iron mains, with all necessary fittings, valves, &c. Mr. W. E. Rogers, engineer, Anson Street, Rugeley.

CARLISLE.—Feb. 20.—For erection of a temporary wooden bridge, 40 feet wide, 145 feet long, in five spans, over the river Caldew, Carlisle. Mr. Henry C. Marks, city surveyor, 36 Fisher Street, Carlisle.

CHELMSFORD.—Feb. 15.—For erection of a block of cottages for workmen's dwellings in Chelmsford. Mr. Dixon, town clerk, 16 London Road, Chelmsford.

CLACTON-ON-SEA.—Feb. 19.—For construction of filters and a covered service reservoir. Mr. Geo. T. clerk, Town Hall Buildings, Clacton-on-Sea.

CLAY CROSS.—For erection of six pairs of semi-detached houses at Holmgate. Mr. Ernest Oxley, architect, Clay Cross.

COVENTRY.—Feb. 10.—For erection of five cottages and other buildings at the sewage pumping-station, W. Coventry. Mr. J. E. Swindlehurst, city surveyor, St. Hall, Coventry.

CROYDON.—Feb. 17.—For supply of ten double-deck trucks, equipped complete with motors, &c., for trolley system. Mr. E. Mawdesley, town clerk, Town Hall, Croydon.

CROYDON.—Feb. 21.—For enlargement of Croydon Post Office. Particulars may be obtained of the Secy. H.M. Office of Works, &c, Storey's Gate, London, S.W.

DERBY.—Feb. 26.—For boilers and engineering and tary work in connection with new public baths, R. Street. Mr. John Ward, borough surveyor, Babington Street, Derby.

DURHAM.—Feb. 15.—For erection of a five-roomed two-stalled stable, out-offices and yard, walls, &c., Parade, Leadgate, for Mr. Robert Laidlaw, Front Leadgate.

EASTBOURNE.—Feb. 10.—For erection of a town institute, public library, science and art schools, fire &c., in Grove Road, Eastbourne. Mr. H. West F. town clerk, Town Hall, Eastbourne.

EDMONTON.—Feb. 11.—For supply and delivery of small gas or oil-engines and pumps, complete accessories. Mr. Wm. Francis Payne, clerk, Town Hall, Edmonton.

ESHER.—Feb. 25.—For erection of a new post office. Particulars may be obtained at H.M. Office of Works, Storey's Gate, S.W.

GRIMSBY.—For erection of a bakery, King Edward Street. Messrs. Athron & Beck, architects, Chambers, Doncaster.

GRIMSBY.—Feb. 11.—For erection of five houses (restaurant, bakehouse, stabling, &c.) at Clethorpe.

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Ernest E. Bentley, architect, 1 Pelham Chambers, Old ket Place, Grimsby.

GUILDFORD.—Feb. 15.—For supplying and setting two es, the construction of brick chimney-stacks in connection with, and the installation of hot-water services to the s, &c., in the two diphtheria pavilions at the Woodbridge pital, near Guildford. Mr. W. S. V. Cullerne, clerk, Com- ial Road, Guildford.

HALIFAX.—Feb. 13.—For erection of a pair of semi- ched villas on the Moorside Estate, fronting into Stafford l. Messrs. Richard Horsfall & Son, architects, 22A Com- ial Street, Halifax.

HALIFAX.—Feb. 17.—For erection of a store shed at the et Street tram depôt. Mr. James Lord, borough engineer, n Hall, Halifax.

HASTINGS.—Feb. 13.—For matchboarding and shelving in toreroms of the new workhouse of Cackle Street, Ore. Arthur R. Inskip, clerk to the Guardians, 11 Wellington re, Hastings.

HATFIELD.—Feb. 12.—For erection of a classroom, &c., at Hatfield Woodhouse schools, Yorks. Mr. H. B. Thorp, tect, Goole.

HELSTON.—Feb. 28.—For erection of a police-station and rtenances at Helston, Cornwall. Mr. Oliver Caldwell, tect, Victoria Square, Penzance.

HOLMFIRTH.—Feb. 11.—For additions and alterations to Rose and Crown inn, Holmfirth, Yorks. Mr. J. Berry, tect, 3 Market Place, Huddersfield.

HORSHAM.—Feb. 12.—For erection of a house at Shelley l, Horsham, Sussex. Mr. William Buck, architect, ham.

CKLEY.—Feb. 19.—For erection of the Cowpasture bridge Backstone Beck. All information may be obtained on cation to the Surveyor, Urban District Council.

IRELAND.—For additions and alterations to the Imperial l, Ballyshannon. Mr. F. M. Lockwood, architect, loran.

IRELAND.—Feb. 10.—For erection of a villa residence and of semi-detached villas at Polo Field, Clooney Park, onderry. Mr. R. Eccles Buchanan, C.E., architect, e Street, Londonderry.

IRELAND.—Feb. 11.—For erection of classrooms, work- shops, &c., in corrugated iron and wood, Bray. Mr. Thomas Tomlinson, 2 Quinsborough Terrace, Bray.

IRELAND.—Feb. 11.—For construction and erection of a metal tank in the Victoria Market, Londonderry. Sir R. Newman Chambers, town clerk.

IRELAND.—Feb. 12.—For erection of five houses at Dun- murry. Mr. George Sands, architect, Railway Street, Lis- burn.

IRELAND.—Feb. 12.—For laying a new concrete floor and sundry alterations in the creamery, and for erection of a coal store and sundry repairs on the outside, for the Derrygonnelly Co-operative Dairy Society. Mr. William Scott, Lisbellaw.

IRELAND.—Feb. 12.—For alterations and additions to the administrative block, comprising new stores, laundry, kitchen and offices, at the Limerick district lunatic asylum. Messrs. Carroll, Batchelor & Browne, architects, Dublin.

IRELAND.—Feb. 13.—For general repairs and improve- ments to the fever hospital of the workhouse, Thomastown. Specification, &c., can be seen at the workhouse.

IRELAND.—Feb. 20.—For erection of twenty-four villa residences at Dromalane. Mr. Wm. James Watson, architect, Benvenue, Rostrevor.

IRELAND.—Feb. 22.—For erection of a bank-house, shop and offices on the site of 114 and 115 Grafton Street, Dublin. Messrs. W. H. Stephens & Son, surveyors, 13 Donegall Square North, Belfast.

IRELAND.—Feb. 26.—For erection of the technical institute, Belfast. Mr. Samuel Stevenson, architect, 83 Royal Avenue, Belfast.

IRELAND.—Feb. 28.—For erection of new National schools in Windsor Avenue, Lurgan. Mr. H. Hobart, architect, Dro- more.

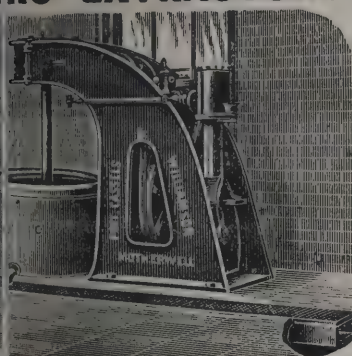
ISLEWORTH.—Feb. 15.—For laying gaspipes, &c., to the mortuary. Mr. A. H. Dixon, the Lodge, Isleworth Cemetery.

KENDAL.—For erection of a villa on Castle Hags, Kendal. Mr. John Stalker, architect, Kendal.

KENDAL.—Feb. 14.—For erection of a bath pavilion at the sanatorium. Mr. R. Hampton Clucas, borough surveyor, Town Hall, Kendal.

LANCASTER.—Feb. 15.—For supply of a 70,000 cubic feet per hour station meter, also a 24-inch governor, at the gas-

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works, St. George's Quay. Mr. T. C. Hughes, town clerk, Lancaster.

LANGPORT.—Feb. 15.—For construction of a steam drying closet, to contain four or six (as may be determined) draw-out clothes-horses, of approved pattern. Mr. Edwd. Q. Louch, clerk, Langport.

LEADGATE.—Feb. 15.—For erection of a five-roomed house, two-stalled stable, out-offices and yard, walls, &c., in West Parade, Leadgate, Durham. Mr. Robert Laidlaw, Front Street, Leadgate.

LEEDS.—For sinking small pit, labour only, about 100 yards deep. Messrs. Mammatt & White, mining engineers, 1 Albion Place, Leeds.

LEEDS.—Feb. 15.—For erection of baths, lavatory, dormitories, &c., at Adel reformatory, near Leeds. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LEEDS.—Feb. 15.—For extension of warehouse block, alteration of warehouse buildings into warehouse and offices, &c., at Cardigan Mills, Milford Place, Leeds. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LEIGHTON BUZZARD.—Feb. 28.—For carting, excavating for, and laying and jointing about five miles of 5-inch, 4-inch and 3-inch cast-iron water-mains, including fixing valves, hydrants, &c., the erection of brick service reservoir and filter-beds, sinking well and erection of pumping-station, &c., at Linslade. Mr. R. J. Platten, clerk, Linslade, Leighton Buzzard.

LEYTON.—Feb. 13.—For erection of steam, exhaust and water-pipes for engine and boiler-rooms, for the electric-lighting committee. The Engineer, Electricity Works, Cathall Road, Leytonstone.

LIMEHOUSE.—Feb. 18.—For erection of a block of artisans' dwellings, Queen Catherine Court area, Dorset Street. Mr. Geo. W. Clarke, town clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

LISCARD.—Feb. 20.—For supply and erection of feed-water heater, &c., at the electric supply works, Sea View Road, Liscard. Mr. J. H. Crowther, engineer, Great Float, near Birkenhead.

LONDON.—Feb. 18.—For delivery and fixing of three 13 feet long by 5 feet diameter Cornish steam boilers, induced-draught plant and feed-pump, and reconstruction of the arrangements for the heating circulation and the hot-water

supplies, provision of steam and condensation mains, and enlargement of the coal store at the infirmary, Archway Road Highgate, N. Mr. J. Allan Battersby, clerk, Guardians' Office Clerkenwell Road, E.C.

LONDON.—Feb. 26.—For (Contract No. 1) two 50-k steam dynamos and boosters, (2) four dry-back marine boiler (3) storage battery, (4) wiring about 2,000 lights. Mr. E. Mott, clerk to the Guardians, 75 Fulham Place Road, S.W.

LONDON.—Feb. 26.—For (Contract No. 5) erection chimney-shaft (120 feet high) at the electric-lighting works Fulham. Mr. E. J. Mott, clerk to the Guardians, 75 Fulham Palace Road, S.W.

LONDON.—Feb. 26.—For erection of casual wards, cloth store, laundry and other buildings at Gainsborough Road Hackney Wick. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONDON.—March 4.—For supply and delivery into car sheds in South London of 100 double-decked double-bog electric tramcars, for the London County Council. Each car is to be equipped with a plough for working on a condenser system, and to be capable of seating about 68 persons. Particulars at the County Hall, Spring Gardens, S.W.

LONDON BRIDGE.—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

MANCHESTER.—Feb. 13.—For erection of surface condensers, oil separators and hot well, cooling towers and feed water heaters, at the Stuart Street generating station. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MENSTON.—Feb. 12.—For erection of entrance gate and lodges at Menston, Yorks. Mr. W. H. H. Marten, architect, 25 Cheapside, Bradford.

MORECAMBE.—For erection of a lecture hall at Overton near Morecambe. Mr. Albert Gorton, architect, 24 Tynes Crescent, Morecambe.

NEWCASTLE-ON-TYNE.—Feb. 12.—For construction of railway bridge and approaches over the river Tyne Newcastle, for the North-Eastern Railway Company. Mr. Charles A. Harrison, Central Station, Newcastle-on-Tyne.

NEW MILLS.—Feb. 11.—For supply of a Lancashire boiler, 5 feet diameter, 14 feet long, single flue, with Meldrum

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NOTTINGHAM.—Feb. 11.—For erection of a dwelling-house, Island Grove, Carlton. Mr. G. W. Bird, architect, Ripley, byshire.

PLYMOUTH.—Feb. 11.—For extension of goods shed and works at Plymouth (Mill Bay) station, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Tington Station, W.

PORTSMOUTH.—Feb. 25.—For alterations and additions to Kent Street Board school, Portsea. Mr. A. H. Bone, architect, Cambridge Junction, Portsmouth.

PRESTON.—Feb. 14.—For re-roofing a portion of the large bath and other repairs at the baths, Saul Street. Particulars may be obtained at the office of the Borough Surveyor, Town Hall, Preston.

ROTHERHAM.—Feb. 14.—For erection of covered playsheds, ices and other outbuildings; additions to master's house, boundary walling, palisading and gates, and asphaltting of polyards at Catcliffe, near Rotherham. Mr. J. Platts, architect, High Street, Rotherham.

ROTHERHAM.—Feb. 14.—For erection of working-men's houses at Parkgate, near Rotherham. Messrs. Garside & Penton, architects, Pontefract.

SALISBURY.—Feb. 22.—For erection (from plinth level) of residence at Milford Manor, Salisbury. Mr. Fred Bath, architect, Crown Chambers, Salisbury.

SCOTLAND.—Feb. 10.—For alterations and repairs to dwelling-house at Auchtermairnie, in the parish of Kennoway. David Storrar, architect, Cupar-Fife.

SCOTLAND.—Feb. 10.—For erection of a poor-house in Kirk. Messrs. A. & W. Black, architects, Falkirk.

SCOTLAND.—Feb. 10.—For additions and alterations to the poor's house at Devon, in the parish of Kettle. Mr. David Storrar, architect, Cupar-Fife.

SCOTLAND.—Feb. 10.—For renovating the milkman's house at Wester Balgarvie, near Cupar. Mr. David Storrar, architect, Cupar-Fife.

SCOTLAND.—Feb. 10.—For erection of various buildings in connection with the new infectious diseases hospital, Hunter's Avenue, Newton-on-Ayr. Mr. A. G. Young, town clerk, Council Chambers, Ayr.

SCOTLAND.—Feb. 14.—For erection of semi-detached villas at East End Park, Cupar-Fife. Mr. David Storrar, architect, Cupar-Fife.

SCOTLAND.—Feb. 15.—For electrical equipment of three of the horse-car routes in Aberdeen. Mr. J. Alex. Bell, city electrical engineer, Electricity Works, Cotton Street, Aberdeen.

SCOTLAND.—Feb. 21.—For supply to the Glasgow Corporation of material for switchboard extensions. Mr. John Young, general manager, 88 Renfield Street, Glasgow.

SHERBORNE.—Feb. 14.—For erection of a bridge at Purlieu, in the town of Sherborne, Dorset. Forms of contract, &c., may be seen at the office of the Surveyor to the Urban District Council, Sherborne.

SHOREDITCH, E.C.—March 4.—For erection of four small blocks of artisans' dwellings on Plumber's Place area, City Road, E.C. Mr. H. Mansfield Robinson, town clerk, Town Hall, Shoreditch.

SOUTHALL.—Feb. 11.—For erection of an isolation hospital, Southall, Middlesex. Mr. G. E. T. Laurence, architect, 22 Buckingham Street, Adelphi, W.C.

SOUTHEAST-ON-SEA.—Feb. 19.—For erection of a chapel in the borough cemetery, Sutton Road. Mr. S. I. Adams, architect, Weston Chambers, Weston Road, Southend.

STAMFORD.—Feb. 17.—For erection of an engine-house, cottage and outbuildings thereto, in Albert Road. Mr. J. B. Everard, engineer, 6 Millstone Lane, Leicester.

STOCKTON.—Feb. 10.—For erection of the new Wellington Street Baptist church, Stockton. Mr. T. W. T. Richardson, architect, 57 High Street, Stockton.

STRATFORD.—Feb. 12.—For painting, graining and repairs at the court-house (Beacontree division), Great Eastern Road. Mr. Frank Whitmore, county architect, Chelmsford.

TODMORDEN.—Feb. 17.—For stripping and resheeting of one 80-feet telescopic double-lift gasholder. Mr. Henry Hawkins, Town Hall, Todmorden.

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TWEEDMOUTH.—Feb. 12.—For erection of twenty-four cottages at Tweedmouth, for the North-Eastern Railway Company. Mr. William Bell, the company's architect, Central Station, Newcastle-on-Tyne.

WALES.—Feb. 10.—For erection of business premises in Station Road, Port Talbot. Mr. G. P. Davies, architect, &c., Port Talbot.

WALES.—Feb. 10.—For re-erecting the Crown Bridge, which carries the road over the canal at Sebastopol, near Griffithstown. Mr. T. P. Holmes Watkins, clerk to Urban District Council, Club Chambers, Pontypool.

WALES.—Feb. 10.—For extension of the kitchens, larder and servants' departments at the Cardiff Infirmary. Mr. Edwin Seward, architect, Cardiff.

WALES.—Feb. 11.—For erection of a gardener's cottage at the Rest Convalescent Home, Porthcawl. Mr. S. H. Stockwood, solicitor, Bridgend.

WALES.—Feb. 12.—For rebuilding the Lamb inn, Neath. Mr. J. Cook Rees, architect, Church Place, Neath.

WALES.—Feb. 13.—For erection of a public hall, library, cottage homes, &c., at Newborough, Anglesey. Mr. Rowland Lloyd Jones, architect, Market Street, Carnarvon.

WALES.—Feb. 15.—For erection of twelve houses upon freehold land, Pontnewynydd. Mr. W. S. Fletcher, Crown House, Abersychan.

WALES.—Feb. 17.—For erection of school at Bargoed. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALES.—Feb. 18.—For erection of an ammonia still, capable of extracting all the ammonia from three or four tons of liquor per 24 hours. Mr. John Smith, engineer and manager, Gasworks, Bangor, North Wales.

WALES.—Feb. 21.—For extending the Abereistedd sewer outfall about 92 feet or thereabouts, and supplying and laying-down a length of  $\frac{3}{4}$ -inch and 2-inch galvanised iron pipes, building brick tank, providing street-watering post and fixing urinal, and for providing and fixing seven ventilating columns, &c. Mr. Morris Williams, surveyor, Criccieth.

WALES.—Feb. 22.—For erecting increased accommodation at the Tynwydd Board school, Ogmere Vale, for 390 children. Mr. T. J. Thomas, architect, Bridgend.

WALES.—Feb. 22.—For erection of a Wesleyan chapel at Pontardawe. Mr. W. W. Williams, 63 Wind Street, Swansea.

WATFORD.—Feb. 12.—For erection of a steel gas-holding tank, 110 feet diameter by 20 feet deep, and a telescopic holder in three lifts, with guide-framing, inlet and outlet pipes, &c., at the gasworks. The Chairman, Watford Gas and Coke Company, at the Gasworks.

WEMBORTH.—Feb. 11.—For reseating in oak the parish church of Wembworthy, North Devon. Messrs. E. H. I. bottle & Son, architects, County Chambers, Exeter.

WEST HAM.—Feb. 11.—For erection of forty-seven detached tenement houses and twelve single-tenement houses on Rotherhithe Estate, High Street, Stratford. Mr. John Morley, borough engineer, Town Hall, West Ham.

WHITEHAVEN.—Feb. 11.—For erection of a new infirmary on land adjoining the workhouse at Whitehaven. Mr. C. Boyd, engineer, Queen Street, Whitehaven.

WHITEHAVEN.—Feb. 17.—For pulling-down and rebuilding 111 Duke Street, and thoroughly overhauling the exterior of the present baths and washhouses in Duke Street, &c. Thomas Brown, town clerk, Town Hall, Whitehaven.

WIMBLEDON.—Feb. 11.—For erection of proposed technical institute, Wimbledon. Mr. G. Hamblin Fox, architect, 9 John Street, Adelphi, W.C.

WOLVERHAMPTON.—Feb. 10.—For erection of a car-shed and offices, &c., at Bilston, Staffs. Particulars may be obtained from the Secretary, the Wolverhampton District Electric Tramways, Limited, Donington House, Norfolk Street, Stratford, W.C.

WORKINGTON.—Feb. 11.—For alterations to St. John's boys' school. Mr. James Howes, architect, Curwen Street, Workington.

WREXHAM.—Feb. 18.—For reconstruction of the main lantern lights along the roof of the butchers' market, &c., reconstruction of market sanitary arrangements and conveniences. Mr. Thomas Bury, town clerk, Guildhall.

YORK.—Feb. 13.—For erection of isolation hospital, Haddington Road. Mr. Alfred Creer, city engineer, Guildhall, York.

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### BIRKENHEAD.

For street works in Raffles Road, Whalley Road and Rawcliffe Road. Mr. CHARLES BROWNRIDGE, borough surveyor. Executrix of the late W. F. CHADWICK, 19 Leeds Street, Liverpool (accepted).

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### BLACKPOOL.

For erection of a new station at South Shore, Blackpool, for the Lancashire and Yorkshire Railway Company.

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### BROMLEY.

For widening of a portion of the highway at Southborough and a portion of Magpie Hall Lane.

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Lawrence & Thacker	211	10	6
M. Dinnaie	193	7	6
Fry Bros.	186	1	6
E. PEILL & SONS, Bromley Common (accepted)	174	5	6

#### Magpie Hall Lane.

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M. Dinnaie	191	19	9
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T. Skinner	£1,245	0	0
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R. Roberts	738	0	0
LUDLOW & MARTIN, Croydon (accepted)	735	0	0

### CORNWALL.

For erecting a villa residence at Downderry. Mr. JOHN H. VINCENT, architect, 74 Old Town Street, Plymouth. Quantities by architect.

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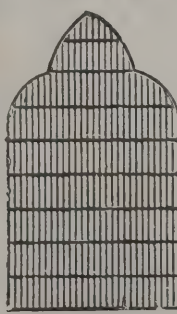
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J. H. Blackell & Son . . . 925 0 0  
A. Andrews . . . 880 0 0  
W. Gibson, Bonhay Steam Joinery Works . . . 810 0 0  
W. Stephens . . . 783 16 0  
A. E. Rickaby . . . 768 4 0  
A. TRUSCOTT, 19 Market Street, Stonehouse (accepted) . . . 760 0 0

**ENFIELD.**

For sinking of a well, lining same with cylinders, driving adits and other works in connection therewith, on the site of the new pumping-station, Hadley Road, Enfield, Middlesex.

A. E. NUNN, Tenterden, Kent (accepted).

**FRIERN BARNET.**

For street works in Carlton Road. Mr. E. J. REYNOLDS, surveyor.

Wallace & Inns . . . £1,040 0 0  
Victoria Stone Co. . . 1,025 0 0  
W. Griffiths & Co., Ltd. . . 1,015 0 0  
B. Nowell & Co. . . 997 0 0  
G. Bell . . . 980 0 0  
T. Adams . . . 934 0 0  
GROUNDS & NEWTON, South Tottenham (accepted) . . . 933 19 0

**GOLCAR.**

For erection of five dwelling-houses, Scar Lane, Golcar, Yorks. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

A. & T. Haigh, Golcar, mason.  
W. Lockwood, Golcar, joiner.  
D. Taylor & Sons, Lockwood, plumber.

**GREAT STANMORE.**

For erection of an isolation hospital in Honey Pot Lane, Great Stanmore, Middlesex. Mr. JAMES A. WEBB, surveyor, Great Stanmore.

Maple & Co. . . . £9,889 0 0  
T. Turner, Ltd. . . . 9,829 0 0  
McCormick & Sons . . . 9,312 0 0  
Hardington & Elliott . . . 9,023 0 0  
W. Bailey . . . 8,900 0 0  
H. Martin . . . 8,778 0 0  
R. L. Tonge . . . 8,600 0 0  
W. Tout . . . 8,446 19 9  
Hardy & Sons . . . 8,400 0 0  
F. Dupont & Co. . . . 8,370 3 8  
Tyler & White . . . 8,350 16 7  
G. & J. Waterman . . . 8,267 0 0  
Herbert Bros. . . . 8,090 0 0  
F. Gough & Co. . . . 7,984 0 0  
A. G. Elson . . . 7,847 7 7  
E. Herbert . . . 7,023 0 0  
BRIGHTMAN, Watford (accepted), roads and footpaths omitted . . . 6,705 4 3

**GUILDFORD.**

For erection of a corn exchange within the cattle market, Woodbridge Road. Mr. C. G. MASON, borough surveyor.

R. Wood . . . £2,315 0 0  
Heglett & Hammond . . . 2,082 0 0  
R. Smith . . . 2,070 0 0  
Tribe & Robinson . . . 2,045 0 0  
T. Swayne & Son . . . 2,035 0 0  
Mussellwhite & Son . . . 1,967 0 0  
Martin, Wells & Co. . . . 1,955 0 0  
W. G. Edward . . . 1,947 0 0  
W. Smith & Sons . . . 1,903 10 0  
D. Fry . . . 1,880 0 0  
E. Chamberlain . . . 1,860 0 0  
Newland & Higgs . . . 1,747 0 0  
S. Ellis . . . 1,743 0 0  
MITCHELL BROS., Shalford, near Guildford (accepted) . . . 1,592 0 0

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erection of an iron hospital, with an administrative block.  
J. McMANUS, London, W. (accepted) . . . £378 0 0

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erection of a house, offices and stores in High Street,  
Haverhill, Suffolk. Mr. A. AINSWORTH HUNT, architect,  
Sudbury.  
Coulson & Lofts . . . . . £2,086 0 0  
Kerridge & Shaw . . . . . 1,900 0 0  
Runnacles . . . . . 1,897 0 0  
MASON, Haverhill (accepted) . . . . . 1,783 0 0

KETERING.

erection of an iron hospital, with administrative block.  
McMANUS, London, W. (accepted) . . . £273 0 0

KING'S LYNN.

erection of a shop residence and dwelling-house in Tenny-  
son Avenue. Messrs. W. JARVIS & SON, architects,  
Paradise Parade, King's Lynn.  
W. Collins . . . . . £1,297 10 0  
Bardell Bros. . . . . 1,259 0 0  
R. Dye . . . . . 1,235 0 0  
Fash, Langley & Co. . . . . 1,223 0 0  
Foreman . . . . . 1,181 18 6  
MEDWELL, King's Lynn (accepted) . . . . . 1,170 10 0

KINGSTON-ON-THAMES.

er constructing experimental sewage filter-beds, for the Town  
Council.  
N. CUNLIFFE (accepted) . . . . . £1,557 0 0

LANCASTER.

er street works in various streets.  
J. JOHNSON, Aldcliffe Road (accepted).  
erection of a car-shed in Thurnham Street.  
W. HARRISON, Moor Lane (accepted).

LONDON.

erection of a house, Froggnal Lane, Hampstead. Messrs.  
BARRETT & DRIVER, architects, 53 Blomfield Road,  
Maida Vale, W.  
Turner . . . . . £8,970 0 0  
Miskin & Sons . . . . . 6,850 0 0  
GEORGE NEAL, Kilburn (accepted) . . . . . 4,657 0 0

LONDON—continued.

For electric-light and power installation at the new infirmary,  
Acton Lane. Specification by Mr. MORGAN WILLIAMS,  
M.I.C.E.

Section A.—Boiler-house plant.

Alley & Maclellan . . . . .	£5,106	0	0
Tinkers, Ltd. . . . .	4,822	0	0
Danks & Co. . . . .	4,088	10	0
Davey, Paxman & Co. . . . .	3,873	10	0
Johnson & Phillips . . . . .	3,795	0	0
CROMPTON & Co. (accepted) . . . . .	3,571	0	0
Lowcock & Co* . . . . .	292	0	0

Section B.—Engine and battery-room plant.

Holmes & Co. . . . .	3,293	0	0
Davey, Paxman & Co. . . . .	3,135	10	0
Holmes & Co. . . . .	3,118	0	0
Electrical Construction Co. . . . .	3,097	0	0
Holmes & Co. . . . .	3,073	0	0
Ditto . . . . .	3,048	0	0
Mavor & Coulson . . . . .	3,031	1	0
Davey, Paxman & Co. . . . .	3,025	5	0
Mather & Platt . . . . .	3,016	0	0
Alley & Maclellan . . . . .	3,015	0	0
Mavor & Coulson . . . . .	2,981	17	0
Bruce, Peebles & Co . . . . .	2,981	0	0
Mavor & Coulson . . . . .	2,953	7	0
Mather & Platt . . . . .	2,946	0	0
Ditto . . . . .	2,926	0	0
Bruce, Peebles & Co. . . . .	2,899	0	0
CROMPTON & Co. (accepted) . . . . .	2,882	0	0
Geipel & Lange . . . . .	2,866	14	0
Mavor & Coulson . . . . .	2,864	17	0
Brush Electrical Co. . . . .	2,852	0	0
Geipel & Lange . . . . .	2,816	14	0
Davey, Paxman & Co. . . . .	2,815	10	0
Siemens Bros. . . . .	2,800	0	0
Johnston & Phillips . . . . .	2,780	0	0
Newton Electrical Works, Ltd. . . . .	2,675	0	0
Siemens Bros. . . . .	2,640	0	0
Ditto . . . . .	2,630	0	0

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## LONDON—continued.

## Section C.—Wiring and mains.

Troy & Co.	£2,861	0	0
Strode & Co.	2,675	16	0
National Electric Wiring Co.	2,258	10	0
Belshaw & Co.	2,143	6	8
Alley & Maciellan	2,115	0	0
H. M. Leaf	2,114	16	8
Spagnoletti & Co.	1,988	14	0
Geipel & Lange*	1,802	0	0
CROMPTON & Co. (accepted)	1,612	0	0
Johnson & Phillips	1,559	16	8

## Section D.—Crane, motors, fans.

Alley & Maciellan	1,540	0	0
Ditto	1,215	0	0
Bruce, Peebles & Co.	778	0	0
J. Carrick & Sons	738	0	0
Ditto	630	0	0
Electrical Construction Co.	701	0	0
Mather & Platt	651	0	0
Ditto	544	0	0
CROMPTON & Co. (accepted)	642	0	0
Siemens Bros.	633	0	0
Holmes & Co.	597	0	0
Johnson & Phillips	590	0	0
Ditto	540	0	0
Mavor & Coulson	565	10	0
Brush Electrical Co.	532	0	0
Geipel & Lange*	391	10	0
Newton Electrical Works*	275	0	0
Spencer & Co.*	110	0	0
Carnick & Ritchie*	86	0	0

\* Tender for portion of a section only.

For erection of stables, &c., Frogmal Lane, Hampstead.  
Messrs. BARRETT & DRIVER, architects, 53 Blomfield  
Road, Maida Vale, W.

T. Turner	£1,350	0	0
Jas. Gibbs	1,290	0	0
A. E. Bye	1,235	0	0
GEORGE NEAL, Kilburn*	1,234	0	0

\* Reduced to 1,100l., and accepted.

## LONDON—continued.

For supply of two high-class steel Galloway type boilers and fittings.

Fraser & Fraser, Ltd.	£1,435	0	0
J. Thompson	1,400	0	0
GALLOWAYS, LTD., Manchester (accepted)	1,350	0	0
H. & T. Danks, Ltd.	1,330	0	0

## LONDON SCHOOL BOARD.

For new school (revised plan), Earlsfields.

W. M. Dabbs	£29,165	0	0
W. Downs	28,419	0	0
J. & M. Patrick	27,745	0	0
E. Lawrance & Sons	27,255	0	0
Holloway Bros.	26,440	0	0
Kirk & Randall	26,412	0	0
J. Garrett & Son	26,161	0	0
W. H. Lorden & Son	25,888	0	0
Treasure & Son	25,772	0	0
J. Simpson & Son	25,740	0	0
Martin, Wells & Co.	25,382	0	0
Holliday & Greenwood, Ltd.	25,160	0	0
Stimpson & Co.	25,110	0	0
Leslie & Co., Ltd.	24,997	0	0
Lathey Bros.	24,919	0	0
F & H. F. Higgs	24,786	0	0
W. Johnson & Co., Ltd.*	23,700	0	0

For providing new offices for all departments with separate pans and traps, refitting lavatories and providing new drainage scheme, Wordsworth Road.

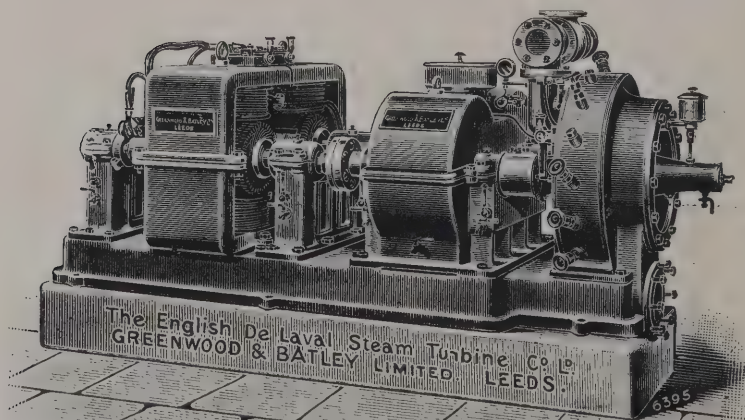
G. Bell	£3,982	0	0
R. P. Beattie	3,919	11	0
McCormick & Sons	3,918	0	0
G. Munday & Sons	3,912	0	0
Durbin & Katesmark	3,789	17	0
Ashby & Horner	3,762	0	0
E. Lawrance & Sons	3,720	0	0
G. S. S. Williams & Son	3,633	0	0
F. Bull	3,439	0	0
Willmott & Sons	3,379	0	0
L. H. & R. Roberts*	3,367	0	0

\* Recommended for acceptance.

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LONDON SCHOOL BOARD—continued.

domestic economy centre, Plassy Road.			
E. Wallis & Sons	£2,989	0	0
V. Johnson & Co., Ltd.	2,717	0	0
& H. F. Higgs	2,598	0	0
irk & Randall	2,559	0	0
Garrett & Son	2,557	0	0
V. J. Mitchell & Son	2,557	0	0
V. H. Lorden & Son	2,477	0	0
& C. Bowyer	2,449	0	0
P. Bulled & Co.	2,408	0	0
Smith & Sons, Ltd.	2,360	0	0
D. Leng	2,357	0	0
Marsland & Sons	2,327	0	0
Appleby*	2,287	0	0
improvements—providing infants' hall and additional cloakroom and lavatory, Princess Road.			
Munday & Sons	£2,386	0	0
Simpson & Co.	2,356	0	0
Miskin & Sons	2,309	0	0
reasure & Son	2,248	0	0
King & Son	2,066	0	0
H. & R. Roberts	2,030	0	0
larke & Bracey	2,022	0	0
eneral Builders, Ltd.	2,013	0	0
Wall & Co.	1,994	0	0
they Bros.	1,952	0	0
Simpson & Son	1,883	17	0
aines & Son	1,866	0	0
Triggs	1,850	0	0
Appleby*	1,814	0	0
fencing-off a portion of the junior boys' playground in order to form a playground for infants; also forming an opening in division wall to connect this playground with the girls' playground, including new stone steps in connection with same, Gipsy Road.			
Akers & Co.	£215	0	0
Leney	193	0	0
Kemp	185	0	0
& C. Bowyer	183	0	0
Smith & Sons, Ltd.	183	0	0
Garrett & Son	176	0	0
P. Tucker	169	15	0
J. Ackworth*	168	0	0

\* Recommended for acceptance.

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- For providing a new w.c. for teachers inside building; diverting all internal rain-water pipes; providing lead or earthenware pipes for chemical laboratory; refitting boys', girls', infants' and pupil teachers' offices with pan closets, extending urinal and providing sparge pipes, refitting lavatory with fireclay basins, fixing basins for teachers, and providing new drainage throughout properly ventilated, Clyde Street. Schoolkeeper's house—For relaying drains, refitting closet and providing water supply direct from main. (Second competition.)
- Ashby & Horner . . . . . £4,347 0 0
- Martin, Wells & Co. . . . . 4,193 0 0
- J. & C. Bowyer . . . . . 3,675 0 0
- Johnson & Co. . . . . 3,671 8 6
- Sanitary Lead-lining and Pipe-bending Co., Ltd. . . . . 3,665 0 0
- R. P. Beattie . . . . . 3,501 16 10
- G. Parker . . . . . 3,495 0 0
- J. W. Falkner & Sons . . . . . 3,359 0 0
- Durbin & Katesmark . . . . . 3,327 2 3
- J. T. Robey\* . . . . . 3,223 11 0
- W. Downs . . . . . 3,189 0 0
- MELTON MOWBRAY.
- For erection of a pair of four-roomed cottages, Old Dalby. Messrs BARRETT & DRIVER, architects, 53 Blomfield Road, Maida Vale, W.
- T. & H. Denman . . . . . £250 0 0
- R. HOLROYD, Abb-Kettleby (accepted) . . . . . 205 0 0

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## PRESTON.

For construction of an underground convenience in Church Street.

T. CROFT & SONS, Victoria Street (*accepted*). £1,724 0 0

## SCOTLAND.

For street works in Portland Street, Kilmarnock. Mr. R. BLACKWOOD, burgh surveyor.

United Granite Quarries, Ltd. . . . . £1,802 0 0

G. Morrison . . . . . 1,800 0 0

R. C. Brebner & Co. . . . . 1,800 0 0

W. Wilson . . . . . 1,720 0 0

C. McAndrew . . . . . 1,647 0 0

J. & J. Neilson . . . . . 1,640 0 0

A. A. R. LANE, Gourrock (*accepted*). . . . . 1,600 0 0

J. Gilmour . . . . . 1,587 0 0

## SHIPLEY (YORKS).

For construction of new tramways and for reconstruction of existing tramways.

E. TAYLOR, Brighton Parade, Blackpool (*accepted*).

## SKELMANTHORPE.

For additions and alterations to Mount Pleasant, Skelmanthorpe. Mr. J. BERRY, architect, 5 Market Place, Huddersfield.

*Accepted tenders.*

G. Hinchcliff & Sons, Clayton West, mason.

T. Blacker, Skelmanthorpe, joiner.

J. H. Thornton, Skelmanthorpe, plumber.

W. S. Needham, Clayton West, plasterer and painter.

## TAMWORTH.

For supplying and fixing gas-pipes and fittings at the work-house.

C. Dent & Son . . . . . £89 0 0

A. H. Aldridge . . . . . 87 12 6

J. Dent . . . . . 85 0 0

TAMWORTH GASLIGHT & COKE CO. (*accepted*). . . . . 85 0 0

## WALTON-ON-NAZE.

For street work in Newgate Street. Mr. H. W. GLADWELL, surveyor.

J. G. Oxley . . . . . £114 0 0

D. Mackenzie & Son . . . . . 106 0 0

J. MORAN & SON, Dovercourt (*accepted*). . . . . 98 0 0

## WEST HAM.

For supply of a travelling crane to carry 30 tons, span 67 feet.

Jessop & Appleby . . . . . £1,120 0

Witting Bros. . . . . 970 0

CARRICK & RITCHIE, Edinburgh (*accepted*). . . . . 947 0

## WESTMORELAND.

For construction of a 100,000-gallon concrete tank, and laying of half a mile of 3-inch water-pipes in connection with the land, supply of pipes, &c.

W. Carradice, pipelaying and tank . . . . . £344 0

J. Blakeborough & Son, irregular pipes . . . . . 24 0

## WESTON-SUPER-MARE.

For supply of furniture and fittings for the new pavilion Knightstone Island.

*Accepted tenders.*

A. R. Dean, Ltd., seating . . . . . £455 12

Lance & Lance, tables, curtain rails, cork lino and linoleum and curtains . . . . . 182 5

J. Leonard, frame and scenery . . . . . 126 10

T. Mills, chairs . . . . . 91 17

Bryant & Son, chairs . . . . . 39 12

THE second sessional meeting of the Historic Society of Lancashire and Cheshire took place on the 30th ult., Mr. Paul Rylands presiding over a crowded audience. After the usual formal business several members exhibited objects of interest. A lantern lecture on "The Ancient Streets and Boundaries of Liverpool," by Mr. W. Fergusson Irvine, was then given, the lecturer expressing his opinion that Liverpool was a village of importance before it got its first charter from King John, its history being traced on to the seventeenth century, up to which time it had made slow progress. After the seventeenth century the town increased by leaps and bounds, with wider streets, greater residences, and wealthier merchants and tradesmen, and the enjoyment of almost unbounded prosperity, the city fathers of that time showing forethought for the future welfare of Liverpool. After a short discussion a vote of thanks, proposed by Mr. T. May and seconded by Mr. W. Handley, was heartily accorded to Mr. Irvine for his paper.

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**BUILDING AND BUILDERS.**

At a meeting of Kelso Town Council it was unanimously resolved to acquire at a cost of 500l. a site in Bowmont Street for the erection of a free library for the town. The site is 100 feet by 90 feet.

PLANS for the proposed new church for St. John's, Hopwood, Hopwood, to replace the present iron structure, have been sent to the Ecclesiastical Commissioners for approval. It is suggested that the foundation-stone be laid on May 23.

THE quarterly meeting of the executive of the Scottish Building Trades' Federation was held in Dumfries on Friday last, when members were present from different parts of the country. Mr. Robert Lamb, building contractor, Edinburgh, president, occupied the chair. The secretary, Mr. James L. Kirk, C.A., Glasgow, submitted the quarterly report, which related the progress made with the various matters engaging the executive's attention. An interesting discussion took place on all the points in the report, and important suggestions were made. At the close of the business the members were entertained to dinner in the Commercial Hotel by the local association.

A SPECIAL joint meeting of the health and team committees of the Wolverhampton Town Council was held on Tuesday, the 4th inst., to consider the desirability of providing destructors for the purpose of dealing with the refuse of the town. Some difficulty has been experienced by the health committee in obtaining tips for depositing the town refuse, and they have decided that the only alternative is a destructor. Enquiries have been made as to the work of destructors in other towns, and it has been decided to advise the Town Council to construct two destructors. The cost is estimated at about 22,000l. One of them will probably be erected with a view of providing power at the electric generating station in Commercial Road.

**VARIETIES.**

It is rumoured that the Middlesbrough town clerk, Mr. St. Bambridge, who has been ill for the last nine months, will tender his resignation at the next meeting of the town council.

A NEW hall in Hull, to be known as the Stratten Hall, was opened last week. It is, when furnished, to be used as a dining hall for the 250 orphans of seamen in the home, and has been erected at a cost of about 2,000l.

As a mark of the estimation in which the British Fire Prevention Committee is held abroad, the Imperial Federation of Fire Brigades in Austria (Esterreichischer Feuerwehr Reichsverband) have nominated Mr. Edwin O. Sachs, the committee's chairman, to be an honorary corresponding member, and the Royal Italian Fire Brigades Association have also asked Mr. Sachs to accept a similar distinction. The Belgian Fire Federation, too, recently elected Mr. Sachs to be an honorary corresponding member.

CONSEQUENT upon the increase of its business, due to the absorption of the Equitable Fire and Accident Office, the London and Lancashire Fire Insurance Company has decided upon the following changes in its home branches:—Mr. Owen D. Jones, who, for the past fifteen years has been the company's local manager in Newcastle, will be transferred to Leeds to take charge of a new branch about to be opened there, to control the entire business of the company (both fire and accident) in Yorkshire. Mr. Charles E. Fox, resident secretary of the accident department at Bradford, will now be attached to the Leeds office in a similar capacity. The present offices of the company at Bradford and Huddersfield will be maintained under the charge of the present resident secretaries, Mr. Walter Miller and Mr. S. F. Johnson respectively. Mr. Samuel Butler, who for the past eleven years has been the local manager of the company in Dublin, will take up the position of local manager at Newcastle. Mr. Thomas M. A. Nolan, hitherto local manager of the Equitable at Dublin, will become local manager of the London and Lancashire, and will have charge of both the fire and accident business in the provinces of Munster, Leinster, and Connaught. Mr. James M. Scott, the present local manager at Belfast, will take charge of the whole of the Ulster business, both fire and accident.

**ELECTRIC NOTES.**

THE Pontefract Guardians have had presented to them by Mr. MacGowan, chairman of the committee, and the prime mover in the electric light scheme, a comparative statement showing the relative cost of gas and electric light on the union premises, from which it appeared that there had been a saving, by the introduction of the electric light, of 15l. on the half-year. Mr. MacGowan said he had still hopes of the ultimate saving being 60l. per year, as he predicted. The report was adopted.

THE Electric Lighting Boards (British Manufacturing Company), Limited, announce that, inasmuch as extra accommoda-

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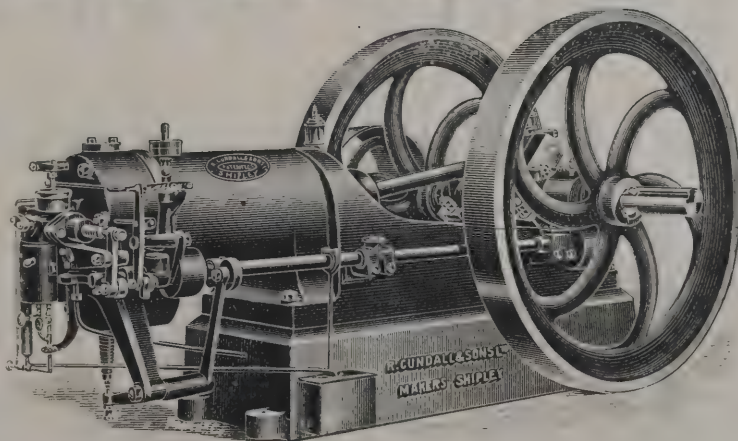
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tion has now been made available at their registered office, 7 Pall Mall, S.W., the counting-house has been removed to that address. The accommodation at No 9 Grosvenor Mansions, will therefore be devoted entirely to sales. The company also announce the engagement of Mr. H. Brome Tarry, for many years with Messrs. Lucas & Aird, the great contractors, who will act as manager with Mr. Holland (late assistant trade manager of Messrs. Ind, Coope & Co.), as general assistant, and Mr. W. G. Haywood will remain as before, works superintendent.

### TRADE NOTES.

SUNDERLAND Road junior school, Gateshead, has been ventilated by means of Mackay's patent direct-acting invisible roof ventilators, supplied by the sole makers, Messrs. Cousland & Mackay, ventilating engineers, Glasgow and Manchester.

ST. JOHN'S CHURCH, Devizes, has lately been fitted by Messrs. John King, Limited, engineers, Liverpool, with their well-known "small tube" hot-water heating apparatus, employing their economical coil heater with waterway firebars.

THE Safety Elevator Company, of Albert Works, Deptford, have just erected the electric passenger and goods lifts and hydraulic hoist at the new premises of the Gramophone Company, 21 City Road, and they have also secured the contract for the four electric passenger and eight service lifts for the King's Mansions, West End Lane, Hampstead.

### SMALLPOX AND VACCINATION.

THE alarming dimensions to which the spread of smallpox is attaining is bringing forcibly home to the minds of employers of labour the advisability of instilling among their employes a just appreciation of the desirability of, or rather the necessity for, vaccination. Many firms have, we believe, made vaccination a *sine qua non* of their workers continuing in their berths; others have adopted persuasive rather than coercive measures. Among the latter are Messrs. Colls & Sons, the well-known builders, to whose employes Mr. Howard Colls addressed the following letter:—

"My dear Friends,—I have just heard that one of our bricklayers has left his job, and is found to be suffering from smallpox. I hope no others have caught it, but it has brought

very forcibly to my mind the necessity of revaccination. Some of us may perhaps have objections, but I think we laymen ought to be guided by the practically universal opinion of the hospital physicians that revaccination is a tremendous safeguard. If they are right we are positively helping by not submitting to spread this dire disease, and even if there is any doubt about their being right, the risk we run by not submitting is so infinitesimal that I do not think we are justified in letting it weigh with us. So as I believe one owes it to one's family, friends, and to those working side by side with us, to be revaccinated, I urge it very sincerely upon you, and I will very gladly arrange for the medical officer to come to the yard or to any job unless you prefer to go to your own doctor.—Yours faithfully,  
J. HOWARD COLLS."

It is satisfactory to learn that as a result of this kindly and thoughtful appeal 160 of the men at once submitted themselves for vaccination, and no doubt their example will be speedily followed by the others.

### FIREPROOF STEEL ROLLING SHUTTERS.

UNDER the heading "An American Warehouse" we published in our issue of 17th ult. a description of a newly-erected building at Columbus, Ohio, and we now purpose giving particulars of one or two of the specialties which were mentioned as being employed in its construction.

Kinnear's Steel Rolling Doors, Shutters and Partitions which were extensively used, are not unknown in this country but whilst they were employed in this building as a means of rendering it fireproof, they are more familiar here as partitions and shutters for car sheds at tramway depôts, having been adopted by the Corporations of Nottingham, Cardiff, Wallasey, &c., and at electric generating stations. But the numerous purposes for which they are suitable and have been adopted will be better understood and appreciated when their merits are more fully known. In addition to the above purposes these shutters are supplied for large entrance doors to warehouses and factories, as partitions for large floor areas, for fireproof doors and fireproof curtains for windows and in each of these they have some feature to specially recommend them.

These shutters, which are made of galvanised steel, differ in construction from the ordinary iron shutter, which depends for its flexibility upon the laths being hinged together at the

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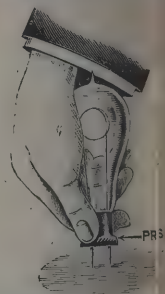
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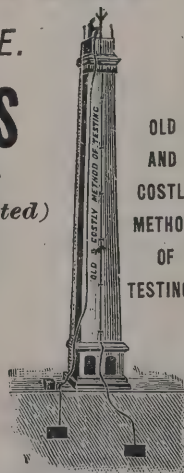
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lock, for each lath or slat is so shaped at top and bottom that they are self-locking, and from end to end form a continuous flexible joint.

The shutter is attached to a shaft containing springs, the length of which are regulated so as to counterbalance the weight of the shutter in any position. A small gearing attached to one end of the shaft enables any person by means of a lever-chain to raise or lower the shutter as desired. A single shutter, measuring 35 feet 6 inches wide by 20 feet high, has been fixed and is found to be as easily operated. Where the opening is of great length and more than one shutter is required, they can be supported by centre-posts which are hinged, and these can be hoisted along the ceiling after the shutters are closed to give a clear opening.

When used in warehouses as doors they effect a great saving in floor space, the space sliding doors take up being all that is occupied, for goods must be kept clear of them, whereas with Kinnear's shutters they are out of the way until required. Where it is necessary to partition off one half of the floor, the centre-posts being hinged, as already mentioned, enables the whole floor space to be available without posts or rails.

When these shutters are used as fireproof doors angle-iron grooves are built into or can be attached to the walls. The construction of the laths allows for any expansion or contraction, while preventing the possibility of flames getting through the joints. Where, however, they are intended to act automatically the shutter is left coiled, held in position by a flexible link in the centre. The bottom is weighted so that it will come down by gravity when the link has been fused, but to insure its prompt action springs which are fixed at each end, press upon the bottom angle iron, causing it to drop immediately. The automatic fire doors are also constructed in another manner. They are fixed without shaft or hoisting arrangement, and are not balanced by springs. Instead, one end of the shutter is attached by expansion bolts to the top of the opening, and is then rolled up from the bottom and secured by a cable and a fusible link. The sides are provided with hinged grooves, which are open so long as the shutter is up. When the link is fused and the shutter comes down the hinged grooves automatically close on to it, and are clamped tightly in position.

The necessity for windows being guarded by automatic fireproof curtains has often been proved, but never perhaps so strikingly as by the great Jewin Street fire, where building

after building was attacked through the openings afforded by the windows to the flames blown across the narrow streets; and there can be no doubt had there been proper protection at these most vulnerable spots, the fire could never have reached such alarming magnitude. The Kinnear steel rolling shutters acting on any of the above principles can be applied to windows, and have proved successful not only in experimental tests, but under the severe test of a fierce fire that destroyed the whole of the adjacent property.

The window shutters, when subjected to a temperature of 150 degs., automatically close and prevent the interior of the building being attacked by fire from outside the building. By a most ingenious arrangement, should the fire occur inside the building, any or all of the shutters are readily opened to admit of water being poured on the seat of the fire by the firemen directing water from the hose on to the shutters, which will entirely open or remain at any height desired.

To speak first of the test to which they were submitted by experts, a house 18 feet high, 8 feet deep and 10 feet wide, with four windows and two doors, was fitted with Kinnear's window-shutters and fireproof doors. Within 5 feet a wooden building 14 feet high was placed, filled with combustibles and fired. The shutters and doors all automatically closed, and after fifty minutes, when the fire was burning itself out, the fireman's hose directed a stream of water against the upper shutters, which were immediately raised, showing the glass and sash frame uninjured. Immediately afterwards the fireproof doors were raised and the building filled with combustibles and again fired. The doors automatically closed, and although the fire cracked the building severely, none of the shutters buckled or permitted the fire to get through them, and after cooling were found in such condition that they were raised again by the gear-chains.

A fire that destroyed a large amount of property at Columbus, Ohio, was checked by a building entirely fitted with these shutters, which not only was uninjured itself, but prevented the fire spreading to property beyond.

Cabot's sheathing and deafening quilt is another specialty that was used both for rendering the building sound-proof and assisting in fireproofing the interior. This "Quilt" consists of a felted matting of eel-grass (*Zostera marina*), held in place between two layers of tough manilla paper quilted together, the long ribbon-like fibres of eel-grass crossing each other at every angle, and forming within each layer innumerable minute cells of "dead" air, making a soft elastic cushion. It is

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claimed for this quilt that for insulation of dwellings and cold storage, and for deadening sound, it is wonderfully effective, clean and inodorous, light and easy of application, and no matter how long in use never becomes solid. The claim that eel-grass never rots seems well founded, for the walls of the old Pierce House, Dorchester, Mass., which was built in 1635, were found, when opened in 1895, to be filled with it, and showed no signs of decay. We are informed by the B. and S. Folding Gate Company, of Tower Street, Upper St. Martin's Lane, W.C., who are the sole agents in this country for this quilt, as well as for Kinnear's shutters, that Cabot's quilt is being very largely used for sound deadening in flats, &c., for lining roofs, and for insulating cold storage buildings, effecting a great saving in space. When used as a means of fireproofing the quilt is covered on both sides with heavy asbestos paper, which, combined with the non-inflammability of eel-grass, renders it, when applied to the walls and floors of buildings, an excellent fire-resisting material.

### NOTTINGHAM MASTER BUILDERS.

THE Nottingham Master Builders' Association held their annual dinner at the Victoria Station Hotel, Nottingham, on the 31st ult. The chair was occupied by the President of the Association, and the vice-chair by Mr. F. H. Fish, the vice-president. The loyal toasts having been duly honoured, Mr. James Wright, the honorary secretary, proposed "The Mayor, Magistrates and Corporation," and offered to the mayor and sheriff their hearty congratulations upon election to their respective positions. No doubt their worthy mayor would have to take part in the Coronation celebrations, and it would be a source of satisfaction if he were able to invite all the citizens of Nottingham to take part with him in rejoicings at the fulfilment of peace and termination of the deplorable war in South Africa. As to the magistrates, his own view was that the administration of justice would gain by the appointment of a stipendiary magistrate, although he fully recognised the services rendered by the unpaid magistracy. With regard to the Corporation they, as an association, were perhaps more directly concerned with the growth and development of the city than any others, and they were as ready to acknowledge that the Corporation had given them a clean, well-drained and well-governed town as anyone. They appreciated the vast improvements that had been made

during the last ten years, and all that they desired to say was that they were anxious that the Corporation should continue its progressive policy, and continue to develop the city both in its material growth and in its moral and intellectual developments. They had a right to ask, however, that when great improvements were undertaken they should be undertaken with due regard to economy. Furthermore they, as an association, felt that a great deal of the work undertaken by corporate bodies could be very much better done on contract.

The Mayor, in reply, said that it was the aim of the Corporation to make the city as popular and as successful as they could, and they desired to give all trades every facility to carry on their business without introducing too many stringent regulations. Speaking individually, he thought that the Corporation ought not to undertake any work that they were not absolutely bound to do. It was only fair that they should give the trades of the town every facility to work according to the ordinary laws of supply and demand. He certainly thought that building work would be better done by individuals than by corporate bodies. The question was as to whether the corporate bodies received as good a return for the money they spent as did individual firms. If they did not, they were doing an injustice to the ratepayers and a gross injustice to the people associated with the particular business in hand. With regard to the stipendiary magistrate he rather fancied the people who went before the Bench did not always want the strict letter of the law, and he failed to see what advantage they would derive under such a system. Touching upon the question of the regulation of buildings, he thought that it was clear that the Corporation ought to have more power than they possessed at present. He had noticed a great many letters in the papers recently about the fire at Lenton, but it was the easiest thing in the world to write letters, and he held that the Corporation had done so far all that they could reasonably have been expected to do. The matter of the fire-brigade was receiving the serious consideration of the watch committee, and before many weeks he thought that the brigade would be put on a perfectly sound and satisfactory basis. They had to move by degrees, but he had an idea as to the points which needed improvement, and he hoped that their action would meet with the approval of the citizens.

The Sheriff also replied.

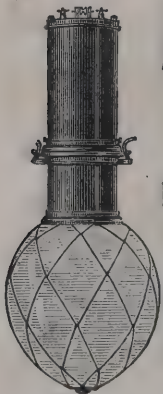
Councillor J. Wright submitted the toast of "The Architects." Modern builders, he remarked, had a great deal to do

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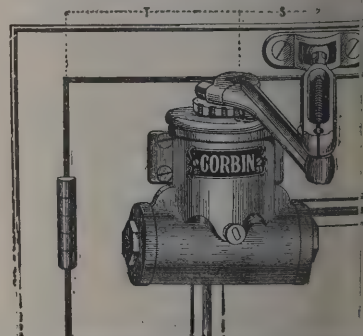
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with architects, sometimes to their cost. They often had difficulties with the architects, and were compelled to reduce their prices. They as builders ought to get a living wage, but they did not. The working-man got the living wage, and the builders got the rest. He wished that the architects had more confidence in the builders, and he could assure them that the desire of the builders was to work amicably with them.

Mr. A. W. Brewill, in response, agreed with the proposer that the whole difficulty between the builders and the architects was the regrettable one of £ s. d. He was often sorry that they could not go back to the old times when the architect was the master builder, and when he loved his work. If they had large buildings to erect nowadays they had to rush them, and under such circumstances it took a great deal of pleasure from the work. He sincerely wished they had some system whereby all contracts were remunerative, the contractors receiving a fair price without running the risk of losing money through strikes and other unforeseen circumstances. He thought it was fair to say that there had been a great improvement in the architecture of the buildings in the city during the last few years.

Mr. John Lewin, C.C., introducing the toast of "Success to the National Federation and the Nottingham Master Builders' Association," said that organisations of master builders were of comparatively recent growth, and they had been brought into existence by the organisations which existed on the part of the men. The last statistics with regard to trade unionism in the building trade showed that they contained 190,000 members, with an income of 347,000£, and an annual expenditure of 93,000£. They had funds of 412,000£, and in one year they spent a sum of 57,000£ in strikes and one of 72,000£ in management expenses. That meant that 129,000£ had been spent to fight the employers. Undoubtedly trades unionism had a useful part to play, and had played a useful part in bettering the condition of the workers, but there was only too good reason to believe that in recent years it had abused its high privileges. The very existence of master builders had in recent years been jeopardised. They had nothing to fear from demands for high wages, for that was a matter which would work it according to the laws of supply and demand, but seeing that their industry was the second largest in the country, it ought not to be unduly hampered and restricted as it had been. His charge against trades unionism was that the restrictions they had sought to enforce had tended to seriously cripple the trade. The restriction of the output was a fatal policy alike to work-

men, employers and the community at large, and he was afraid that the unions had unduly and unnecessarily interfered with liberty of management. He was beginning to feel also that even the cherished doctrine of the standard rate of wages did not work out as it was intended that it should. It contained a high ideal, to make the good compensate for the bad, and when they had large buildings to erect nowadays they had dragged down the good and the efficient to the level of the bad and inefficient. Unless the builders were prepared to stand together their troubles were on the increase.

Mr. J. N. Greenall and Mr. F. H. Fish responded briefly.

The remaining toasts were "The Visitors," cordially submitted by Mr. Enoch Hind, and acknowledged by Mr. J. Sulley, and "The Chairman," proposed by Mr. W. Edgar.

### LONDON WATER BOARD.

THE Water Bill introduced into the House of Commons by Mr. Walter Long has been printed. It is a considerable measure, covering twenty-eight pages. The first clause deals with the formation and constitution of the new Water Board of the Metropolis, which will buy out the existing companies' undertakings and supply water within "the parishes and places in which any of the metropolitan water companies are authorised to supply water, and the parishes of Sunbury, Chessington and Cuddington." In other words, all those who are consumers under the following companies will come within the exercise of the powers of the new authority:—

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The Company of Proprietors of Lambeth Waterworks.

The Governor and Company of Chelsea Waterworks.

The Grand Junction Waterworks Company.

The Company of Proprietors of the Kent Waterworks.

The Staines Reservoirs Joint Committee.

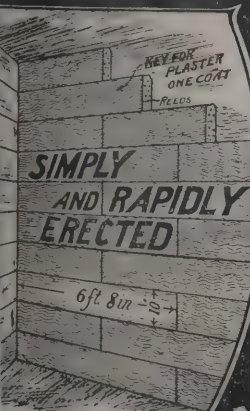
There are certain exceptions. The Bill provides that "such parts of the boroughs of Croydon and Richmond, and of the urban districts of Cheshunt, Enfield, Tottenham and

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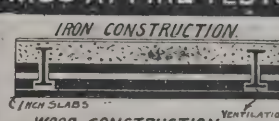
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Ware as are within the limits of supply shall cease to be within the limits of supply, and the powers, rights and duties of the councils of those boroughs and districts with respect to the supply of water shall extend throughout their respective boroughs and districts." For the lapse of these rights of supply compensation will be payable to the Water Board, besides a sum for the mains and other apparatus, but the board may be required to supply water in bulk to these authorities, or to "any rural district situate wholly or partly within the limits of supply."

A period must occur before the companies' concerns are transferred, and the Bill contains certain "transitory provisions," one of which runs:—

"Until the appointed day the undertaking of each metropolitan water company shall be maintained and carried on by the company as heretofore in the ordinary course of business, but if the Water Board think that any appointment to any office or service of the company, or any contract with respect to any matter connected with the undertaking, or any alteration in the rate of salary or wages payable to any officer or servant of the company, made by the company subsequently to the introduction of the Bill for this Act was not reasonably necessary in the ordinary course of business of the company, they may give notice in writing to the company to that effect within three months after the appointed day."

All such matters will be referred to the arbitration court. The Water Board take over the several companies' officials at their present salaries, and those whose services are dispensed with will receive compensation, and the auditors of the accounts of the companies will also be paid an "annual or other sum" on the withdrawal of their appointments.

The shareholders of the companies concerned will receive Three per Cent. Metropolitan Water stock, which must be issued to each corporation within three months of the decision of the Court of Arbitration fixing the purchase sum, and in the meantime money equal to the last two half-yearly dividends will be paid by the Water Board, with any additional sum "in respect of the reasonable expectations of increasing dividends (if any)." It is also proposed that—

"Within two years from the appointed day all irredeemable debenture stock shall be extinguished, and the Water Board shall issue to the holders thereof in substitution therefor the amount of water stock to which they are severally entitled under this section.

"The Water Board shall within eighty years from March

31, 1903, purchase or redeem, and pay off, all redeemable debenture stock and all mortgage debts, and any stock so purchased or redeemed by the board shall, as from the date of the purchase or redemption, be extinguished and cancelled."

The new Water Board will be presided over by a paid chairman and vice-chairman (serving for three years), who need not be members before election, but if they are members their appointments will create vacancies. The new body will consist of sixty-seven members, constituted as follows:—

#### INNER LONDON.

London County Council	10
Common Council	2
28 Metropolitan boroughs (six having two members each—Islington, Kensington, Lambeth, St Pancras, Stepney and Westminster—the remaining 22 one)	34

#### OUTER AREA.

West Ham	2
Willesden, East Ham, Leyton and Walthamstow, one each	4
County Councils of Kent, Essex, Middlesex, Surrey, Hertfordshire, and Conservancies of the Thames and Lea, one each	7
Grouped outside Urban Districts	8

Each outside grouped district will elect members of its council to serve on a joint committee, and from each of these committees one representative will be elected to the Water Board. These joint committees will be formed by members from the urban councils, each authority being represented by the number of members given in parentheses:—

Buckhurst Hill, Chingford, Loughton (1 each), Waltham Holy Cross (2), Wanstead (3), and Woodford (4)
Beckenham, Bromley (4 each), Chislehurst (1), and Penge (3).
Bexley, Dartford (2 each), and Erith (3).
Ealing, Acton (2 each), and Chiswick (1).
Brentford (3), Hampton (2), Hampton Wick (1), Hanwell (2), Heston and Isleworth (5), Sunbury (1), Teddington (3), and Twickenham (4).
Edmonton (2), Hornsey (5), Southgate (1), and Wood Green (2).
Kingston (6), East and West Molesey (2), Esher and the Dittons (3), Ham (1), and Surbiton (4).
Barnes (2), the Maldens and Coombe (1), and Wimbledon (5)

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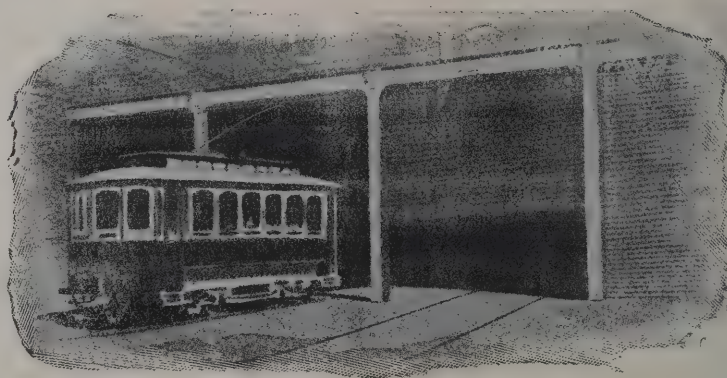
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As was explained by the President of the Local Government Board in his speech, the court of arbitration will consist of Sir Edward Fry, Sir Hugh Owen and Sir John Wolfe Barry. Any two may act with the same authority as a judge of the High Court, and their decisions cannot be called in question by anyone with one exception:—

"Provided that the court of arbitration may at any stage of the proceedings at an arbitration, and shall, if so directed by the Court of Appeal, state, in the form of a special case for the opinion of the Court of Appeal, any question of law arising in the course of the arbitration."

As Mr. Long has stated, the costs incurred by water companies will be borne by the Water Board, and also those of any other person if directed by the Court. One clause in the Bill lays down the basis upon which the judgment of the arbitrators shall be formed in arriving at the value of any undertaking:—

"In determining the amount of water stock to be issued to any metropolitan water company, the court of arbitration shall not make any allowance in respect of compulsory sale, and shall not take into account any enhancement or depreciation of the market value of any stock or shares of the company, which in the opinion of the court was caused by or resulted from the passing or the anticipation of the passing of this Act, but the court may make such allowance as they think just for covering any expenses which have been or are likely to be incurred in consequence of the passing of this Act, and which ought, in the opinion of the court, to be borne by the Water Board."

### NATIONAL REGISTRATION OF PLUMBERS.

THE annual meeting of the District Council for Hull, East Riding of Yorkshire and North Lincolnshire, for the national registration of plumbers, was held in Hull on the 23rd ult., Alderman Dr. Sherburn, J.P., presiding.

Dr. Sherburn said all who took any interest in the well-governing of the city were most anxious to do what they could to elevate the plumbing craft to a high position among the skilled trades. The work of the plumber was fraught with serious responsibility, in so far as it was connected with the public welfare and health. He had no hesitation in saying that the mortality of such large towns as Hull was largely decreased by the character of the work done by plumbers. The mind of the public was ripe for legislation upon this important matter, affecting as

it does the public health. Our national asset was our public health, and the public had a right to demand some evidence of the efficiency of the men who did such important work as the plumbers did. It was their duty to see that the air was not polluted with dangerous gases which emanated from sewers and gained access to our dwellings. There was no doubt that the duration of life was longer than it used to be, and that the general state of health was better than formerly. That was due to the fact that there was a greater knowledge of the laws of public health, and that plumbers had wonderfully improved in their work. He advocated the necessity for examinations of plumbers, which would have the effect of keeping them a body composed of none but efficient men. This matter, he said, should be pushed forward, and there should be statutory legislation to make it compulsory.

Councillor Cohen moved:—"That this meeting cordially approves of the movement for the national registration of plumbers as a safeguard to the public health, and recommends that the Government be urged to deal with the subject during the ensuing session of Parliament, and that copies of this resolution be sent to the First Lord of the Treasury, the President of the Local Government Board, the Home Secretary and the local members of Parliament."

Mr. W. L. Harrison, president of the National Association of Master Plumbers, seconded the resolution, which was carried unanimously.

### SOCIETY OF ENGINEERS.

THE first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, February 3, at the Royal United Service Institution, Whitehall. Mr. Charles Mason, the president for 1901, first occupied the chair, and presented the premiums awarded for papers read during that year, viz.:—The President's Gold Medal to Mr. H. Alfred Roechling for his paper on "The Sewage Question during the last Century"; the Bessemer premium of books to Mr. Roger G. Hetherington for his paper on "The Main Drainage of Ilford"; a Society's premium of books to Mr. Arthur T. Allen for his paper on "Concrete Subways for Underground Pipes"; a Society's premium of books to Mr. Sydney A. Hollis for his paper on "Preliminary Investigations for Water Supply," and a Society's premium of books to Mr. J. Freebairn Stow for his paper on "Irrigation Works in South Africa."

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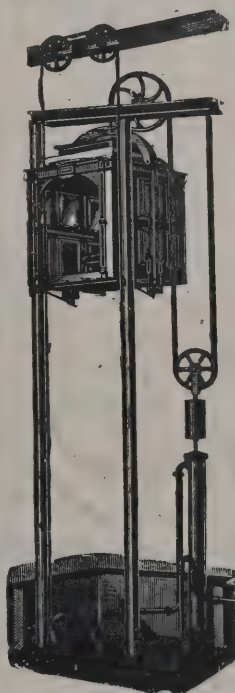
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Mr. Mason then introduced the president for the present year, Mr. Percy Griffith, to the meeting, and retired from the chair, receiving a hearty and unanimous vote of thanks for his services during the past year.

The President then delivered his inaugural address.

After acknowledging the honour conferred upon him by his election to the presidential chair, and expressing his determination to do his utmost to warrant the choice of the members, Mr. Griffith proceeded to deal with the domestic affairs of the Society. After pointing out the satisfactory condition of the membership roll and the Society's financial position, reference was made to the visits to works, the annual dinner and the annual general meeting, which last it was proposed to render somewhat more attractive in the future than it had been in the past. Mr. Griffith then dealt at some length with the objects and position of the Society in regard to the modern conditions under which its work was carried on, emphasising the fact that, in spite of the large number of kindred societies by which it was surrounded, its position was still firmly maintained and its objects were clearly defined and successfully accomplished.

The President then dealt with some of the broader aspects of the question of water supply in this country, pointing out that even at the present time there were many towns and districts without any public supply whatever and others in which the supply was very deficient. The causes of this state of affairs were then indicated as being the very imperfect system of control and allotment of responsibility, the irregular and haphazard selection of areas of supply, the peculiar physical characteristics of the country generally, and the present system for allocating the various available sources of supply. He then pointed out the unsatisfactory effects of the rivalry existing in many places between local authorities and water companies, and suggested some limit being placed on the power of the former to interfere with or oppose the latter. The concentration of the population in the large cities and the consequent increase in the demand for water in such cases, and the growing practice of seeking new sources at long distances from the area to be supplied were then remarked upon. After pointing out a few elements of risk connected with long conduits, Mr. Griffith suggested that local sources of supply should in every case be developed to their utmost capacity before large gravitation schemes were undertaken.

The difficulties attaching to underground sources were then referred to, the condition of the water supply in the county of Essex being quoted as an illustration. As representing modern

practice in regard to deep borings, descriptions were given of the boring recently completed at Gainsborough, which was the largest in the kingdom, and that recently commenced at Lincoln, which was intended to be 700 feet deeper, both under the supervision of the President. Attention was called to the modern practice of dispensing with wells and pumping direct from borings, and to the necessity for special attention being given to the design of the pumping machinery in such cases, an illustration being given from actual practice. The President dealt with the newly imported American system of lifting water by compressed air, and pointed out its advantages and disadvantages, expressing his opinion that the system was not applicable to any cases where the ordinary form of pump could be used.

In connection with gas engineering, the President refrained from dealing with the details of manufacture on the ground that they had been fully discussed and described in the transactions of the various gas institutions; and, after remarking upon the great benefits conferred on the gas industry by the introduction of electric lighting, proceeded to describe the present position and future prospects of the system of incandescent gas lighting. Under this head, Mr. Griffith ventured to forecast the possibility of illuminating power in gas being ultimately subordinated to calorific power, and pointed out the vastly increased scope for the gas industry afforded by the reduction in cost of manufacture which such a change would bring about. Having remarked upon the enormous lighting efficiency of coal gas rendered possible by the incandescent burner (40 candle-power per cubic foot of gas per hour as against 3 candles per cubic foot with the argand burner), the President strongly urged the necessity for extending the practice of superintending consumers' fittings at reasonable rates.

In conclusion, Mr. Griffith referred to the remarkable advances made by the introduction of high-pressure lighting for external purposes, and briefly described the work done in this connection by Mr. William Sugg, the Welsbach Company, and Mr. Scott-Snell. A description of the automatic air pump or pressure-intensifier, which is operated entirely by the waste heat from the burners, invented and recently much improved by the last named, then followed, and a reference to the inverted incandescent lamp, also recently introduced, concluded the address.

The address was listened to with marked attention by an appreciative audience, and at its close a hearty vote of thanks was accorded to the President.



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# The Architect.

## THE WEEK.

YEAR ago, when discussing the DE FALBE tapestry case, we recommended that a further appeal should be brought to the House of Lords. In a mansion at Luton 100 seven pieces of tapestry belonging to the tenant for life were hung. Three pieces were treated as pictures and were fastened to the wall in such a way that they could be easily removed. In the drawing-room efforts were made to conceal the mode of attachment of four pieces, as if it were desired to suggest that they were to be kept in those positions permanently. When the case came before Mr. Justice BYRNE he discriminated between them. He decided that the tapestries in the hall were not permanent additions to the building, while those in the drawing-room had been annexed to the mansion-house and became part of the estate. In the Court of Appeal it was held that the rules about fixtures had been relaxed, and as at Luton nothing was done except what was necessary for the owner's enjoyment of the tapestries, the pieces belonged to the owner's executor rather than to the heir to the estate. In the House of Lords there was agreement with the decision of the Court of Appeal. The Lord Chancellor said it was not easy to see how the tapestries in the drawing-room could have been more slightly attached than in fact they had been. They could never have been intended to form part of the house. The difference of opinion in the Courts below on the subject arose less from the state of the law than from the alteration in modes of life. Lord MACNAGHTEN agreed with the Lord Chancellor. Lord SHAND maintained that there had been changes in the law, but they were in favour of the tenant. A tenant might decorate the house he occupied with pictures, tapestries or other ornaments, or even with a parquet flooring, and so long as there was no damage by the process they could be removed. The other lords present agreed that the tapestries were only chattels. The case is remarkable, but it will not be wise to apply the final judgment in too liberal a manner. The owners of ornamental property, their dealers and frame-makers, are not necessarily authorities on fixtures; and, as we said before, the costly litigation between the executor and the heir or remainderman in the DE FALBE case might have been avoided if an architect or surveyor had been consulted about the hanging of the tapestries.

THE action, PARKER v. W. F. STANLEY & Co., LTD., which was decided by Justice FARWELL, is interesting as the latest enunciation of the law by which top lights are treated as ordinary windows. When additions are made to houses by building in backyards, in the majority of cases it is necessary to light them from above. Behind No. 288 High Holborn was a one-storey building which had been used as a restaurant. In 1890 it came into the possession of the plaintiffs, who are photographers. They carried out various alterations; the skylights were enlarged for a part that was to be utilised as a studio, while over another part that was to serve as a dark room the skylight was obscured. An adjoining strip of land that was partly bounded by a building 33 feet high belonged to the defendants. They required additional workshops as mathematical instrument-makers, and accordingly raised the building. The plaintiffs, considering the access of light was interfered with, sought an injunction. The defendants denied that the light was diminished, and alleged that by obscuring the part required for a dark room the right to ancient lights was abandoned. A further plea was that the plaintiffs were entitled to no more light than had been needed for the restaurant. Mr. Justice FARWELL, in his judgment, said that the darkening or obscuring of the skylight could only be regarded as temporary, for the room might have to serve the purposes which required light from above. Where the old skylight had been replaced by a new glass skylight the plaintiffs were entitled to have as much of it as was formerly occupied by the old window or skylight to be treated as an ancient light. The fact that the premises were once used for a restaurant was immaterial. Photographers required special light, and the plaintiffs

were justified in complaining, although they had only carried on business since 1890. His Lordship said he was constrained to grant a mandatory injunction, but it would only relate to the obstruction caused by the increased height of the new part of the buildings. He advised the parties to come to some arrangement. It is bad policy to undervalue restaurants in similar cases, for the late Vice-Chancellor MALINS, whose experience was wide, was always certain to decide in favour of a plaintiff who held such premises if one or more of his customers declared that new buildings prevented them reading a newspaper with as much ease as formerly. His Lordship seemed to think that, where so much is uncertain, there was no surer test of diminution of light, and acted accordingly.

THE difficulties which attend underground water-supply are revealed by a statement which was made at Lewes on Tuesday. A very costly asylum is now in course of construction by the County Council. In order to obtain a water-supply borings have been made to a depth of 326 feet without success. The machinery has broken at that depth and further progress is at an end. The consequence is that no water appears to be available, and the committee are in a fix. It has been decided to seek expert advice. This case by itself is enough to suggest the necessity of a more scientific study of well-boring. Accordingly, the volume on the subject by Mr. C. ISLER, which Messrs. SPON have published, could not be issued at a more opportune time. So many asylums and other institutions are now in progress which have to depend on wells for their independent water-supply, the old-fashioned empiricism seems to be inadequate to cope with the obstacles. In the volume the different kinds of wells are described and illustrated, as well as various systems for boring. Among these, deserved attention is given to Messrs. MATHER & PLATT'S deep-boring system, which is said to combine many of the advantages of other systems without their disadvantages. For such emergencies as now are nullifying the operations at the Sussex Asylum, special apparatus are provided, one being a breaking-up bar, weighing about a ton, which either drives the boring-head through the material or breaks it into fragments. The system is also adaptable in dealing with running sand. French as well as American methods are also dealt with. Mr. ISLER'S book is applicable to boring for brine and petroleum, as well as for water. We believe that in the majority of cases the operations are best carried out when entrusted to specialists, but architects should be in a position to understand what is practicable, as well as the contingencies which may have to be encountered. Much information of a useful kind, and derived from experience, will be found in the pages.

AMONG German architects WILHELM BÖCKMANN holds a prominent place, and his public and private works entitle him to recognition by his brother artists. During some forty years he has been in some way connected with all the great building works in Berlin and other cities, and his loyalty and kindness were among the factors which led to the recent celebration of his seventieth birthday in a festive manner. For others besides the Government he has shown himself to be a wise counsellor. He is a native of Elberfeld, and was long associated with HERMANN ENDE, the president of the Academy of Arts. To the partners, and especially to BÖCKMANN, is due the disposition of the suburbs of Berlin. The Zoological Gardens is unquestionably the finest example of its class in Europe, for those who walk or drive through it on their way to Charlottenburg have a conviction that a part of the primeval forest had been prepared for their especial use. In the laying out of streets BÖCKMANN'S services were invoked in the majority of the principal cities of the Fatherland, and his influence has extended as far as Tokio. The buildings he has erected are of all varieties; he has also written much about architecture, and from his wide experience what he says is always accepted as trustworthy. Visitors to Berlin will remember the Architektenhäuser in the Wilhelmstrasse, and its renovation has been in a great measure due to BÖCKMANN. Architects of many countries who have had the privilege of meeting Herr BÖCKMANN will unite with his fellow-artists and compatriots in wishing him every happiness.



## THE LATE SIDNEY COOPER, R.A.

IF the large number of pictures which SIDNEY COOPER produced and the still larger number which are fraudulent imitations of them can be taken as a test, he must be recognised as among the most popular of modern English painters. For some classes of people it seemed to be imperative that at least one of his cattle-pieces should adorn every respectable dining-room, and it must be owned that guests were to be found who admired his simple compositions beyond more ambitious efforts. There was a correspondence between his works and a very general feeling among the public. The "country" and all that belongs to it have a hold on Englishmen, although they are compelled to spend their lives in cities. The crowds that visit agricultural shows, cattle shows and horse shows are all evidence that rural life has votaries besides those who are occupied with agricultural and pastoral pursuits. For them SIDNEY COOPER painted. All classes could understand his pictures. There was no need to have a line of description attached to any of their titles in a catalogue. Even children out of back alleys could appreciate the subjects, for they knew that the figures represented stages in the preparation of beef or mutton.

In that way SIDNEY COOPER appealed to what is a human necessity, the love of animal food, and as long as the world does not become a habitation of vegetarians such pictures as his must be enjoyed. Hence there was also a refreshing honesty in the praise given to his works. There is much affectation surrounding art in all forms, and men give large sums to possess pictures which they do not understand and are incompetent to esteem. But one of COOPER'S cattle-pieces presented no subtleties or conundrums to the spectator. If a man were only able to obtain occasional glimpses of the country, he could have witnessed such scenes from the window of a railway carriage. The representations might be prosaic, but they corresponded with the citizen's recollections.

There was so much that was characteristic of England in SIDNEY COOPER'S pictures, they might be utilised as a text by a foreign critic. According to EMERSON, hunting is the fine art of all Englishmen of condition, and they associate well with dogs and horses. But the late painter had no sympathy with the pastimes of the Nimrods of his country. He preferred the old Saxon regard for cattle and sheep, which, although humbler than the horse or deer, are more useful to the community. On that account SIDNEY COOPER was often made to suffer as if he were the representative man of whatever was inartistic, material and commonplace in painting. Some of his contemporaries in the search for novel subjects went far afield, and they were able to find supporters. From time to time we have had a Classic spirit, an early Italian spirit, a modern French spirit and a Spanish spirit predominant, and a man was regarded as being vulgar or an ignoramus if unable to yield allegiance to the supremacy of the latest idea. If a painter thought it was unsafe to completely change his old manner, he made at least more or less concessions. With SIDNEY COOPER styles might come and styles might go, but he went on year after year as if not one word respecting new theories had entered his ears. If he were given to boasting, he could with safety have defied Mr. RUSKIN and told him to do his worst. The persistent and undisturbed fidelity to what pleased himself became so exasperating, there seemed to be a possibility five-and-twenty or thirty years ago that painters and visitors to the Academy would join in a protest against his occupation of so large an area of wall space, but the artist himself remained unmoved, and repeated the old forms under similar conditions. It might be concluded that English painting came under no new influences during seventy years, and that, in fact, our artists were unteachable.

His peculiarities arose to a great extent from the circumstances of his early life. He belonged to a very humble family, and was born in Canterbury in 1803. Canterbury then, and for long years afterwards, could not be reckoned a propitious place for an embryo artist. But it had one glorious embodiment of the beautiful in the cathedral, and the streets presented much that was picturesque. He tells us himself how "My childish attempts at drawing went on the same simple way for many months, the great church always remaining my model.

After that I used to take my slate out into the fields to try to sketch anything that took my fancy, such as cottages, bridges, trees and so forth, and in this way I learned to love the works of nature, while simply copying what I saw. On one occasion he surprised the Archbishop by asking him for a pencil, and on another occasion GEORGE CATTLEMORE, who made such charming drawings of Mediaeval buildings and Mediaeval warriors, gave him paper and pencils. But for the English GIOTTO there was no CIMA to take him by the hand and to watch over him until his talent was sufficiently developed. His first practical application of art was as a coach-painter. Then he was employed to adorn the Canterbury Theatre and to paint such scenery as was required. He also worked as a painter of scenery at Hastings. After the accession of GEORGE IV. sympathy was excited for the king's hapless but imprudent wife. Transparencies were exhibited of scenes in her trial, and SIDNEY COOPER took part in painting them. Then his uncle, who apprehended that his nephew would bring disgrace on him if he were allowed to associate longer with strolling players and other irregular people, offered him a home in London, and held out hopes that he could gain admission into the Royal Academy School. In the necessary preliminary studies at the British Museum he had companions GEORGE RICHMOND, who afterwards became a portrait-painter and an Academician, and CATTLEMORE SMITH, who for a long time was the principal portrait-painter in Dublin. COOPER'S drawings secured for him the right to attend the Academy schools. He said that he was present at FUSELI'S last lecture. The Swiss artist resigned the office of Professor of Painting in 1804, when he was elected Keeper, but afterwards the by-law was suspended and he was allowed to hold the two offices. At that time there was much irregularity at the time, he might have delivered an occasional lecture at which COOPER would have been present.

There was then nothing to indicate what manner of subject SIDNEY COOPER would follow. LANDSEER was only a year older, but it was easy to see by the works exhibited from his fourteenth year onwards that he was destined to be an animal-painter. His success does not seem to have excited the young Canterbury artist to a rivalry. He was content to return to his native city, and to give lessons in drawing there as well as in the neighbouring towns of Dover and Margate. The arrival of a French competitor was fatal to his prospects as a teacher, and he resolved to try his fortune abroad. In 1827 he left England and made his way to Brussels. There he became acquainted with VERBOECKHOVEN, the animal-painter, whose work aroused the latent ability of SIDNEY COOPER. He settled down in the Belgian capital and married. He might have remained there all his life, but the Revolution of 1830 made him feel he was a foreigner and in danger from the mob. He fled to England with his wife and child. When he landed at Dover to begin once more the battle of life he possessed no more than 13s.

At the time EDWIN LANDSEER had gained reputation but his animal paintings were dramatic. The *Alps Mastiffs Reanimating a Traveller*, the *Prowling Lion*, the *Larder Invaded*, the *Cal's Paw*, the *Highland Cottage*, the *Monkey who had seen the World*, the *Pets*, *Lassie Feeding Sheep* and the *Hunted Stag*, all of which had been exhibited before COOPER'S return to England, were unlike the old-fashioned Dutch paintings in which animals were introduced. SIDNEY COOPER therefore resolved to avoid ambitious subjects, and to confine himself to the cows and sheep he was able to see and use as models in Regent's Park. His own account of his start is as follows:—"I had taken a second floor in the Tottenham Court Road, and morning after morning with an orange and a couple of Abernethy biscuits in my pocket, I used to set out for Regent's Park, where there were often from five hundred to a thousand cows in the days, and try and sketch them. My methods were simple. I always had six or eight sketches going at one time, so that if a cow moved from one position I could go on with another, and only wait until I caught my cattle friend in an old position. At night I worked at home over my pictures and earned my daily bread by drawing them on stone. ACKERMAN." The dealers were shrewd enough to recognise the value of his work, and when in 1833 he exhibited a picture, *Landscape and Cattle*, at the Suffolk Street Gallery



the critics at once perceived it was not the work of a novice. The facetious THEODORE HOOK offered him employment as a critic of paintings. In 1834 he contributed for the first time to the Royal Academy the first of the Canterbury series. Mr. ROBERT VERNON, who was a veterinary surgeon, was able to appreciate the truth of the representation. He purchased it, and *Milking Time: Study in a Farmyard near Canterbury*, is now one of the nation's pictures. SIDNEY COOPER was grateful for at once finding a purchaser, and the house he built for himself near Canterbury was a memorial of his early patron, for he called it "Vernon Holme." Nearly sixty years afterwards he wrote:—"Having been successful in getting the first picture I sent in for competition accepted by the Council of the Royal Academy, I determined it should be through no want of effort on my part if I failed upon any subsequent occasion. I therefore continued to work very hard, and my exertions were rewarded by success; for, from the first year that I began to exhibit at the Academy to the present date (1890), I have never once missed having one or two, and in later years even more, pictures in the exhibition, though often my contributions were only commission pictures."

From that time onwards SIDNEY COOPER'S success was unvarying. Some people may now be surprised that his work was preferred to JAMES WARD'S. But although the painter of *The Bull* lived until 1859, after 1830 he only painted occasionally, and as if for a pastime. COOPER'S field might be a narrow one, but there was really nobody to trespass upon it. He therefore continued to paint cattle pasturing, reposing or watering, and for all of them purchasers were to be found. In 1837 he slightly altered his themes in *The Drover's Halt on the Fells, Cumberland*. The picture was sold in 1887 for 455 guineas, a sum which suggests that in fifty years his works had not become diminished in value. In 1845 he was elected an Associate of the Academy, but twenty-two years had to elapse before he could attach the letters "R.A." after his name. He was in 1901 appointed a Commander of the Royal Victorian Order, and beyond that he received no other distinction. From foreign exhibitions he gained no medals or awards. His art was too English to satisfy strangers.

A catalogue of his pictures would be less generally interesting than those of the majority of painters' works. It was not necessary for him to compete with himself by seeking a diversity of subjects. There was nothing dramatic or anecdotic about his paintings, and in that way, as in others, they differed from LANDSEER'S. Year after year he was able to follow the even tenor of his way, and the variations of one year's subjects from those of the preceding or the subsequent year were so slight as to be inexplicable without diagrams. His life, too, was uneventful. He therefore thought much of receiving a commission from the late QUEEN to paint a picture representing some of the cattle on the Osborne farm. But his introduction of conventional dock leaves and a pool in the foreground did not satisfy the royal agriculturists, for in their minds they were indications of careless culture. The artist used them for the same reason as brown trees were employed in the eighteenth century for the sake of contrast.

Having attained so much success, SIDNEY COOPER wished to express his satisfaction for a happy life by founding a School of Art in his native city, which was also to serve as a memorial of his mother, to whom he owed much. In remembering his own condition, the instruction was most gratuitous. The school was, however, made over to the Science and Art Department. The late Lord LEIGHTON delivered one of his best discourses in it about the aptitude of country youths for painting; but in spite of all the endeavours the school has not yet produced any extraordinary results. The attention to it and the picture gallery attached to it formed a diversion for SIDNEY COOPER. He and people were willing to give higher prices for his works, the climax being reached when 2,500*l.* was paid for *The Monarch of the Meadows*, a picture which was stolen from its owner, but afterwards returned.

In his life he followed as regular a routine as if he had been one of the Mediæval monastic painters who lived under the rule of a superior. His own account of how he passed a day reveals the repetition which was observed

year after year:—"I always go to my painting-room," he says in his "Reminiscences," "at seven o'clock in the morning in the summer, half an hour later in the winter; set my palette and paint till breakfast is ready, at eight o'clock. For this I eat oatmeal porridge, some bread, and drink about half a pint of milk just warm from my own cows. I have not tasted a cup of tea or coffee for thirty-six years. I find the porridge very sustaining, and at the same time very provocative of appetite, while it keeps the head clear for a morning's work. Then I return to my studio and paint till lunch, at twelve o'clock, when I eat well and drink but little, after which I paint again till three. Then I clean up my palette for the day, and go out for my walk, returning in time to wash and prepare for a six o'clock dinner, which I enjoy, without my glass of port, for I have quite given that up, and every other kind of wine, since my last severe illness. After this I read my newspaper; at nine o'clock I smoke my cigar, and at ten o'clock I am off to bed." A man who was able to live so simply in an age of luxury, and who amidst the pessimistic influences of our time remained cheerful after an experience of almost a century becomes a testimony to the salutary influences of art. We can overlook the shortcomings of his pictures when we think of the example he set of systematic labour kept up to the very end, and of the continued solace for the weakness of age which he found in the practice of recording natural scenes.

#### THE ART OF THE ILLUMINATOR.\*

IT is commonly supposed that the influence of Prince BISMARCK has prevented a more general adoption of the use of Roman letters in the printing of German books and newspapers. Although there are objections to German text and it is thought to have much to do with the prevalence of weak eyes among the people, yet a statesman of the Prince's experience would hold there were advantages which compensated for the premature adoption of spectacles by his countrymen. In the first place, the type is a distinct announcement of opposition to the Latin race, and by the acceptance of it much is gained in political and other ways. In the next place, the characters unite modern Germany not only with the times of GUTENBERG and FUST, but with a far earlier age. To the majority of people the ordinary German text appears identical with the lettering seen in most of the illuminated manuscripts that were prepared in monasteries from the fifth century, and hence the influence of the country is assumed, although erroneously, to be traceable to a remote date. The same effect is to be observed in architecture. The calling of the style of which the pointed arch is an element by the title "Gothic" has created a belief in its German origin. Frenchmen who ought to know better have succumbed to the fallacy, and since 1870 despise a style which with good reason they might have claimed as their own. Even HEINE, who in all that relates to art was broad-minded, could see in Gothic only a creation of German faith. When he conjured up the visions of his childhood, one was the Mediæval cathedral rising from earth to heaven, and he heard sweet hymns in which the tones of organs and of bells united with wailings like his own:—

Ich sehe wieder stolz gen Himmel ragen  
Den frommen Dom, den deutscher Glaube baute,  
Ich hör' der Glocken und der Orgel Laute,  
Dazwischen klingt's wie süsse Liebesklagen.

Much else besides German faith is to be witnessed in Gothic, and the influence of German forms in architecture was not extensive in Mediæval days.

The belief in the connection with Mediæval times has, however, been advantageous in many ways to Germany. At the present day it is the only country in Europe in which illuminating is a living art. It is true that in walking through some parts of London one can read announcements in letters of many colours in stationers' windows about the production of illuminated addresses and other documents.

\* Board of Education: *Historical Introduction to the Collection of Illuminated Letters and Borders in the National Art Library, Victoria and Albert Museum.* By John W. Bradley, B.A. (H.M. Stationery Office.)



There are churches, too, where lettering meets the eye which is thought to have been inspired by Mediaeval art, and is usually produced by some amiable young ladies of the congregation. A German would be as amused with those specimens of calligraphy and ornament as with much else which he sees around him. In Germany illumination is accepted as one of the arts which are subsidiary to architecture, and from practising it under such conditions the humblest effort, although it may not be as large as a page of note-paper, acquires a dignity and a style which are unattainable by our amateurs. A German illuminator is in fact a cultivated and interesting example of the modern craftsman. His work serves a variety of purposes. In the comfortable halls which are meant to recall "AUERBACH'S Keller in Leipzig," the walls are adorned with proverbs, witticisms, versicles, which have to be painted on a large scale, and are excellent exercises in illuminating. With the Germans manifestations of brotherly love count for much, and a man must be a misanthrope who cannot produce an address which he has received from the fellow-members of some Verein or society or from acquaintances of various sorts. The composition of complimentary letters is often a bore to most people in England. In Germany several people will unite and make their congratulations take the form of an illuminated tribute, which the recipient and his family will be glad to prize. Specimens of the art possess so many artistic qualities, they regularly find a place in exhibitions, and in no other variety of production is the German mastery of ornament displayed with so much skill. BISMARCK knew his countrymen thoroughly, and it is no wonder he fostered that form of text which holds so peculiar a place as an auxiliary to their affections.

It is characteristic of the position of illumination in England that the collection of illuminated letters and borders in our National Art Library "consists chiefly of pages, initials and ornaments that have been removed from the books to which they belong." The people who visit museums are indifferent to the relation which should subsist between a manuscript page and its ornamentation. They are charmed with the brilliant colours and the gilding. If they utilise the ornamental forms it is as an accompaniment to ridiculous lettering, and hence it is that so much is to be seen in churches which overcomes the reverence of the congregation. Now illumination cannot be appreciated properly unless we thoroughly understand its origin, or, as some would say, its second origin. The copying of books and the adorning of them with a diversity of figures and ornament is an ancient art. But the distinctive character of what is generally known as illumination originated with the early Christians. Much of the time of the Syrian solitaries was occupied in copying the Scriptures. All early monks and nuns engaged in some stage or other of similar work. We hear of an abess writing the Epistles of St. Peter in letters of gold. An abbot named DAVID copied the Gospel of St. John in a similar style. The art developed. More than one system of lettering was adopted; and it is even said that the small letters of the ordinary Roman type which is now used by printers in England and elsewhere are really derived from the lettering devised by English monks. As time went on the books became so beautiful, there was a rivalry between the ornamentists who painted the initials and the jewellers who fashioned the gold and silver plates that were used to enshrine the manuscripts.

Human nature was always much the same, and although poetry and romance have described the work in the monasteries as if every manuscript was the creation of one man's hand, there is no doubt that division of labour was taken advantage of for their production. BROWER, in his account of Fulda, compares monks of the abbey to industrious bees, each occupied with a specialty. He tells us how some of them were engaged in inscribing here and there upon the parchment the special letters and characters which were to be filled in; others were wrapping or binding the manuscripts in handsome covers; others were marking out in red the remarkable sentences or the heads of the chapters. Some were writing fairly what had been thrown together at random or had been left out in the dictation, and were putting every part in fair order. And not a few of them excelled in painting in all manner of colours and in drawing figures. Occasionally versatile monks were to be found.

Thus it is recorded of St. DUNSTAN that he was excellent in writing, painting, modelling in wax, carving and work in the precious metals, besides being a musical composer and a performer. How strong was the obligation to produce copies of books is seen from the narrative we have of the last days of Venerable BEDE. As he was no longer able to hold a pen he had recourse to dictating, and the two works on which he was engaged were a translation of St. John's Gospel and extracts from some treatise of St. ISIDORE. He kept imploring from time to time, "Take down what I say quickly, for I know not how long I am to last." The work was continued by the dying man. Then, as his voice seemed to fail, one of the monks asked, "Dearest master, one chapter is still wanting; can you bear our asking you about it?" The work went on until he was reminded that there was yet one sentence unwritten. The sentence was dictated by a great effort, and then BEDE murmured, "Consummatum est." With works produced under those circumstances much else besides the ornament deserves attention although under the conditions of modern life they are not likely to receive it.

The small book which Mr. BRADLEY has prepared as an introduction to the collection at South Kensington is issued in a style that is unworthy of its importance. It appears as if it were a flimsy guide that was to be cast aside after an hour's use. It is true the price is only 2s. 6d., but Government work should always be excellent. The Victoria and Albert Museum is not rich in specimens of the illuminator's art, and Mr. BRADLEY does not confine his attention to them. He gives an account of the art from the earliest times, and is careful to obtain as much information as possible about the technic employed in the different periods and to express it succinctly. The following are examples:—

*Classical and Early Christian.*—Little or no visible outline. The brushwork broad and decided, and applied in successive layers, dried between each application, in a kind of body colour called *tempera*, or in the thick wash technically called *gouache*. The vehicle, probably cherry-tree or other gum or white and yolk of egg, together or separate, beaten to cream and diluted with the sap of the fig-tree. Liquid gold used sometimes as a high light or to enrich the ornamentation.

*Byzantine.*—In most instances the miniature is painted on a ground of leaf gold. Colours bright, varied and mixed with a viscid and varnish-like medium, probably of egg-glair and gum, sometimes so thick as to scale off with age and use. Methods of working laid down in a system called the "Guide to Painting," and containing strict and invariable rules both as to materials, manipulation and subject.

*Celtic.*—The execution chiefly consists in penwork in black or coloured inks. The bands and frames are painted in various colours, often harmoniously arranged. The colours usually are *pale* green, red, violet and yellow; intense black and white, but *no gold*. The red is sometimes clear and deep. The vehicle or medium is firm and smooth, but less viscid than the Byzantine. The various colours, though often pale with white, are clear and permanent.

*Carolingian.*—The pen still the chief instrument, but the Italian or Byzantine mode of painting also used, except in the mode of applying gold, both in miniature and in ornament. Bands of body colour used as grounds on which letters and ornaments in gold and silver are placed. Colours: those used in Byzantine miniatures applied with a similar medium. They are violet, purple, blue, scarlet, green and yellow. The flesh painting is dark, but not executed on gold grounds, as in Byzantine work. The gold when used is laid on afterwards with a pen or brush.

*The Winchester School.*—Strong *tempera* or *gouache*, very thick and viscid and looking almost like oil-painting. Colour pure and bright, but varying in different examples, with preference, however, for green, red and yellow, as in Carolingian examples. Gilding profuse and solid-looking, as applied in the Western manner.

The Winchester School was not the only one in England, but towards the end of the tenth century it attained prominence. One of the best examples is the Golden Charter of King EDGAR which is in the British Museum. Another splendid work is the Benedictional belonging to the Duke of DEVONSHIRE. Careful copies of many of the drawings were made at the expense of the Society of Antiquaries, but as they are not coloured they have not the richness of the originals. This precious work is associated with the name of ÆTHELWOLD, Bishop



Winchester, which was then the capital of England. The style of treatment was recognised abroad as being most characteristic of the English illuminators, and became known as the "Opus Anglicum." The British Museum includes some examples, and there are others in Paris, Cologne, Rouen and Oxford.

In the history of art illuminations are of importance. They are anticipations of wall-paintings and stained-glass windows. The degree of skill for depicting objects which existed in various places and times can be tested by them. It is as the artists enjoyed more liberty than the painters of works on a large scale, they were able to introduce many things which help in suggesting some of the characteristics of the time. We can, for example, derive more information about the peculiarities of buildings from manuscripts than from frescoes or mosaics. The page of the copy of the Gospels which is in the South Kensington Museum, to take a case, contains, within the limits of the upper part of the letter P a representation of a metalworker's smithy in the fifteenth century. Sometimes local colour was respected, sometimes the reverse. Mr. BRADLEY says that the Byzantine artists ruthlessly ignored, disregarded and sacrificed the actual colours and tones of objects, furniture, utensils and buildings, and the dominance of the illuminator's special purposes was no less asserted in other periods. Art for art's sake was accepted, but in those times the art was the miniaturist's. The want of precision in perspective arrangements was also unfortunate, for it led to many absurdities.

Mr. BRADLEY is an enthusiast for Celtic illumination. The Gospel-book attributed to St. COLCLOMBA he declares to be "the most wonderful of Irish MSS., perhaps of any MSS. whatever. Once seen it is never forgotten; it is in itself both the finest type and the completest monument of Celtic art in existence." It is now in Trinity College, Dublin, with the Book of Kells, the Book of Durrow, the Leabhair Dimma, the Stowe Missal and the Garland of Howth. Dr. LAMBRECHT has endeavoured to prove that ornament similar to the Celtic prevailed in Germany before Irish work was known there. Mr. BRADLEY does not deny the possibility that corresponding forms may have occurred to designers in various parts of Europe. Like HERMANN SEMPER, he believes that the art of pattern weaving or plaiting of prehistoric tribes in zigzags, knots and interlacings had much to do with the penwork of early Irish manuscripts. He is also of opinion, and the same opinion has occurred to others, that mechanical helps of one kind were employed by the artists, for "the coils or spirals are so exact that they might well have been printed at the edge of a finely coiled wire or steel watch-spring, if such a thing had then been known." Like every other writer he speaks of the Book of Kells in glowing words. The page which has XPI as a motif he says, "This page is the very climax and culmination of all caligraphic art. It has never been equalled for variety, intricacy and alternating dexterity of execution, but its taste and patterns are more than half barbaric." If we grant that the Book of Kells was produced in the seventh century or earlier in a lonely island, the influence of a much earlier period is an advantage rather than otherwise.

In the thirteenth century the art of the illuminator was practised in its most advanced form in Paris, and a typical example of execution is the Psalter of St. Louis in the National Library. But changes soon became inevitable. Realism, as it was then understood, caused the ancient representations of living things to be undervalued. The comic element could no longer be kept out, and the illuminator was sometimes known as the "babouiner." With the progress of painting, sculpture and stained glass the simple work on vellum appeared of small account. In the course of time, when the art of painting was revealed, it was to be expected that illumination could retain its interest. At first the printers showed respect for the older work by endeavouring to imitate parts of the ornament, especially in elaborate initial letters. Some amateurs who were not favourable to the cheapening of knowledge preferred to have manuscript copies to printed copies. Mr. BRADLEY tells us that the Duke of URBINO was offended at the suggestion of his agent respecting the introduction of a printing press. The most superb of patrons, PAPA THIAS CORVINUS, long refused to allow printed books

into his collection. In fact, the old art has never ceased to find occasional supporters. The late WILLIAM MORRIS was the most recent example of an artist making a serious effort towards its revival. He was able, however, to form lettering as well as ornament, and he could find sympathetic artists to co-operate with him whenever figure drawings were essential. In Germany there would be no difficulty in producing large manuscripts, for there the art of caligraphy, as we have said, continues to be practised.

Mr. BRADLEY'S book may not lead to a revival of illumination, and it would perhaps be wiser to regard it as if it were the history of a lost art. It is no mere South Kensington guide; it is a review by an enthusiast of a long period, with every variation of which he has sympathy. Our only regret is that it is not presented in a form which will make its endurance as a work of reference more permanent. But whatever the outward form or the quality of the paper, the information it contains will be found both valuable and interesting by the student of art and the amateur.

#### PORTSMOUTH PARISH CHURCH.

THE following communication has been issued by the vicar, the Rev. Charles Darnell, M.A.:—The churchwardens and I thought it necessary to call in an architect of great experience in dealing with old buildings to examine the church, and, with the sanction of the Bishop of the diocese, we asked Mr. T. G. Jackson, R.A., to give us his advice. The Bishop's opinion is that no other man could possibly give us advice on which we could rely with greater confidence. We felt that it was necessary for us to have the direction of a man whose opinion would carry great weight, and the Bishop himself has told me that in the case of such a church as ours, we ought to have the advice of a man of undoubted position as an ecclesiastical architect. And such a man is Mr. Jackson. It is, of course, inevitable that we shall have criticism of whatever is proposed, but I feel confident that the vast majority of our people will accept Mr. Jackson's opinion, and feel that we have done right in calling in a man of his standing and capacity. For myself, I can only say that I could not accept the responsibility which is at this time laid upon me as vicar of the parish in connection with the church, unless I felt sure that my adviser was a man whose opinion would relieve me of all responsibility in the eyes of reasonable people as to the fabric. For our church does not belong to this parish alone. It is in some way unique, and for this reason, and also because of its antiquity and its beauty, is a cherished possession of the borough, of the county and of the whole country. I cannot find words to express my thanks to the churchwardens for the way in which they have approached this subject, and have supported me at a time of very grave responsibility. And I call upon the whole parish to support us and do their very best when the time comes to help us to do what is best and safest for the church. I say when the time comes, because we have not yet received Mr. Jackson's fuller report and his suggestions as to what is to be done. Something, of course, must be done without delay. Mr. Jackson is of opinion that without the beam he has put in, the chancel would not be safe from day to day. With that beam it is safe, but no time should be lost in getting to work to make it permanently so.

I have given formal notice to the Bishop and to Winchester College of the condition of matters, in my name and that of the churchwardens. As soon as any further step can be taken the whole matter will be laid before the parish.

But as it is necessary to get to work at the chancel I hope very much that the parishioners and the public at large will help us to do other work which no doubt ought to be done. The floor ought to be cemented or concreted over; the pews ought to be remodelled in some way to make them reasonably comfortable; the floor ought to be made level, and the church thus made fit for the worshippers and worthy of the old parish. There are no doubt some who dread any change. These I would ask to defer their judgment till I can lay before them a plan which, with the consent of the churchwardens, I have asked Mr. Jackson to prepare. When this appears I doubt if there will be any one who will object to it in itself. The difficulty as to raising the necessary money will face us and must be boldly faced. It is never well to be too confident, but in this case I feel that not to have confidence would be foolish. I believe that as the repairing of the chancel is an absolute necessity which has occurred in the ordinary course of nature and through lapse of time, there will be hundreds or even thousands of people throughout the country who will desire to have a share in the work of making the old parish church safe, and handing it on in that condition to future generations; and that



there will be many others who will rejoice to think that the other alterations in the nave have been made possible, and the church rendered more beautiful and more comfortable at the same time.

And I venture to state once more what is to me the most important point of all. The pews must be lowered if children's services are to be effective and catechising possible in the church. And I feel more strongly than I can easily express that the children have as good a right to have their services in the church as the grown-up people. We all know how great is the force of the associations of early days. Nothing tends more to keep people true to the church of their fathers than that the associations of their early childhood should be with the parish church. And when we have such a parish church as ours, so rich in tradition, so well fitted to rouse feelings of enthusiasm and devotion, is it not unfair to our children to deprive them of the use of it? And for what? That the present pews, which are in many cases unfit for occupation owing to their size and discomfort, may be unaltered, even to the extent of being lowered, and that there be no change. I cannot believe that such views will seriously confront us. It will, I believe, be possible to do all that is required without to any great extent altering the appearance of the present pews. Once more I venture to appeal to you all in this crisis of the history of our own church to wait till Mr. Jackson's suggestions are before you, and then to come to a just conclusion. It is a time of grave anxiety to all who admire and love the old church. For myself, I have complete confidence that our people will desire that the right thing shall be done.

### LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

THE members of this Society held their annual dinner at the Queen's Hotel, Leeds, on Tuesday evening. Mr. Butler Wilson, the president, was in the chair, and amongst the company of about thirty were present Mr. John Hepper, Alderman J. H. Wurtzburg, Mr. W. H. Beevers, Mr. G. F. Bowman, Mr. R. Wood, Mr. H. Slater, Mr. H. Perkins, Mr. W. H. Thorpe, Mr. H. C. Whigham, Mr. T. Greenwood, Mr. P. Robinson, Mr. E. J. Dodgshun, Mr. A. Grimshaw, Mr. Paul Rhodes, Mr. M. H. Watson, Mr. H. H. Cribb and Mr. H. S. Chorley (hon. secretary).

Mr. Hepper proposed the toast of "The Royal Institute of British Architects and Allied Societies," and observed that every man ought to have a high ideal in his profession. Unless his ideal was above himself, he had not the incentive to make the best of himself. Mr. Hepper went on to refer to the fortunate position of the architect who combined in his work both the capacity for scheming plans that were essentially practical and useful and the capacity of artistic designing at the same time, without additional cost.

The President, who responded, briefly alluded to competitions. So long as architects had to start without clients and so forth, they must continue to go on the market and find a start in life in the competition world. But they had a right to expect that the assessors in these competitions should be men who had had a practical experience in the particular class of buildings that was under consideration. Otherwise their awards could scarcely give general satisfaction. Continuing, Mr. Wilson said that there was to-day a very strong movement in the direction of dealing with architectural problems in a quiet manner and with a consideration for the requirements of their clients, without any regard to style or period. The advanced school had carried out this idea to an extreme degree. It appeared to him unreasonable that men should be asked to forget the architectural beauties of Yorkshire, for example. They must not be asked seriously to ignore the great store of knowledge which the world had placed at their disposal. There was no reason why they should not store themselves with this knowledge and, at the same time, be prepared to deal with every architectural question put before them strictly on its merits. In conclusion, such societies as theirs, said the President, must, to be successful, be based upon unselfishness.

Alderman Wurtzburg gave "The Leeds and Yorkshire Architectural Society," and incidentally, when speaking of the architectural improvements that had been effected in the city during the past few years, said that Leeds people used to be known as "loiners." In view of the number of arcades that had sprung into existence, he thought that Leeds might now be called Arcadia, and its people Arcadians.

Mr. G. F. Bowman responded, observing that local architects, when it came to a matter of public criticism, always came out a very good second—if not first—in comparison with architects in London and elsewhere.

In giving the toast of "The Guests," Mr. W. H. Thorpe deprecated the evils that the competition system brought with it. Architects were put to a great deal of expense, and with no

return in the majority of cases. He suggested that the might to a certain extent be minimised if a system of limited competition were adopted, by which, say, half a dozen members of the profession would be invited to send in plans, the unsuccessful competitors to receive an honorarium for their work.

The toast was responded to by Mr. J. W. Brooke.

### TESSERÆ.

#### Encaustic Tiles.

THERE were three varieties of Mediæval encaustic tiles. 1. Where the pattern is in relief and of the same colour as the ground. These appear the most ancient; the devices upon them (as indeed upon most others) are usually heraldic, i.e. either actual bearings, such as plain ordinaries, or lions passant, rampant, combatant, adorsed, regardant, &c., mullions and similar designs. The colour varies from black to red, the intermediate shades being sometimes found in the same piece of pavement and probably produced by different degrees of heat in the burning rather than by any difference in the material of which they are composed. These tiles are usually from 3 to 5 inches square; they are probably in many instances of Norman era, and are of rare occurrence. Some excellent examples are preserved at Castle Rising, Norfolk. They appear to have been glazed by being burnt to a vitrified state. 2. The second kind of encaustic tile is where the pattern is impressed or indented. In this case the lines are usually rather fine (about the thickness of ordinary wire) and the patterns simple, for the most part consisting of interlaced circles or parts of circles in the centre of the tile. They appear to be of Early English date. To the same age or class we refer those small plain glazed tiles of a greenish-blue tint, which are by no means uncommon, though antiquaries' taste seems to have thought them hardly worthy of notice, they are little known by description. With this tile Bayly Abbey and many small country churches were paved. The forms are usually either square or semicircular; they were perhaps used in considerably later times. 3. The third kind, the most common, the largest, most varied and by far the most beautiful. They are from 3 to 6 inches square, appear to have been highly glazed (though the glazing seldom remains at the present time) and seem to have been made by filling with clay which bakes yellow or white an indented pattern in sun-dried or half-burnt brick which bakes red. These tiles are of course durable in proportion to the depth of the white or yellow clay. A mere surface-pattern would be trampled very shortly. It is probable that this kind of tile was not used before the end of the thirteenth century. The very perfect and beautiful specimens in St. Cross's Hospital, near Winchester, are traditionally, we believe, called Norman, but they are probably of not earlier date than the Decorated window; there appear, however, to be several kinds of encaustic tile in that church, which must be discriminated from each other as of different styles. The heraldic bearings upon the will, of course, not unfrequently determine the precise date of such tiles. They very commonly occur of such a device that several tiles placed contiguously compose a complete pattern.

#### River Scenes in Painting.

There is no studying landscape proper near large cities, though there are effects for everyone's daubing. A black windmill throwing its hideous arms into a white cloud burst out of a dark grey one, a moor and a reedy puddle will thoroughly satisfy the ambition of many, humble enough to abject poverty in subject, presuming enough in effect. They take great pains that their deformities shall stare. Ere it is too late, and they become confirmed in their vulgar vanities, let them take coach an hundred miles or so and follow the course of some of our sweet rivers. Rivers are always poetic; they move or glide or break into fall and rapid through the courses as if they were full of life and were on natural mysterious errands. The sunbeams gleam upon them as messages from the heavens. Trees bend to them, and receiving freshness and fragrance, grow in their music; flowers kiss them, love haunts them, silence keeps awake in the caverns and sequestered nooks, and there the nightingale sings to her; the bright and many-coloured bow arches their fancies and the blessed and blessing moon shines on them and glows them with magic. Let them be followed from their sources mountain or moor, through dell, dingle, ravine and mere of valley, over which the clouds loiter to admire—"do rest;" and if the mind of the sketcher do not drink poetry through his eyes and convey it to his portfolio he may be sure neither nature nor art intended him to be painter or sketcher. But if he first his soul poetic and imbued with the feelings of the poets he reads, he will call up such ideas as will suit his scenery, enable him to give it a new character, perhaps nowise inconsistent with that it has or indicates, and he will thus study with purpose.



### The Dutch Garden.

Much ridicule has been bestowed upon the stiff formal style of gardening which has been designated the Dutch style, and which was introduced among us about the time of the revolution. The ridicule would have been better directed against those who adopted a style unsuitable to the nature of English scenery than against the style in itself, which is admirably suited to the circumstances of the country where it took its rise. It is not solely from want of imagination that a Dutchman delights in straight lined walks and clipped hedges. In a country so level as Holland it is natural that everything should be straight, precisely because there is no reason why it should be otherwise. If we have to go from one point to another the straightest line is always, *ceteris paribus*, the best, because it is the easiest and least expensive to make and the shortest to travel. Hence in Holland, where there are no hills or rising grounds, canals and roads are made as straight as an arrow; and to have made an exception of garden walks would have argued a degree of caprice and frivolity quite unworthy so steady, industrious and sensible a people as the Dutch, who never do anything without a good reason. Again, in a country where the soil is so rich, it is necessary that hedges should be clipped, otherwise they would grow so high as to occlude all view of surrounding objects. The transition is not very great from clipped hedges to clipped shrubs and trees, and where no natural features ever intrude to contradict the prevailing regularity, this sort of restraint upon nature's productions, in place of being absurd and ungraceful, is only in character with that universal neatness, the effect of art and industry, which meets the eye in every quarter. Dutch gardening, we therefore conceive, is exactly suited to the circumstances of Holland, and to the scenery, or rather, the scenery, which is to be found in that country. It was absurd to introduce it in England, as was attempted to be done by William III.; but that sovereign was distinguished by higher qualities than his taste for ornamental gardening.

### Early Christian Art.

The origin of Christian art was wholly different from that of the Christian religion. The art of Christendom came not by revelation, but through development. Its earliest works, while Christian in subject, were Pagan in type and style. Christian mosaics in the nave of Sta Maria Maggiore do not materially differ from the Pagan bas-reliefs on the column of Trajan. The mural paintings of the catacombs and their earliest sculptured sarcophagi are Roman both in the type of the heads and in the treatment and character of the drapery. The decorations likewise which adorn their chapels are similar to the arabesques found in the Baths of Titus and in the houses of Pompeii. There can be little doubt, indeed, that Pagan artists were frequently employed on these Christian works. We would readily have arrived at a different conclusion; we could rather have found in the catacombs an art pure and uncontaminated. We would eagerly have recognised in the earliest representations of Christ the type of His doctrines and mission, and it was with reluctant regret that we were forced to the conclusion that these earliest heads were likewise Roman and Pagan in origin. The Roman-Pagan and this Roman-Christian are, indeed, in art-style identical. The two and Christian sarcophagi of St. Helena, the mother of Constantine, and St. Constantia, his daughter, both now in the Vatican museum, are essentially Pagan, and in art, style and degradation do not materially differ from the debased small bas-reliefs of Aeneas and Dido of the same epoch, likewise in the Vatican museum. The new and pure faith thus adopted the corrupt art-style of the religion it superseded.

### Greek Antæ.

In Italian architecture pilasters are very frequently employed in lieu of columns, or are placed against a wall to correspond with a range of columns in front of it; their bases and capitals, too, are made to correspond with those of the columns, as far as the difference between a square and circular column will allow. The Greeks, on the contrary, never employed antæ, except at an angle or the extremity of a wall, and instead of aiming at perfect similarity they purposely gave to such pilasters, bases and antæ-caps dissimilar from those of the columns; neither did they diminish them, but made them of the same width above and below, which width was determined by that of the soffit of the architrave, and was therefore something less than the lower diameter of the column but greater than the upper one, since both in the Doric and Ionic the architrave overhangs the upper part of the column. Thus they kept the antæ and columns quite distinct in character, thereby producing variety and contrast without injury to consistency. Sometimes the Doric antæ has a simple kind of moulding above at its foot, which seems requisite to detach it from the wall, whereas the plain foot of the column resting on the pavement or steps defines itself to the eye quite sufficiently. The Doric antæ-cap is very simple, and its abacus and other mouldings much narrower than those of the column-capital. If such are not the case, the mouldings under the abacus being square

like that member, whose angles do not overhang them as they do the circular echinus, the whole would look exceedingly clumsy and coarse, and the capital be enormously wide in comparison with the antæ itself, because that being no broader at bottom than above, such capital would extend very preposterously far beyond the line of the base. Although more ornate than those of the Doric, Ionic antæ-caps differ still more than the others do from the capitals of their respective columns, inasmuch as they have nothing whatever answering to those exceedingly characteristic features, the volutes; nevertheless, they are so strongly marked by the same style as to render it impossible to mistake them or attribute them to any other order. Between the bases of the antæ and those of the columns there are very slight differences, the chief is that besides the upper torus being fluted like that to the base of the column, the under one is also enriched, but by reeding or convex mouldings. There is also an additional concave sweep moulding placed beneath the torus. It is further to be observed that antæ are never fluted, as is generally the case with Roman and Italian pilasters whenever the columns are so, and consequently a stronger distinction is kept up between the antæ and the columns, and in fact the plane faces of the former are very ill-suited for such channelling, which would only produce monotony by so many parallel lines and hollows all casting the same shadow, and least of all is the Doric mode of fluting adapted to such purpose.

### Canova's Church at Possagno.

The church which the sculptor erected at his own expense in Possagno, his birthplace, was designed by Selva, of Venice, but many modifications were introduced by the sculptor. The first stone was laid in July 1819. The building is remarkable for its portico, being almost the only instance of the application of the Athenian Doric in Italy, certainly the only one upon so large a scale. The columns are 35 feet in height, the entire height from the ground to the apex of the pediment 79, and the breadth of the portico 93; therefore the dimensions of the order are very nearly equal to those of the Parthenon, the difference in the height of the columns being only 10 inches. The rotunda itself is about 45 feet less in its internal diameter than the Pantheon, but is still sufficiently ample to be imposing. In its proportions and in its coffered dome, the centre of which has a glazed opening to light the whole interior, it resembles the Roman structure; not so, however, in design, for the architecture errs as much in being too plain and cold as that of the other building does in being broken into too many parts and too much cut up by heavy ornament. Like the Pantheon, the plan is divided into eight compartments, all of which form as many arched recesses, that within which is placed the door and the opposite one (forming a deep sanctuary for the high altar) being rather loftier than the rest. The arches themselves are quite plain, without either keystones or archivolts, and except the tabernacles or altars within the recesses, the only decoration is that produced by the panels filled with sculpture in the spaces between the arches. Nevertheless, taken altogether, it is a noble monument, especially when it is considered that it was raised by a private individual. The building cost about a million of francs, and a sum of 113,437 francs was set aside for repairs. The metopes of the portico were executed from Canova's designs by some of his pupils.

### Chinese Houses.

The construction of houses in China is directed by a public functionary, whom we may not inaptly designate a district surveyor. Every one is obliged to build his house according to his rank, and for every house a certain size and details are fixed. The ordinary habitations have one floor, and we may presume the houses of the common people in the towns to be crowded and badly ventilated, since the police force the people to sleep in the open air during the dog days, lest they should be suffocated. The houses called heon, that is, of many floors, were once very much the fashion, and some were built about 211 feet high. Wooden columns, so placed as to support the roof, are common, and are from 8 to 10 diameters in height. They are fixed on stone or marble bases, but have no capitals; an architrave of wood placed on the top of them runs through the wall of the house, and a beam which is carried through the upper part of the column, and passes through the wall also, is connected with the architrave on the outside of the house. The roofs, which are slightly constructed of bamboo, are often double, and resemble one roof rising out of the other; they turn up at the eaves, at the angles of which are hung grotesque figures of dragons, &c. The columns and beams are often made of precious woods, and are inlaid with ivory, copper and mother-of-pearl. Not the least singular appearance in a Chinese house is the door, which is often a complete circle; the window-frames and sashes are formed of small panels of various forms moulded out of clay and neatly joined together. The sills of doors are of stone. The wood of the nan-mon is said to last more than a thousand years. Stone and marble, though in abundance, are more rarely used than wood brick and tile.



### NOTES AND COMMENTS.

ACCORDING to a statement by Lord CURZON the grounds assigned in Calcutta where the Victoria Memorial Hall is to be erected are thirty acres in extent. It is proposed to have a raised terrace 400 feet in length on which the building will be constructed. In plan it will form a parallelogram, the principal front being to the west, as was originally proposed. In the centre will be a large hall to contain Mr. FRAMPTON'S statue of the late QUEEN, and which will at once strike all eyes on entering. On the right will be a picture gallery, and on the left a sculpture gallery; there are also to be rooms for various other collections. It is suggested that white marble, if possible, derived from India, should be employed in the building. It appears that 30 lacs of rupees, or less than 300,000/., have been promised, but a far larger sum will be required to erect the memorial hall, to allow for the purchase of works of art and the maintenance of the collections. Lord CURZON has been in consultation with Mr. WILLIAM EMERSON on the subject of designs.

THE German EMPEROR on his birthday presented to the city of Rome a bust of GOETHE. It will be installed in the Palace of the Conservators, a building which was designed by MICHEL ANGELO. The Conservators claim to be the successors of the ancient Roman senate, and the once renowned S.P.Q.R. is their distinguishing mark. A corridor in the building is known as the protomoteca, and was intended to contain busts of illustrious Italians. The collection was commenced by PIUS VII. and the busts were placed in the Pantheon. But about 1820 several of those of foreigners were removed from the church to the palace. As usual the Germans contrived to be well represented. WINCKELMANN'S bust is the work of DÖLL, who also executed one of RAPHAEL MENGES, the painter. ANGELICA KAUFMANN is by PETER KAUFMANN. The Irish sculptor, CHRISTOPHER HEWITSON, prepared the bust of JOHAN PICHLER, the gem engraver. There is also a bust of RAPHAEL STERN, the architect of the Braccio Nuovo in the Vatican. It will thus be evident that GOETHE'S bust will be among fitting companions. It is to be regretted that an equal number of English celebrities cannot be found in the protomoteca.

It will be difficult to foretell whether builders will be grateful or the reverse for the suggestions about scaffolding which have been issued from the Factory Department of the Home Office. Although we are told that leading experts have been consulted, it cannot be said that more safety than usual is insured. It is announced that copies of the documents have been forwarded to coroners, so that they may be in a position to form an opinion in the case of fatal accidents on buildings as to whether or not the necessary precautions have been observed by the persons responsible. It may also be assumed that in actions for compensation a wide departure from the suggested scaffolding would have an effect on judges and juries that would be adverse to builders. It is also pointed out by the Home Secretary that the Factory Act makes it obligatory on persons undertaking building operations to report to the local inspector of factories all accidents to persons employed by them on buildings on which any structural work is being done with the aid of machinery, or which exceed 30 feet in height and are being constructed or repaired by means of a scaffolding, if either the accident is fatal or disables the person injured on any one of the three working days next after the accident from working at least five hours. By section 167, "any premises on which machinery worked by steam, water or other mechanical power temporarily used for the purpose of the construction of a building or any structural work in connection with a building" is taken to be equivalent to a factory. There is no definition of a "building" in the Factory Act, and temporary premises may be regarded as one. But apparently such a building must exceed 30 feet in height. There is much doubt on the subject, and nobody engaged in building will desire litigation in order to ascertain the significance of the phraseology. It is evident, however, that by bringing buildings in an indefinite way under the operation

of the Factory Act there is a new field opened of wide extent for the employment of lawyers.

WE have so often referred to the new church which the Curé of Montmartre is erecting in Paris, we may be allowed to refer to it again, as there is another phase in its history. It will be remembered that as the site of the building is a short distance from the street, the Rue des Abbesses, the usual formality of lodging plans and obtaining the approval of the Municipal Council was not observed. The crypt and nave were constructed of what is called *beton armé*. After the fall of the bridge at the great Exhibition, in which a similar material was used, the Municipality intervened and the Prefect of the Seine ordered a demolition of the building. Instead of complying with the order the Curé made formal application for permission to erect the façade and the belfry. It is needless to say the application was refused. An appeal was next made by him to the Minister of the Interior, who has just given the necessary authority to complete the church with the belfry. It is, however, assumed by some that the Minister's order can only relate to the belfry, and it is not impossible that further litigation may arise out of the failure to carry out the order of the Prefect.

THE announcement that sufficient money has not been received to enable the committee to undertake any fresh exploration in Crete will cause much disappointment among archaeologists everywhere. If possible Mr. A. J. EVANS will finish the Knossian Palace, but Mr. D. G. HOGARTH is compelled to relinquish his projected excavation in the island. The success which was attained by Mr. EVANS was, it might be presumed, enough to encourage people who were dubious about the aptitude of English explorers to support the efforts of the Cretan committee. No more interesting work was performed by the representatives of any other nation, and a new idea of ancient architecture was inspired by the revelation of the palace of MINOS. It means were forthcoming there could be no doubt that much else would have been brought to light of no less importance. Besides, we have some claim on Crete. A great many years ago Professor COCKERELL had examined several parts of the island, but he was unable to make excavations, and all his speculations therefore related only to what he saw on the surface. There is now competition between various nations, and it will be unsatisfactory if after attaining so much success, we allow the work to be completed by Germans or Americans.

It is pleasing to learn that a memorial of JOHN RUSKIN will increase the interest of Westminster Abbey, although it is only in the form of a medallion by the late ONSLOW FORD, and has been fixed high above the bust of Sir WALTER SCOTT. As a poet, a moralist, an essayist and, we might add, as a theologian, although not entirely in accordance with the orthodoxy of the Dean and Chapter, JOHN RUSKIN deserves to have his name inscribed among the rather miscellaneous assemblage of Poets' Corner. But there is something satirical in the fact that the small portrait of a man who lavished a large fortune in an attempt to better the condition of his countrymen would not be allowed to be set up in the Abbey without the payment of 201/ 1s., by which the cost became no less than 460/ 9s. 11d. It appears, however, that in such cases it is usual to pay a guinea to the clerk of works and 2000/ to the Fabric Fund. The Chapter say the preservation of the building is so costly they have had to suppress a canonry, in order that the rent derived from the canon's house may be applied towards the payment of the debts. Consequently high fees have to be paid for memorials.

### ILLUSTRATIONS.

WEST FRONT, ROMAN CATHOLIC CATHEDRAL, WESTMINSTER.  
GENERAL VIEW.

NEW BLUE COAT HOSPITAL, WAVERTREE, LIVERPOOL.

CATHEDRAL SERIES.—RIPON: GENERAL VIEW, FROM THE RI



## BELFAST ARCHITECTS AND THE CORPORATION.

THE following petition against the Bill, promoted by the Belfast Corporation, praying to be heard by counsel, has been lodged:—

To the honourable the Commons of the United Kingdom of Great Britain and Ireland in Parliament assembled. The humble petition of Thomas Drew, Knight, as president of the Ulster Society of Architects, on behalf of the said Society, and also of the said Thomas Drew and all other the signatories hereto, being members of the said Society, or owners of landed property in the city of Belfast, sheweth as follows:—

1. A Bill (hereinafter referred to as the Bill) has been introduced into your honourable House, entitled "A Bill to empower the lord mayor, aldermen and citizens of the city of Belfast to purchase lands for purposes of a public hall; to dedicate ground for hospital purposes; to amend several of the local Acts in force in Belfast, and to confer various powers on the Corporation."

2. The preamble of the Bill, amongst other things, recites that the lord mayor, aldermen and citizens (thereinafter called the Corporation) of the city, acting by the Council, is the Urban Sanitary Authority for the district thereof; that it is expedient that the various powers referred to therein should be conferred on them, and that the other provisions contained in the said Bill, and not specifically set forth in the said preamble, should be made.

3. The said Bill is divided into nine parts, of which Part V., being one of the matters not specifically set forth in the said preamble, and to which this petition relates, is entitled "Elevation of Buildings."

4. The Bill prejudicially affects the rights and interests of your petitioners, and your petitioners object thereto.

5. The Ulster Society of Architects, the president whereof is your petitioner, Thomas Drew, the vice-president, your petitioner, William John Gilliland, and the secretary, your petitioner, Nicholas Fitzsimons, consists of your said petitioners and about forty other members, and is affiliated to the Royal Institute of Architects, Ireland, which is itself affiliated to the Royal Institute of British Architects.

6. The names of the signatories hereto, who are members of the Society, are distinguished by the letters M.U.Soc.A. being attached thereto.

7. The members of the said Society practise their profession in the city of Belfast, and are injuriously affected by all acts tending to fetter, interfere with, or curtail the free exercise of their profession in the said city of Belfast, which would have the effect of causing financial loss to and hindering the artistic progress of them and their profession.

8. Your petitioners' Society, as the local representatives of the parent Royal Institute of Architects, Ireland, takes upon itself as part of its duty the obligation of tendering to the Government and the Belfast Corporation its advice on all matters relating to architecture and building generally in the city of Belfast. The advantages to the city of Belfast of having a body of experienced and independent men ready and willing to give advice on all matters requiring long experience, local knowledge and great technical training is obvious, and it has been the practice of the Government and other municipalities to seek advice of the Royal Institute of British Architects (to which the Society is, through the Royal Institute of Architects, affiliated), notably in the case of the London Buildings Act, 1892 (58 Vict. cap. 213).

9. Early in the month of November 1901 your petitioners' Society learned from the usual advertisement that the Belfast Corporation were about to petition your honourable House for a Bill to confer on them powers relating to buildings in the city of Belfast, the nature and extent of which the said advertisements did not disclose.

10. On November 5 the secretary of your petitioners' Society was directed by the Council, and accordingly wrote to the Corporation of Belfast, offering the assistance of the said Society in drafting the clauses in the proposed Bill relating to buildings; the offer was ignored, and the Society was merely informed that the Bill had not yet been drafted.

11. Early in December the Council of the Society learned officially that the clauses of the Bill were coming before the local committee of the Corporation on December 5, 1901. The Council of the Society caused their secretary to write to the Corporation asking for a draft of the proposed clauses, and in reply they were informed that a copy would be sent as soon as printed; no copy was, however, sent.

12. On December 13 the Council of the Society learned officially that the clauses of the Bill were to come before the local committee of the Corporation for final settlement, and thereupon a deputation attended and asked why they had not been favoured with the draft clauses, pursuant to the promise made them on December 6, 1901, and were informed the promise was to send them a copy of the Bill when ready for distribution to the public; this interpretation of the promise was at once repudiated by the vice-president of the Society.

13. Part V. of the said Bill to which this petition relates is as follows:—

(1) Every person who proposes to erect or alter the front wall of any building shall together with and in addition to the plan section and notice which are required by the existing local Acts of the Corporation to be lodged with the surveyor lodge in the manner and subject in all respects to the conditions prescribed by the said local Acts a drawing or drawings showing all the elevations of such building overlooking any street or streets in which such building is proposed to be erected or altered. There shall be specified and shown on such drawing or drawings the height character and design of the building proposed to be erected or as proposed to be altered and the height of any buildings immediately adjoining the same and there shall be stated on such drawing or drawings the materials of which it is proposed to construct such elevations.

(2) The Corporation may disapprove of such elevations on the ground that the same are in their opinion objectionable or that in any respect they are not in conformity with the requirements or provisions of the existing local Acts or by-laws of the Corporation.

(3) The provisions of the said local Acts and by-laws shall so far as applicable for the purposes of and not varied by or inconsistent with the provisions of this section apply mutatis mutandis to the matters referred to in this section.

(4) Any person aggrieved by a decision of the Corporation as to such elevations may appeal to the Recorder against such decision whose decision thereon shall be final.

14. A copy of the draft clauses was on December 14 supplied to the Society, and on December 16 the Corporation met to consider the Bill, when a deputation of the Society attended and stated that the substitution of "The Corporation" for "The Surveyor" in said Part V. as the primary authority made it if possible more objectionable.

15. The Society were now informally invited to propose alternative clauses, but refused to do so, as on reading and duly considering Part V. of the Bill as furnished to them they considered it too vicious in principle to be capable of any amendment short of actual abandonment of the cardinal principles.

16. In consequence of the strong protest of the Society, at a meeting of the Corporation held on December 31, 1901, a minute was made that the entire of Part V., save so much thereof as related exclusively to the height of buildings, should be eliminated from the Bill.

17. Believing that the Bill would be altered pursuant to the said minute, the Society, acting in accord with the resolution of the R.I.A.I., passed on January 6, 1902, drafted on the model of the London Building Act certain modifying clauses, whereby the arbitrary and dangerous discretionary powers sought for by the Corporation could be controlled within reasonable limits and the vested rights of their profession and property owners duly safeguarded.

18. The proposed new clauses, printed in parallel columns with the corresponding clauses contained in the said London Building Act and copies of the same, together with the resolution of the Royal Institute of Architects, Ireland, were duly forwarded to the members of the Corporation.

19. The Council of the Society are informed and believe that these modifying clauses so submitted to them were never even considered by the members of the Corporation, though duly received by them.

20. The Council of the said Society having learned that the said Bill, possibly by reason of its having been deposited prior to the said meeting of December 31, was in its most objectionable form, the portions of Part V. relating to matters other than height not having been eliminated, and that no provisions limiting the arbitrary powers as to height had been introduced into the Bill, and as no guarantee was given by the promoters that these alterations would be made in the Bill at the instance of the promoters, the Council of the Society instructed their secretary on January 25, 1902, to write to the Corporation asking for a guarantee that the portions of the clause affected by the said minute should be struck out of the Bill, and that the provisions as to height and the constitution of the Court of Appeal should be modified according to the suggestions of the Society, and in the event of the Corporation desiring to alter the suggested clauses, that all alterations in them should be notified to the Society one week before the Bill be read a first time.

21. Beyond a notification of receipt, no reply to this letter was up to January 31 received by the Society, when, notwithstanding the said minute of the Corporation and the protests of the Society, the Bill as deposited was read for the first time.

22. At a general meeting of the Society, duly held on February 6, pursuant to resolution passed at a special meeting held on January 23, 1902, it was unanimously resolved that the Society should forthwith petition against the Bill.

23. Those of your petitioners who are architects most respectfully submit to your honourable House:—

(a) That the powers sought for by the said Part V. of the said Bill are not in accord with precedent, and are not required by the exigencies of the public weal.



(b) That they would most injuriously affect the rights and interests of the profession to which your petitioners belong, and which they practise in the said city of Belfast.

(c) That even if Part V. of the Bill be amended by the promoters pursuant to the said minute, the clauses would still, without proper safeguarding provisions, most injuriously affect the profession to which your said petitioners belong.

(d) That they are in full accord with, and, to avoid prolixity, rely on the objections hereinafter contained and submitted by such of your petitioners as are owners of house or landed property in the city of Belfast.

24. Those of your petitioners who are owners of houses or land in the city of Belfast also humbly submit to your honourable House:—

(a) That the proposed clauses forming Part V. of the said Bill would work an unprecedented and unwarrantable interference with the rights of private owners.

(b) That the same might be used as an engine of oppression in order to depreciate property either in the interest of influential persons or for political or trade revenge.

(c) That the exercise of the powers asked for by Part V. of the Bill is quite uncontrolled by any restraining provisions, and rest on the very unstable provision of individual discretion, unfettered by anything but their own peculiar artistic taste, while the proposed appeal could not afford any reliable safeguard against individual eccentricity, inasmuch as the holder of the very responsible and onerous office of Recorder of the city of Belfast need not of necessity possess the requisite technical knowledge and artistic taste to constitute him a final court of appeal in matters which must be decided not on matters of law or fact, or the legal construction of documents, but solely according to individual artistic taste of possibly grotesque and distorted ideas.

(d) That they are in accord with the architects in submitting that even if the provisions relating to height are to be retained there should be safeguarding clauses, as otherwise, for inadequate reasons, private rights would be sacrificed and orders impossible of compliance with, by reason of ancient lights or other easements, might lead to endless litigation and expense.

25. The rights and interest of all your petitioners are injuriously affected by the provisions of the Bill contained in Part V., set forth and referred to, and the preamble of the Bill so far as it relates to such provisions is incapable of proof.

Your petitioners therefore humbly pray your honourable House that the Bill may not be allowed to pass into law as it now stands, and that they may be heard by themselves, their counsel, agents and witnesses against the preamble of the Bill, and such of its clauses and provisions as affect the rights and interests of your petitioners, or any of them, and in the event of the Bill being modified in support of the introduction into the Bill of such other clauses and provisions as may be considered necessary, and that your petitioners may have such relief on the premises as to your honourable House may seem meet.

And your petitioners will ever pray.

## UNIVERSITY TRAINING IN ARCHITECTURE.\*

THERE are various architectural topics that are the subject of perennial discussion, according as one's view leans, with natural bias, to one side or another in matters essentially many-sided. "Whether architecture is a profession or an art" is such a topic; upon it discussion—nay, controversy, both bitter and prolonged—has raged interminably; and, in England, at any rate, even serious division of counsel has resulted, with somewhat dissipated energy and hampered action for a time as a natural consequence. Closely allied is the question of the proper training for an architect during his period of preliminary studentship; what course will best fit him to do his best? It is a question, I venture to think, of somewhat vital concern to us in Canada. At present, as a people, we are neither very wealthy nor very powerful; we have not yet worked out our scheme of national education at all completely; it is not yet established as it should be, broad and harmonious, on really national lines; on the contrary, to one coming but new from Europe, it seems in too many ways seriously provincial in spirit and narrow in result.

In Toronto and in Montreal we have now in Canada two schools for the training of architects. Of the former, I naturally do not venture to speak in detail, standing in the presence of many who know it well and can speak with an authority in regard to it that I cannot claim. But I do not doubt that I am right at any rate in this, that in both we are still at the stage of "missionary effort" in our endeavour to promote the thorough training of young architects in the

Dominion. Too often our voices are but as those of one crying in the wilderness, where there are none that listen, whence architects do not come forth. In Toronto I do know exactly how the matter stands at present, but in Montreal, during the five years that I have been at McGill University, encouragement and discouragement have been fairly evenly commingled. Personally, however, I have had the deeply interesting experience of organising from beginning and planning out the lines of development for the will, I trust, prove a sound and stimulating school of training in architecture on broad university lines of education.

In so many-sided a field as architecture, which is, it seems to me, an art and a profession both, and, perhaps, something more besides, there is room for many kinds of activity and many types of mind. To one the solution of problems of construction, with the extraordinary wealth of mechanical resources at the disposal of the modern constructor, is the side of architecture that appeals most strongly; to another, it may rather be the problems of social interest, the housing of the people, the proper provision for the caring of the sick in hospitals, even the progress of sanitation, and the realisation of its laws and their requirements; to some it is the nice adjustment of plan and interior arrangement; to others it is the wider field of the composition and design of buildings as a whole, and the joy of seeing thoughts take concrete form, as they are realised in actual execution.

It is significant this many-sidedness of architecture, and justifies in a measure its claim to be at once the broadest of arts and the foundation of the rest. It brings the architect into touch directly with almost all the other arts, professions and handicrafts, from sculpture and painting to law and medicine, and to industries of very many sorts.

And the training for the architect must be broad to correspond, if he is to be adequately fitted for his work. He cannot, of course, prepare him to the extent of endowing himself with all the knowledge in all the branches that he may, in the course of his practice, require to master and make use of; that is out of the question, but it should lay the foundation for such acquirement by training the mind to grasp readily the dominant factors in the problems that ask for their solution in well-balanced and harmonious architectural design.

Of the many and varied qualifications that go to make a successful architect in practice, some are of the distinctly practical type, such as business aptitude, faculty of organisation and attention to practical detail, while others are distinctly of the theoretical and academic type; most notably this true power in design.

Between the two comes construction and engineering, leaning now to the more practical, now to the more academic side, according as it is the more ordinary, rough-and-ready customary building or the altogether higher work of the scientific constructional engineer. That this last requires mathematical and scientific training, and is a fitting subject for university instruction, surely needs no argument or proof. The enormous advances made in but recent years in modern steel construction especially are, I suppose, for the most part, the direct result of such scientific study and research. But we accept this main rough division into the two sides, the practical and the academic, for the former class let it be at once conceded that the best preparation is the actual stress of day work at the office desk, and the experience that is only to be gained by study at first hand in closest touch with building in course of actual execution. Nothing can ever take the place of such practical training, which must always remain an absolutely essential part of the preliminary equipment of the architect. No plea for academic education is ever intended to lose sight of this; nor is it the case that for this practical training academic education is either specially adapted or required.

But while those who urge so strongly that your architect must be "a practical man" are not by any means beside the mark, that contention by no means covers the whole of the ground of an architect's education; it does not touch what, after all, if I may be allowed the phrase, the truly architectural side of architecture. It is doubtless in the ordinary relations of life—though I am not quite sure that I ought to qualify the relations of architect and client as always "ordinary"—a matter of great personal convenience to be on this eminent practical footing, obviating friction and promoting smoothness that may almost be prosaic. Heaven forbid that I should fully endorse the eminent desirability of being "a practical man."

Even the staunchest advocates of practicality, however, will admit that a great monument of architecture is not to be measured ultimately by the business capacity of its design, but by some other and higher quality altogether. Jacob Sansovino is said to have miscalculated the roof for the famous library of St. Mark's at Venice, and to have spent a time in gaol as the result. While languishing there he doubtless came to hold a very exalted appreciation of the practical advantages to an architect of being practical; but we, and the majority

\* An address delivered at the annual meeting of the Ontario Association of Architects by Professor S. H. Capper.



thousand travellers who know nothing, perhaps, of Sansovino's tedious time of incarceration, for whom the library of St. Mark's is one of the buildings that make the Renaissance architecture of Venice so fruitful and delightful a study, are apt to think less of the "practical man" than of the brilliant artist and designer who has left us so impressive a monument of his genius and skill.

The pre-eminent quality of architecture is in truth design, and this power of design is the vital touchstone of the greatness of an architect. It is in virtue of design and composition that the great buildings of the past, differing utterly, it may be, in point of architectural style, yet, one and all, appeal to us in varying degree. Historical associations may, of course, affect greatly, and other considerations, too, may have to be allowed for in our appreciation; yet, architecturally appraised, all buildings owe their fame in chiefest measure to this power of composition and design. The same is true of our modern work. It stands to reason, therefore, that anything that will foster and quicken power of design must tend to the best equipment of an architect for his life's work.

For design I venture to claim that academic training is the best road—for most, at any rate—to the achievement of success; that in no other way can the student readily obtain the grasp of the subject, the breadth of view necessary to attain to the best use of the power that may be his. Design is the expression given to a building; if consistent, convincing and harmonious the building will have dignity and the incomparable quality of style. Slipshod designing will mar any building and make it commonplace and lacking in distinction. With design, then, the architectural student's preparation should begin, and with design it should continue to the end, not, of course, to the exclusion of other necessary studies, but in conjunction with them. Design, it seems to me, should form the basis, the backbone (so to speak) of his course of study from the earliest moment possible, and around it the rest of his subjects should, so far as possible, be grouped. And I use my plea for university training for architects precisely on the ground of the pre-eminent importance of training in design, and upon the special facilities a university course affords for carrying out such training consistently in the fullest measure.

Nay, I do not hesitate to go still further, and to argue that the chief objection usually urged against academic preparation for professional life, the objection, namely, that it is "unpractical," is not in itself a disadvantage in this particular connection. In studying out an architectural design, in developing his ideas so as to bring out of them the best result he can, the student must, at the outset at any rate, be left as little hampered as possible by fettering limitations, such as economy of cost, restrictions and inconveniences of site, &c. The object of his study is to teach him to think architecturally, and to express his thoughts suitably and with grace of diction in the language of his art, to mould them into form that shall be purposeful and fitting as well as beautiful and gracious.

It is by no means an easy alphabet to learn; like any other language, if I may pursue the metaphor, it takes long to master; it means no short apprenticeship in grammar and expression, for the artistic faculties are slow of development sometimes, and always require careful, even toilsome training.

My contention is that for such training no preparation, as a general rule, is more apt or better than that provided by an university course of education. It can offer a well-arranged and systematic scheme of education, such as cannot readily be equalled by any other training. Moreover, it can and does most especially develop the study of design, that being precisely the side of architecture that most lends itself to academic teaching; it thus lays special stress on what, in my view, is the central subject, the foundation of the whole, while it is precisely the subject most difficult of adequate and serious study under ordinary conditions, apart from such a systematic course. I cannot be acquired in ordinary office training, where a student, be he never so willing, can at best but "pick up" fragmentary fragments of the subject. In a busy office each assistant is bound to have his special work allotted to him, without reference to his own requirements as a student, or, if he is a beginner, all around him are too anxious to have him show that he can be of some use to them, to think of his own immediate studies as the matter of first importance to himself.

Travel and study are an alternative, but I do not think they are of the most effective service till a student has both learned what to see and how to see it; and both these require the previous training which systematic study of design best can give.

As against this academic instruction it has been urged that such a course of training will stifle genius—a charge which need not, I think, be very seriously refuted; no sincere education can so fail of its primary object, namely, to "draw out" the faculties and develop them, as to succeed in stifling the superior powers that we call genius; and, secondly, that it will tend to create a dead level of correct mediocrity, dull and wholly lacking the freshness of untrained spontaneity. This, too, appears to me hardly to need refuting. The efforts of untrained

spontaneity are not generally, I fear, much more successful in design than in painting or sculpture; in architecture they too often lead to a wholly unregenerate straining after originality that appeals successfully neither to reason nor to good taste. And academic training fully justifies itself, if it succeeds in making mediocrity less wayward, controlling its vagaries, and sparing us those frantic abortions in design that remain a lasting instrument—potent for evil—in vitiating public taste.

I would not be thought for a moment to speak slightly of originality; no gift can be more precious. But originality in architecture is not to be attained through the medium of blatant disregard of accepted forms of architectural expression.

It is rather, it seems to me, to be attained more modestly by absolute sincerity in design, coupled with, or rather dominated by, that rare gift, the imaginative power that naturally expresses itself in form or composition that is beautiful, not ugly. The French use the phrase "*voir en beau*," or "*en laid*," to express this faculty or its opposite. One man will "see," or realise to himself, a design under a form that naturally lends itself to beauty of line or mass or composition; in the hands of another, on the contrary, the same idea will be embodied under forms that are less pleasing, artistically not satisfying. But I cannot think that the former will risk any loss to this admirable faculty, if he seek to educate his powers along the lines I have endeavoured to suggest, while the latter may at least have the asperities of diction modified by familiarity with established and well-accepted forms.

Perhaps few great architects have shown more striking originality in design than Sir Christopher Wren in the wonderful series of churches with which he enriched London during nearly half a century after the Great Fire of 1666. Of them all the great cathedral of St. Paul's is assuredly his masterpiece, I suppose the most beautiful and imposing church that the Protestant faith has raised. Yet, in its final form, it is a triumph of academic discipline over daring, but not successful amateurish spontaneity. Those of you who are familiar with the design as originally approved—in King Charles's warrant it is declared to be "very artificial, proper and useful"—will recall the really grotesque design for the central dome. "A nightmare conception," it has been called, "of two domes and a telescope steeple." It is even surpassed in grotesque extravagance by an earlier scheme of Wren's for the reconstruction of Old St. Paul's, in which a dome was to be "surmounted by a huge open-work pineapple, 68 feet high, of monstrous and horrible design." Yet the dome of St. Paul's as actually erected is one of the most beautiful in existence, its most conspicuous characteristic being, as has been well said, "its magnificent sanity." The reason for this astounding aberration of England's greatest architect is probably simply the lack of academic training. Wren entered upon the practice of architecture as an amateur, and, genius though he was, he never wholly overcame his lack of preparation for his great career. In St. Paul's itself, for which the long series of London churches was Wren's very wonderful preliminary study ground, there are still minor blemishes, in spite of years of patient study—it is idle to deny them—that seem only the result of this want of training in Classical design.

Originality does not then, I take it, imply departure from traditional forms in architecture so much as honest, unaffected and gracious use of them in sincere application to the requirements of modern building. Hence it is that I do not give my adhesion to those who would try to cut themselves adrift from the architecture of past times in order to be "modern." Not from ignorance, but from full and critical knowledge of the past, can we create a tradition for the present.

It is idle to seek to evoke a "modern style" in the sense in which Gothic or French Renaissance were styles at different periods of French architectural history, when builders—both designers and workmen—were all familiar with certain current forms and methods, and were restricted to these alone. With our immensely fuller knowledge, we cannot be so restricted if we would. We can express ourselves in many ways in solution of the same problem, whereas in earlier times one current way only of expression was known, and therefore consistently practised. And modern architecture gains in this immensely fuller vocabulary, so to speak, if wisely not extravagantly used.

The historical study of architecture consequently forms the natural basis for architectural design. Only by knowing the best that has been done can we do the best that can be done to-day. Study of architecture in the past should not, if rightly guided, lead to mere archaeological copying or repetition in our work to-day; but it should, if its lessons are properly learnt and its teaching taken truly as our inspiration, bring home to us the best that past has done, and set before us an ideal that will serve us as both a standard and a stimulus to solve our modern problems as honestly and well.

Only out of full and loyal knowledge of past tradition can we to-day hope to achieve in our work results that will be as true and as expressive of our modern life.



In the course in architecture which I have had the privilege of planning out and developing at McGill University, I have sought to give effect to these conceptions.

The full curriculum embraces four years, of which the first is preliminary, devoted chiefly to mathematics, physical science and drawing, with the very useful addition of practical instruction in the workshops, designed to impart some knowledge of the nature of materials of construction, to familiarise the student with the more important tools, and to give him some manual skill in their use. Only in the second year is the more special work in the different departments of architecture and engineering begun with us.

In the first of the three remaining years the teaching is chiefly devoted to a rapid survey of architectural history from ancient Egyptian to modern times, touching successively upon the great eras of European civilisation and tracing the evolution of architectural styles in their constructional forms and methods.

The student is thus placed in touch, so far as may be, with the broad lines of his subject, and the present is linked with the past in continuous development. This, it seems to me, should have an important influence on the student's attitude; for, fascinating though the archæological side of architecture may be, it is not as archæology but as architecture that the modern student should regard it.

In conjunction with these historical lectures, a course on the elements of effect in architecture and the main principles underlying the two great divisions of architectural style, the Classic and the Gothic, naturally, I think, arises; for want of a better name I have called it elements of architecture. And from the first, so soon as the student has acquired a little familiarity with the more obvious means of architectural expression, such as the Classical orders (which remain, I think, the best primer, so to speak, the most reasonable and effective introduction to architectural form), he is set to express himself in elementary design of plan and building.

In the next year the historical course is devoted to a study in detail of the architecture of the Renaissance down to modern times, in amplification of the earlier general course, while both third and fourth year students take together the more special courses. These comprise detailed study of ecclesiastical, domestic and public architecture, the lectures still dealing with the historic evolution of architectural styles and with the problems and requirements of modern work. A course is also given upon general art history so as to place the architectural student in touch not only with the decorative details of the different styles of architecture, but also with contemporary forms in other branches of art, especially the decorative arts employed in building.

I have only mentioned the subjects bearing on design, as the central theme round which, in my opinion, architectural study can best be developed in an university course. I have perhaps spoken at too great length already of the work of my own department at McGill's University; if so, I again apologise. But I have said scarcely anything of that other side of architecture, construction, for which the scientific training of an university course offers very direct and effective preparation. For modern construction in its more recent progress touches engineering in its completeness of calculation and in its accuracy of design.

And, again, let me guard against the charge of disregarding the practical training needed. In an university course it is not possible, nor is it attempted, to supersede that side of training for professional practice which is only fully to be gained by practical employment in office and on works. This, the more business side of professional work, must always be learned in actual employment under the conditions obtaining in everyday life. And such practical knowledge of the work before him should, whenever possible, be acquired by the student concurrently with the higher training the university offers, by seeking, during his free months, employment in connection with works in operation or in progress of execution. This training is manifestly of the greatest importance for the complete equipment of the student. But, necessary as this practical training is, an university course can and does provide for something more, for a thorough grounding in the principles upon which professional practice is ultimately based, an education which can hardly ever be otherwise at all adequately acquired, but which, though too often lacking, is essential for attaining the best and highest work in architecture. In design and composition—the keynote of the art of architecture—success depends for the most part on the due training of the critical æsthetic faculties, and for such training the education offered in an university course is very directly and specially adapted; for most the surest, for many the only road.

Let me conclude, having thus in a sentence suggested these wider bearings of my subject, with a quotation from one of Oxford's greatest sons, which sums this up in words far more eloquent than mine:—

"An university training is the great but ordinary means to a great but ordinary end; it aims at raising the intellectual tone

of society, at cultivating the public mind, at purifying national taste, at supplying true principles to popular enthusiasm and fixed aims to popular aspiration, at giving enlargement and sobriety to the ideas of the age, at facilitating the exercise of political power and refining the intercourse of private life."

Is there any one of these great ends that should not be the goal of our profession, the aspiration of us all as architects?

## A ROMANCE IN FLINT.

TO the casual observer those few glass cases containing oddly-shaped bits of flint which have found a resting place at the Midland Institute during the conversazione week says the *Birmingham Post*, are not absorbingly interesting yet around them may be woven all the glamour of romance. There are students of nature and many whose intellect, whose observation, whose imagination has for years centred around such objects as these, to whom they form links with past ages almost immeasurably remote, the basis of theories as to the antiquity of man, fanciful in a great measure it may be, but nearly approximating to history one cannot say. These are the men who, spending their lives, in a sense, "exempt from public haunt," find "tongues in trees, books in the running brooks, sermons in stones." At the outset credulity is severely tested by the appalling figures with which some archæologists denote the antiquity of these vaunted evidences of man's handiwork. Their theories are not universally accepted by their fellows, yet they have at least the merit of picturesqueness and of human interest.

Nearly a quarter of a million years ago, they say, before the great ice age crept down and seared the face of our fair land, paralysing it for unnumbered æons in the grip of Arctic cold, there lived here a race of rude and hardy men. They were primitive savages in the fullest sense of the term. Their habits were simple, their wants few—they were but little higher in the scale than the beasts of the field. And yet there was in them the faint dawns of that intelligence which was slowly to lift them above themselves, to develop, as endless generations passed away into oblivion, the highly-intellectual and scientific civilisation in which we now have part. The record of their existence which they have left behind them is meagre indeed. These rough flints, rudely chipped into shape to serve domestic or warlike uses, are the only literature which has survived through the centuries in which we can hope to glean the story of their lives. Eolithic man is the general term which some of our latest antiquarians have applied to these remote peoples, these early stone-men, from "eos," the dawn, and "lithos," a stone. With palæolithic and neolithic man we are comparatively familiar, for they belong to later times, the times which preceded the copper, the bronze and the iron ages, which bring prehistoric humanity into close touch with us of to-day. Their relics are more conclusive and more readable, their skilful manipulation of stone to fashion weapons of battle and the chase admits of no question, and betokens a much higher standard of intelligence. Yet in such rude flints as a curious Birmingham public has inspected archæologists like Mr. Benjamin Harrison, of Ighite, Kent, and the Hon. Auberon Herbert profess to find just certain evidence of human handiwork as exists in relation to later periods.

Two hundred and forty thousand years may or may not be anything like a correct guess as to the antiquity of these relics. It represents a period of time which the human mind almost fails to grasp. We look back a mere couple of thousand years to the dawn of the Christian era. We note the march of civilisation, the nations that have risen and fallen again, the grandeur of Rome and of Spain which has passed away, the mighty world empire of our own which has come into being. We reflect that but a few short centuries since America, where now dwells a great, a new, a prosperous people, was unknown to the eastern hemisphere, and we reflect that 2,000 years is a long period in the history of humanity. Yet if these new theories are to be accepted, a hundred and more such periods have passed away since eolithic man lived his narrow life, found those rough flints, and rudely chipped them to his hand. Professor Geikie places the beginning of the glacial period 240,000 years ago, and thinks it lasted about 160,000 years ago. It was broken by milder periods during which these eolithic men returned to the haunts from which they had been driven out by the cold. At that time England was joined with the Continent, and the great ice sheet travelled down, it is believed, as far as the latitude of London. Controversy upon the question of the so-called evidence of eolithic man has raged around two points—first, to whether or not the flints show conclusive traces of man's handiwork; secondly, as to the period in the world's history which they are to be assigned. Geikie, Godwin, Austin and Boyd Dawkins believe the gravels in which they are found to be pre-glacial or inter-glacial, while other authorities declare them to be post-glacial.



is in the extensive gravel pits of Hampshire and Kent the stones, of which specimens are included in the collection referred to, have been found. They consist largely of what are known as body stones, chipped away so that concave surfaces are formed, and the theories of Mr. Harrison and the Hon. Auberon Herbert are largely founded upon the fact that these stones are used at the present time by primitive savages in the African and Australian interiors. These tribes are in the habit of scraping their bodies after violent exercise, and of scraping the soles of their feet. As a result of continually walking shoeless, the skin on the soles of the feet becomes thick and cracks, and corns develop if the feet are not kept in condition by this primitive practice. The flints discovered in England were shown to several explorers who had recently returned from these remote regions, and were at once recognised as being identical with the African and Australian body stones. Arguing along parallel lines, the theorists point out other uses to which the stones were put consisted in the making of wood, bones and other like materials in order to use and point them as weapons. In the course of geological ages and upheavals extending over thousands of years, the flints would naturally come in for much grinding and breakage; but it is from the particular character of the chips that the theory of man's handiwork is deduced. Its supporters point out that exactly similar effects are produced at Ringwood by the knappers, who, by means of modern hammers and anvils, chip off the flakes from pieces of flint so as to fashion them for use in flint guns, which are still manufactured for distribution among semi-savage tribes. They try to find a clear distinction between such mechanical workings and the breakages which the flints would undergo in the course of geological changes. Of the remote races which we have known these eolithic men, of the cave and drift men who are associated with the palæolithic and neolithic ages, much more is known. There are specimens of their work, of stone spear heads, of fossilised bones undoubtedly fashioned to suit human necessities in many of our museums, all going to support the accepted evidence of the existence of these tribes.

The Hon. Auberon Herbert's theory of totemism among primitive man is no less picturesque, and no less strongly refuted by some archaeologists, while many others retain an open mind towards it. From those same gravel drifts this gentleman has collected hundreds of flints, small and large. They are all of the same size, he says, and the beds are literally full of them. To any observer these stones are as commonplace and unsuggestive as the others, but Mr. Herbert finds in them the household gods of primitive man. To him they represent birds, beasts and fishes, pyramids and mountains, even the sun, the moon and flame; and each object, he tells us, probably formed a tribal, the family, or the sex totem. Through all the imaginative ideas and suggestions which he weaves around the rough flints it is hard to follow him. The basis of his theory lies in the savage belief that in everything, animate or inanimate, concrete or abstract, there is a separate and divisible entity.

"To the savage," he says, "the world of nature and the world of soul are inseparably intermixed. They touch him at every point, and it is to the spirit forces around him that he owes a large part both of the good and the evil of his life and his nature, his cherished memories, his softer and more sensitive feelings, his search after secret wisdom, and at the same time the invented sufferings and fantastic terrors that he endures, and the cruelties that he commits." That totemism is a dominant influence upon the savage peoples of the world there can be no doubt. It is very much akin to the idolatry which marks a higher civilisation, and in this fact Mr. Herbert finds the strongest arguments in support of those romantic theories which he weaves around his Hampshire flints. The question has at any rate a human interest. Whether or not these discoveries will demolish or confirm such imaginative theories remains to be seen.

The scepticism with which they have been received by the author's opponents in the field of archaeological research cannot be better indicated than by a brief statement of the views of Mr. William Dale, F.S.A., F.G.S., hon. secretary of the Hants Field Club and Archaeological Society. Mr. Dale writes:—"I do not say there is no basis in fact for what Mr. Herbert has written, but I do assert that the only foundation for his generalisations is to be found in the varied and curious uses to which flints will assume through transportations and accumulations, through their internal structure, and the circumstances they contain and around which many of them were used. The amount of rough usage that lies between the time when a flint was dislodged from the chalk in which it was embedded until it was laid to rest in a gravel bed is enormous. There are the crushing and breaking effects of transport—the only effects. Flints are of unequal hardness. Chemical changes take place in them. They will burst and flake to pieces as they are heated. They contain much water, and frost will not only shiver them, but make in them cup-like depressions or hollows. Many flints were originally formed round branching corals, sponges and other organisms, the fantastic shapes of which

they take. Mr. Herbert is not the first who has seen strange forms in broken flints. The men who dig gravel here and bring me palæolithic instruments sometimes tempt me with such objects as a monkey's face or a frog's head, which can be explained by a fossil organism or the cup-like hollows of frost, assisted by the grotesque shape of the flint." So does this brother scientist pronounce his "Requiescat in pace" upon the pretty romances of his more imaginative confrère.

## ARCHITECTS' FEES IN AMERICA.

A CASE of importance to architects came up recently in the Supreme Court of Indiana. An architect contracted with a public board of commissioners to furnish plans and specifications for a certain building, and superintend its erection, for a certain percentage on the cost of the completed building. It was stipulated in his contract, says the *American Architect*, that the building should not cost more than a certain sum, and that he should make necessary changes in the plans and specifications without additional expense; and the contract also provided, presumably by implication only, that the architect should pay all loss or damage due to his own mistakes in preparing plans, specifications or contracts, or in superintending the erection of the building. After the original plans and specifications were made, the commissioners directed changes to be made which greatly increased the cost of the building, and the architect superintended its execution at the increased cost. The question before the Court, which was decided unfavourably to the architect by the Court below, was whether under his contract the architect was entitled to a percentage on the extra cost of the building over the sum originally stipulated. The Supreme Court reversed the decision of the lower Court, and held that the architect was under the circumstances entitled to his percentage on the entire cost of the building as finally completed. The attorneys for the commissioners thought that it strengthened their case to claim that the contract with the architect was illegal under a statute forbidding "commission or percentage contracts with State or county officers," but the Supreme Court held that the case in question was not within that statute.

## YORK MINSTER.

A PAPER was read by Mr. George Benson before the members of the York Architectural Society on "York Minster." The president (Mr. C. H. Channon) occupied the chair, and there was a large audience.

Mr. Benson said the pilgrim of old, with his staff and wallet, or the pedestrian of to-day, on approaching York was only able to recognise the city in the distance by its cathedral. It was the Minster that denoted the city; the sight of it inspired hope in the tired traveller, and enabled him to persevere until he had entered the gates of the capital of the North. From the city walls the Minster was seen high above the houses and parochial church towers and spires. The Rolls of Edward I. record the Minster Close as being the nightly resort of those whom we now term Hooligans. So, for the prevention of nocturnal incursions of thieves in the streets and lanes in the said precincts, a license was granted on May 18, 1285, to the Dean and Chapter of St. Peter's, York, to enclose the churchyard and precincts of their church with a stone wall 12 feet high for the better security of the canons. In view of the approaching coronation of King Edward VII. it was interesting to note that Archbishop Aldred crowned Harold and also the Norman Conqueror. York then rebelled against William I. and a terrible fire took place which damaged the Minster. Thomas, treasurer of Bayeux, when appointed Archbishop of York, set about to repair the Minster and to reorganise the clerical staff. To the west of the edifice he erected a new church, consisting of nave with aisles and aisleless transepts, each having an eastern apsidal chapel. The old church was restored and used as the choir. When Archbishop William died the Minster had no saint of its own, and in 1227 Archbishop Walter de Grey and the Chapter pleaded the Pope to enter William on the calendar. Pilgrims then came from all parts to visit the saint's tomb and to make offerings. In June 1221 Alexander, king of Scotland, was married in the Minster to the sister of the English monarch. The presence of royalty and the miracle-working saint demanded a more glorious edifice for the worship of the King of kings. A rebuilding was contemplated, planned on an immense scale, and very soon new transepts were commenced, exceptional in height and breadth. After tracing the interesting history of the Minster down to more modern times, Mr. Benson, in conclusion, said:—Generation after generation of our citizens have worshipped within the walls of the Minster. To each successive age the stones of St. Peter have re-echoed with the Gospel story. The Minster of St. Peter is of hoary antiquity; a venerable



able church with a continuous history of no less than 1275 years. From a lowly wooden building erected in 627, it has culminated in the magnificent structure completed in 1472. For 430 years this building has been the glory and pride of York. May the sons and daughters of old Ebor cherish the vast heritage that has come down to them, and likewise pass it on in perfect condition to their descendants.

### THE GRANT BOULEVARD, PITTSBURG.\*

THE main part of the city of Pittsburg is built on the wedge-shaped piece of land lying between the Allegheny and Monongahela rivers, where they unite to form the Ohio. The central portion of this land consists of a range of high hills which commences at Smithfield Street, at a distance of about one mile from the junction of the two rivers, and rises rapidly to an elevation of nearly 600 feet above the rivers, leaving a narrow and comparatively level strip of ground on the bank of each. Along these narrow strips of land are located all the railroads which enter the city from the east and north-east, as well as the main thoroughfares which connect the business portion of the city with that occupied by the residences and with the eastern suburban districts.

These main thoroughfares number only five and are all narrow, none of them having a roadway of greater width than 36 feet between kerbs. Each has two street-car tracks, which leave only room enough for one waggon between the rails and the kerb. These narrow roadways are only sufficient to provide for teams, delivery waggons and similar traffic, and the use of carriages and pleasure vehicles on these streets is not only impracticable, but sometimes dangerous.

Mr. E. M. Bigelow, formerly director of the Department of Public Works, observing this condition, realised that at the rate the city was growing and traffic was increasing all of the existing avenues between the residence and business sections of the city would in a short time be taxed to their utmost capacity by the street car and waggon traffic alone, and that the use of carriage and passenger vehicles on these streets would have to be given up entirely. He therefore asked the city Councils to authorise the construction of a new driveway along the north face of the hill between the two sections of the city, and to reserve this driveway for the exclusive use of carriages and light vehicles. The necessary measures having been passed by the city Councils in the spring of 1895, Mr. Bigelow, assisted by Mr. W. R. Browne, superintendent of the Bureau of Engineering and Surveys, and Mr. W. S. Wakefield, assistant engineer, made the surveys for such a driveway and the Grant Boulevard was located, beginning at Seventh Avenue, near Union station, and following the face of the hill parallel with the Pennsylvania Railroad to Centre Avenue, near Bellefield Avenue.

On August 10, 1896, a contract for the construction of the drive was let by Mr. Bigelow to W. E. Howley & Co., but before the work was started the contract was transferred to Werneburg, Sheehan & Co., who broke ground October 28, 1896.

The boulevard, which is 15,407 feet long and 60 feet wide, consists of a roadway 40 feet in width and two sidewalks, each of which is 10 feet wide, constituting a direct and much needed avenue between the business and residence sections of the city.

The face of the hill along which the boulevard is constructed was very steep for a distance of nearly 2,000 feet east of the Union station, being almost vertical. This consequently materially increased the expense and difficulties attending the construction, necessitating very heavy cuts, in some places 70 feet deep, and the construction of nearly two miles of heavy retaining walls, one of which is over 60 feet high and another one nearly a mile long.

The retaining walls are built of heavy rubble below the ground and above the ground of heavy ashlar backed with rubble. Over a mile and one-half of wall is furnished with a parapet capped with a cut coping, the top of which is 3 feet 8 inches above the curb grade. For a distance of some 1,500 feet near the west end the retaining wall extends down to the top of the slope wall of the Pennsylvania Railroad, forming a heavy masonry facing for the hill, over 80 feet high in some places. The retaining walls are constructed principally of Beaver sandstone, with the exception of the parapet, coping and some of the ashlar, which are of Cleveland sandstone. The parapet and all ashlar are laid in Portland cement mortar, and the backing in Louisville cement mortar.

The greater portion of the deepest cuts was through rock of a shale formation, very much broken by seams of clay, which, when exposed to the action of the elements, softened and caused considerable annoyance by land slides, one of the most serious difficulties encountered in engineering works of

this class in western Pennsylvania. The excavation exceeded the fill by about 100,000 cubic yards, which was loaded on the Pennsylvania Railroad at the foot of the hill by mechanical chutes and dumped beyond the city limits.

Each side of the roadway is furnished with a 6 by 24 cut curb of Beaver sandstone, the top of which is 6 inches above the gutter, which is built of six rows of Ligonier stones along each curb, the joints between the stones filled with paving pitch and gravel. The remainder of the roadway, 35 feet in width, is paved with Telford macadam crowned 10 inches, consisting of a foundation of 2 1/2 inches deep and two courses of broken stone, each of which is 4 inches thick, with enough screenings on top to bind the broken stones, making the thickness of the completed pavement 16 inches. The Telford foundation is of native Pittsburg sandstone 8 inches deep, from 4 to 6 inches wide and 6 to 16 inches long. The crushed stone and screenings are of Ligonier stone, the first layer being broken to 1 1/2 to 2 1/2 sizes, and the top layer, forming the wearing surface, to 2-inch sizes. The screenings are of sizes varying from 1/2 to stone dust. Each course of broken stone was thoroughly compacted by a liberal use of water and a 10-ton steam roller.

Most of the material used on the work was delivered by the Pittsburg Junction Railroad, at the foot of the hill near the eastern end of the boulevard, and hoisted up the hill over an incline built for that purpose. Thence it was delivered to the required on the line of the work by means of a temporary narrow-gauge railroad, which the contractors constructed the full length of the boulevard.

The accompanying copy of the final payment will materially in forming some idea of the work attending the construction of this highway. The high figure for extra work is principally due to the land slides, which necessitated considerable work not covered by the contract.

#### Total Estimate of Grant Boulevard.

Items.	Quantities.	Rate.	Total.
Grading	377,103 cubic yards	\$ .37	\$139,521
First-class masonry	61,058 "	7.50	457,935
Rubble masonry	1,569 "	6.00	9,414
Concrete	1,324 "	6.00	7,944
Sewer pipe, 24-inch	1,286 lineal feet	2.50	3,215
Sewer pipe, 15-inch	1,714 "	2.00	3,428
French drain	4,899 "	.50	2,449
Curbing	30,738 "	.50	15,369
Crossings	4,061 square feet	.60	2,436
Block-stone paving	1,444 square yards	2.10	3,032
Sidewalk relaid	223 "	1.00	223
Curb reset	318 lineal feet	.20	63
Macadamising	68,206 square yards	1.20	81,847
Iron fence	428.5 lineal feet	.90	385
Extra work			62,290

Total estimate . . . \$789,560

### VIBRATION ON LONDON ELECTRIC RAILWAYS.

WE understand, says the *Times*, that the committee appointed by the Board of Trade in January last year inquire into the vibration produced by the working of traffic on the Central London Railway, have presented their report to Mr. Gerald Balfour. As a first step the committee satisfied themselves by personal observation that vibration sufficient to cause serious annoyance is actually felt in many of the houses situated along the course of the railway. Exhaustive experiments, entrusted to engineering experts, were then carried out with a view to locating the origin of the trouble and to discovering a remedy. After carefully weighing the evidence placed before them, the committee decided to recommend the adoption of a type of locomotive or motor car which the load not carried on springs is reduced as far as possible. This, the report explains, may be arrived at by using gearing as in the geared locomotives or motor cars, or by using a gearless locomotive in which an electric communication is employed between the driving axle and the motor, but the committee had no opportunity of experiment with a locomotive of this type. In the trials carried out with motor cars were found to have an advantage in freedom from vibration over the geared locomotive. So far as the Central London Railway is concerned the committee are confident that by adopting motor cars in place of the ordinary locomotives the vibration produced by the running of the trains can be reduced so as to cause no serious annoyance, although it is possible that the sound of the trains may still be detected especially in the night.

The report proceeds to state that the committee are able to speak positively as to the motor cars, but they have little doubt that any method of driving in which the unsprung-borne load on each axle is reduced to a similarly small quantity might be used with impunity. They are disposed to prefer a still

\* By John Brunner, superintendent, Bureau of Engineering and Construction.



than that in use on the Central London Railway, and they think that in new undertakings sufficient room should be allowed for the introduction of a deeper rail; but they are of opinion that without altering the permanent way of the Central London Railway the change of motors which they recommend will effect a practically complete cure of the disturbance complained of. It may be added that, in order to ascertain whether a specially severe disturbance could be connected with particular trains on the Central London Railway, the committee instituted elaborate observations in which ten or twelve observers were stationed in various houses and recorded during the whole of the day the times of passage of the trains and the estimated intensity of the vibrations. A comparison of these records with records made at the stations by other observers of the precise times of starting and arrival of the various trains showed that it was a matter of chance whether a given train caused a light or a severe vibration; (b) that trains causing a severe vibration in one house were as likely as not to cause only a light vibration in the others; and (c) that different rooms in the same house were not similarly affected by the same train. The report is signed by Lord Rayleigh (chairman), Sir John Wolfe-Barry and Professor Ewing.

### LEEDS NEW WATERWORKS.

**DESCRIPTION** of the Leeds waterworks, with special reference to the scheme recently sanctioned by Parliament for the extension of the undertaking, was the subject which engaged the attention of a well-attended meeting of the Yorkshire College Engineering Society on February 10, the lecturer being Mr. E. J. Silcock, M.Inst.C.E., of Park Row, Leeds.

The lecturer, whose remarks were illustrated by maps and diagrams, reminded his audience, says the *Leeds Mercury*, that prior to 1837 the water supply of the city was pumped from the River Aire in the neighbourhood of Leeds Bridge, and a water-wheel, the framework of which was still in existence, was used to develop the necessary power for the distribution of the water to the population. It was hardly necessary, he thought, to say that the source from which this water was obtained was now and had for some time been totally unfit for the purpose of drinking.

Proceeding, he described the formation of the Leeds Water Company, and the subsequent taking over of the works by the Corporation in 1852. He also described in some detail the extension of the works in the Washburn Valley, the drainage area of which, he said, was 22,000 acres. The area above the bankment of the Swinsty Reservoir, from which the supply to Leeds was taken, was 17,047 acres, the available supply of water from the valley being 18½ million gallons per day. At the present time the consumption of water in Leeds was at the rate of 16 million gallons per day, and it was the nearness with which the actual consumption approached the available supply that rendered it necessary for the Corporation to secure powers for the construction of additional storage reservoirs in the valleys of the Burn and the Laver. The present waterworks of the Leeds Corporation in the Washburn Valley were surrounded to the north and west by the gathering grounds of Bradford, Tadcaster, Shipley and other towns, while in the valley of the Skell the ground was also occupied by the Bradford Corporation, so that, excluding the ground already occupied by existing projected waterworks, there remained no area which could be utilised for the purpose of collecting water on any scale at all commensurate with the requirements of the city other than in the valleys of the Burn, the Laver and the Skell.

In estimating the quantity of water required, a consumption of 40 gallons per head per day was fixed upon as being probable within a short time. The present normal consumption in the country was 20 gallons per head per day; but Leeds was considerably above the normal standard, and the rate was increasing by 2½ per cent. per annum. The rate of increase in the consumption during the past decade in Leeds had been 175 per cent., while that in all other county boroughs outside the London area was only 13.25 per cent.

The problem to be faced was how to double the present supply of 18½ million gallons per day, and it was found that the valleys of the Burn, the Laver and the Skell would provide 24 million gallons. Harrogate, however, secured about 300 acres of the area, representing two million gallons, and owing to the opposition of the riparian owners, and particularly Lord Ripon the projected extensions in the Skell Valley were abandoned, with the net result that the increased supply of Leeds had been reduced to 15.6 million gallons per day. This would be collected in three reservoirs in the Burn Valley, known as the Colsterdale, the Leighton and the Healey reservoirs, with a total capacity of 4,086 million gallons, and two reservoirs in the Laver Valley, known as Carlismoor and the Verton reservoirs, with a capacity of 1,555 million gallons. These reservoirs, said the lecturer, would discharge into the

Swinsty reservoir by means of iron pipe aqueducts and a tunnel passing through the ridge dividing the watersheds of the Nidd and the Wharfe, and entering the Swinsty reservoir at a point 10 feet above the present top-water line.

Having dealt exhaustively with technical details of construction, the lecturer concluded by referring to the cost of the undertaking, the original estimate for which amounted to two and a half millions sterling, a figure which, for the modified scheme, has been reduced to 2,200,000.

### ARCHITECTURAL EXAMINATIONS.

**A**N architect having written to Mr. Seth-Smith for his opinion on an examination recently instituted by the Society of Architects, that gentleman has replied by the following letter:—

46 Lincoln's Inn Fields, London, W.C.:

February 3, 1902.

My dear Sir,—As to the Society of Architects, to which I at one time belonged, it had a mission, viz. that of calling the attention of the profession and the public to the need (in its judgment) of the legal protection of the title of "architect," and of compelling those who in future aspired to the calling to have gone through a proper and sufficient training.

The first principle the Council originally laid down was that the Royal Institute of British Architects was the proper examining body, and that in any Bill it (the Society) advocated the Institute should be the sole examining body for England. On these bases I supported the movement, for the reason that the Royal Institute of British Architects in their new charter had apparently ignored or abandoned this broader policy—the only policy which, to my mind, can secure to our profession its due status, or to the Royal Institute of British Architects its widest usefulness.

When, however, some eight or more years ago the Society of Architects launched a scheme for examinations of its own, after using all my powers of persuasion to no avail, I was obliged to resign my membership, and I shall continue to oppose the policy it is pursuing by every possible means, excepting that I am, of course, as strong (and even stronger) an advocate of the legal registration of every properly qualified architect as ever I was, and am pleased to notice how rapidly the necessity for something of the kind is forcing itself on the minds of most architects.—I am, dear Sir, yours very truly,

(Signed) W. H. SETH-SMITH.



[The Editor does not hold himself responsible for opinions expressed by the writers.]

### Liverpool Cathedral.

**SIR**,—The promised statement by the Liverpool Cathedral committee "giving the reasons which induced the committee to finally select St. James's Mount as being in every way the most suitable" has appeared, but it cannot be said that the committee have provided any new facts or arguments. Their pamphlet chiefly consists of a mere reprint of the statements which have appeared in the Press from time to time, and which have been then shown to be incorrect and not at the time further contested; but the committee seem to be, for want of arguments, relying upon the proverbial forgetfulness of the public. They will probably discover that the memory of the public is somewhat longer when it concerns the subscribing of funds, and it does not therefore seem necessary to again rebut these statements.

It is, however, greatly to be deplored that the pamphlet of the cathedral committee should exhibit such a want of candour and straightforwardness. For instance, the value of St. James's Mount site is stated to be only "a little over 10,000*l.*" (i.e. the cost of raising the mound and laying it out many years ago, and not its present market value), whereas their own diocesan surveyor, Mr. Bradbury, has valued it at 20,000*l.*, and the Corporation surveyor, Mr. Shelmerdine, at 35,000*l.*, and both of these valuations are probably less by some 60,000*l.* to 70,000*l.* than the actual market value of the site and houses.

On the other hand, however, Monument Place site is stated to be worth over 200,000*l.* without trade compensations, although Mr. Bradbury and Mr. Shelmerdine have each valued it at 130,000*l.*, with 50,000*l.* for trade compensations.

Again, it is stated that there is a railway tunnel underneath the corner of Monument Place site, "which may prove a source of very great inconvenience," but no reference is made to the



fact that another railway tunnel is close to the St. James's Mount site, which, were there any real objection in either case, might prove an equal source of inconvenience. Another instance. The committee say that "it is only right that both sides of the case should be heard, and heard fully and impartially;" yet they requested the local Press to close their columns to a discussion of the subject, and that this has largely been the case can be clearly proved. One other example. The pamphlet suggests that the St. James's Mount site has been selected because it is the best, and not because it is cheap, though Lord Derby stated at the town-hall meeting in June last that its selection was due to motives of economy, and it is a fact that the cathedral sites committee reported that Monument Place site was the best, and recommended its adoption.

It will be a matter of surprise if the public is satisfied with the sorry answer which the cathedral committee have made to their critics, the strength of whose position is amply demonstrated and increased by the publication of the cathedral committee's reply.—I am, sir, your obedient servant,

T. MYDDELTON SHALLCROSS,

Hon. Secretary (pro tem.),

Liverpool Cathedral Petition Committee.

Bank Buildings, 6 Dale Street, Liverpool:

February 8, 1902.

### GENERAL.

**Mr. Francis Trollope**, late of Messrs. George Trollope & Sons, builders, has left property which has been valued at 78,951*l.* 19*s.* 5*d.*

**A Manager** is to be elected for the works department of the London County Council at a salary of 1,500*l.* a year.

**The Grand Palais**, in Paris, will be occupied by the annual horse show from March 23 to April 11. On April 12 the sculptors can send in the works which are intended for the Salon exhibition.

**Mr. A. G. Temple**, the director of the Guildhall Art Gallery, has accepted an invitation to join the committee for the exhibition to be held at Bruges, under the auspices of the Belgian Government, of the works of early Flemish painters. It is hoped that the Flemish authorities will permit the exhibition of pictures of the kind which are to be found in the museums and churches of Belgium.

**The Will** of the late Mr. John Brett, A.R.A., has been proved at 4,486*l.* 19*s.* 6*d.*

**An Official Difficulty**, which will of course be overcome, arises out of the bequest of the late Thome Thiery to the Louvre. The works of art which he bequeathed are valued at 10,000,000 francs, but as he was a British subject his property is liable to a duty of 18½ per cent. In other words, the Louvre authorities should pay to the Minister of Finance 1,850,000 francs.

**The Council** of the Royal Society decided on January 22 to petition in favour of a charter of incorporation to "The British Academy for the Promotion of Historical, Philosophical and Philological Studies." This petition of the Council of the Royal Society has been drafted, and was laid before the Council for the purpose of being sealed with the seal of the Society last Thursday.

**M. Formigé**, the French architect, has been commissioned to prepare a scheme of decoration for the Salle des Cariatides and the Galerie Lobau in the Hôtel de Ville.

**A New Committee** has been formed, entitled "The Leighton House Concerts and Entertainments Committee," for the purpose of conducting arrangements for all concerts, exhibitions, lectures, &c., that take place in Lord Leighton's studio. It is composed of the following ladies and gentlemen:—Harriet, Countess of Darnley, the Earl of Darnley, the Countess of Darnley, Viscount Barrington, Lady Strachey, Mr. Russell Barrington, Mrs. Russell Barrington, Miss Fortescue Brickdale, Mr. A. G. Temple, Mrs. Whitelegge, Mr. Arthur Bent (director of the concerts), Mr. Windsor Fry, Dr. Ronald Carter. Hon. secretary, Mrs. Russell Barrington.

**An Anglo-American Art Club** for the Riviera has been formed, for the purpose of holding a joint exhibition of the works of British and American artists. The club's first annual exhibition will shortly take place in Cannes.

**Francesco Rava**, the Italian decorative artist, died in London last week of pneumonia. He had lived in England many years and had decorated several large buildings. One of his chief works was the ceilings at Drury Lane Theatre, and decorative paintings from his hand are also to be seen in several hotels and other places.

**The Jury** at the inquest on the fourteen persons killed by the collapse of a floor at Smithfield Mills, Belfast, on January 28, found that no blame attached to any one. The

piers of the building were defective, but it was difficult to detect the weakness.

**The Bournemouth Town Council** have resolved to abandon their sea-water scheme, which has been in existence for upwards of twelve years, on the ground that it has been a failure. The scheme has cost the town nearly 30,000*l.* for machinery, pipes and water towers, but the use of sea water for the roads is not found satisfactory.

**The New Southsea Central Hall** was opened last week. The building has a front elevation of 70 feet, there is a small turret on one side and a cathedral glass window facing the street. Between the two entrances shops are being built and are already let on a lease for three years. There is seating accommodation for about 600 persons, and the schoolroom below is capable of holding 400 children. Both are heated with hot-water pipes and are supplied with electric lighting. Mr. T. Wonnacott, F.R.I.B.A., is the architect, and Messrs. T. Quick & Son, the builders.

**Dr. Charles Porter**, county medical officer of Shropshire, has accepted the post of health officer for Johannesburg at a commencing salary of 2,000*l.* per annum. He took his medical degrees with honours in the Royal University in 1889, is a diplomate in public health of Cambridge University, a barrister-at-law of Gray's Inn, and has had a varied experience of sanitary administration.

**The Margate Town Council** have adopted a scheme devised by the borough engineer (Mr. Albert Latham) to obtain a supply of water from the hills near Wingham, 14 miles from Margate. The scheme is estimated to cost 93,000*l.*, but the Corporation have agreed, in order to avoid opposition, to supply fifteen parishes in the district, and powers are sought in the Bill to borrow 120,000*l.*

**The New Bridge** across the Wey at Guildford was opened on the 6th inst. The bridge, which has been constructed of iron girders of a span of 70 feet, takes the place of the old brick and stone structure which collapsed in the flood at Guildford nearly two years ago. It has been built from designs of Mr. J. Webster by Messrs. Faisey & Son, of Leytonstone, the contract price being 5,396*l.*

**Cardinal Vaughan**, in a preface to a work on "The Holy Rood," by Mr. Dudley Baxter, writes:—"I am not favourable to screens, but I am in perfect accord with St. Charles Borromeo, who laid down in his instructions, that a great crucifix should be placed between the nave and the sanctuary, so as to be visible to the whole congregation, and to dominate the church." It is the Cardinal's intention to give practical effect to his opinion in his new cathedral, as a crucifix of colossal proportions is to be suspended immediately over the sanctuary.

**Mr. Hugh Stannus**, director of architectural studies at the Manchester Municipal School of Technology and the School of Art, on Wednesday gave the first of a course of twenty lectures on the history of architecture in the new school in Whitworth Street.

**Mr. G. Washington Browne**, architect, was on Wednesday elected an associate of the Royal Scottish Academy. The following associates were also elected:—Messrs. Tom Scott of Earlston; George Henry, of Glasgow; R. B. Nisbet, of Comrie.

**The Liverpool Architectural Society** will hold the fourth members' meeting on Monday, February 17, in the Lavender Library, 41 Castle Street, when a paper will be read by Mr. Richard Holt on "Bricks and Brickwork."

**The Institution of Junior Engineers** will on Saturday, February 22, at 3 P.M., visit the new baths and wash-houses of the borough of Fulham, Melmoth Place.

**At a Meeting** of the Royal Philosophical Society of Glasgow to be held on the 17th inst., Professor Cooper, D.D. will read a paper on "An Early Description of an East Syrian Church, with its connected Buildings, from the recently published 'Testamentum Domini,' with some Notices of the Service at that Time."

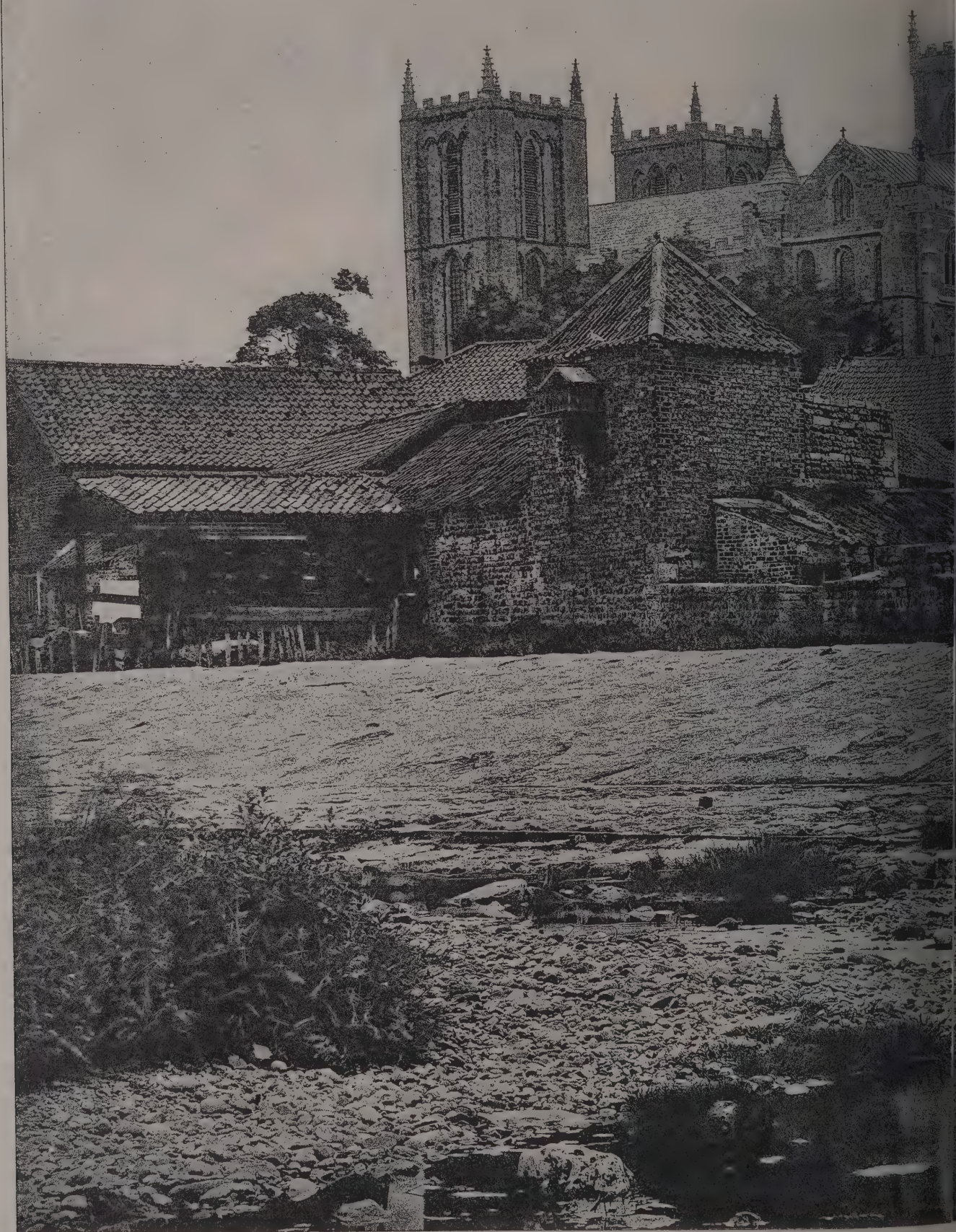
**A Meeting** of the Glasgow Technical College Architectural Craftsmen's Society was held on Friday evening, the 7th inst., when papers on "Stone" and "Brick" were read by Mr. James S. Robertson and Mr. Robt. Armour respectively. The stones from the best-known quarries of Scotland, with their characteristics, were described, and the manufacture of various types of local brick were also treated of in practical fashion, the whole forming a most instructive evening's study. Votes of thanks were cordially accorded the lecturers.

**The Ceremony** of taking over the Thetford new town hall from the architect and contractors took place on the 29th ult. at a meeting of the Council held in the mayor's ante-room. The proceedings were opened by Mr. Millington, as chairman of the building committee. He said the cost had not yet been finally arrived at, but he believed 10,000*l.* would cover everything. The full figures would be presented in due course.













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GENERAL VIEW, FROM THE RIVER.



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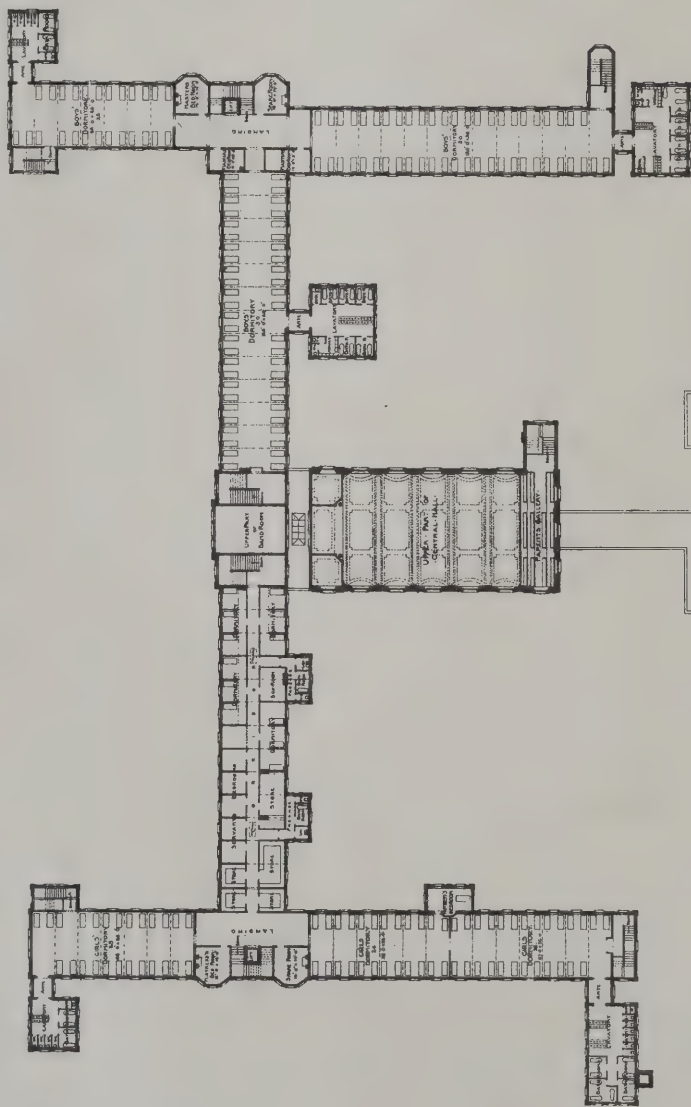


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FIRST FLOOR PLAN

Scale of Feet

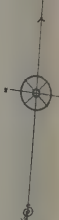
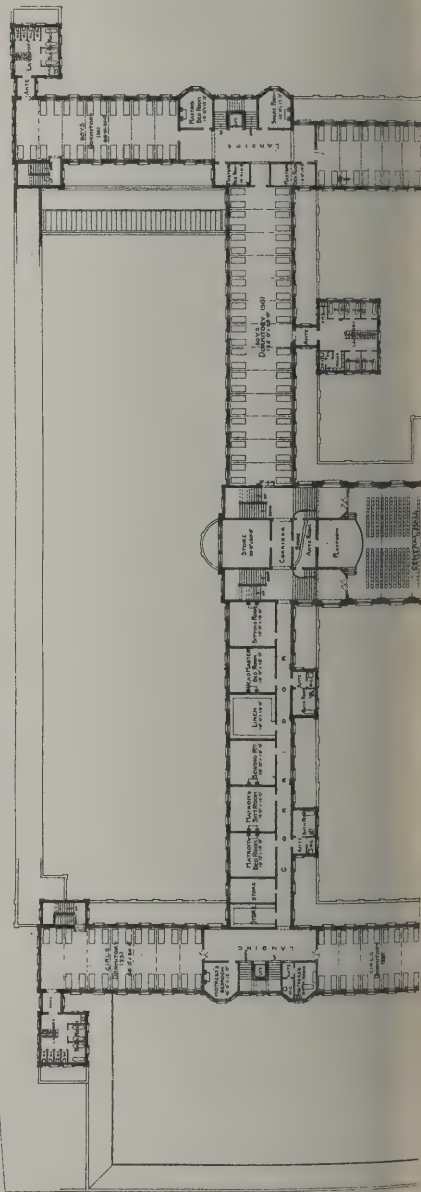


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UPPER GROUND FLOOR PLAN

Scale of Feet









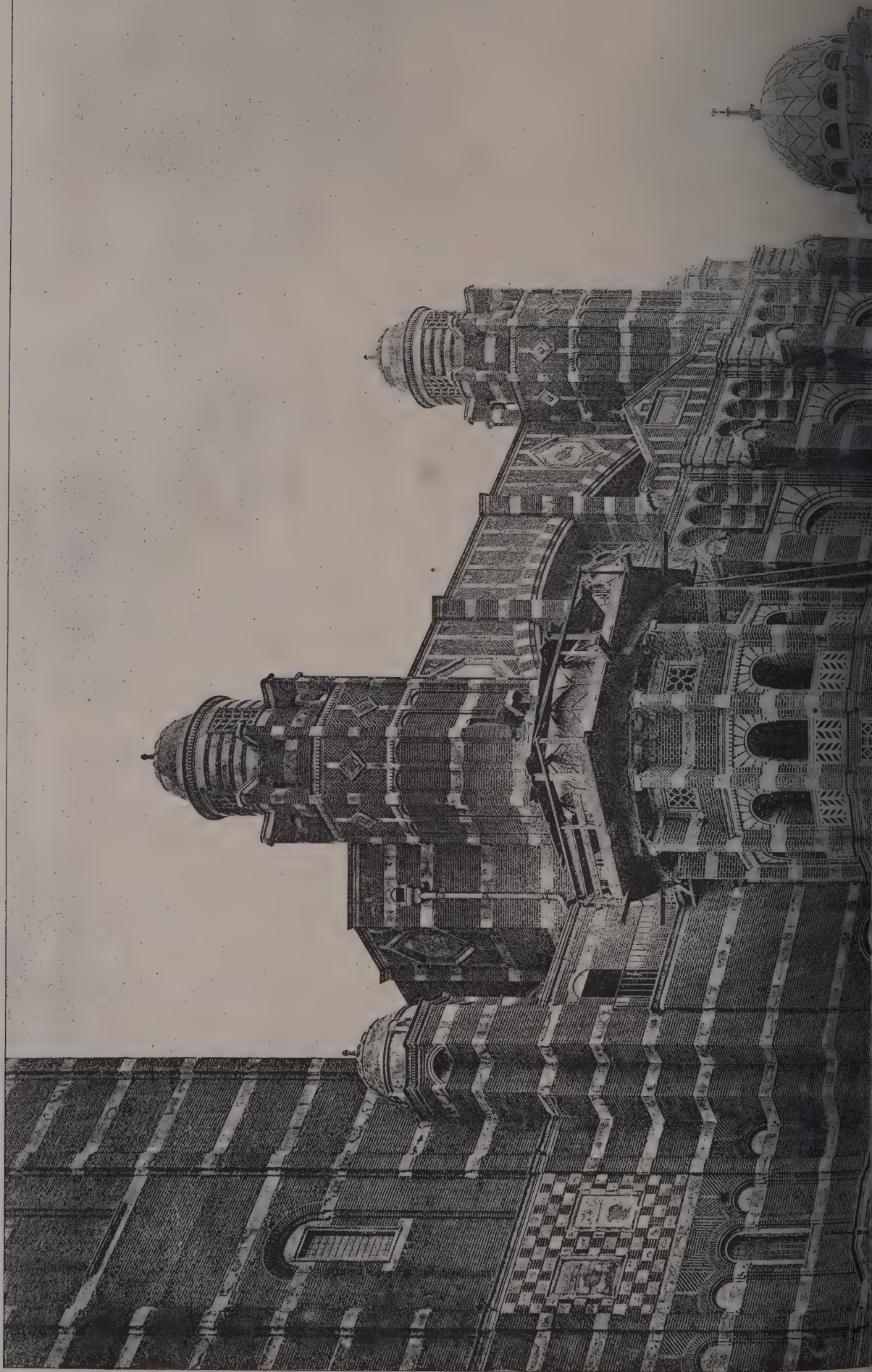
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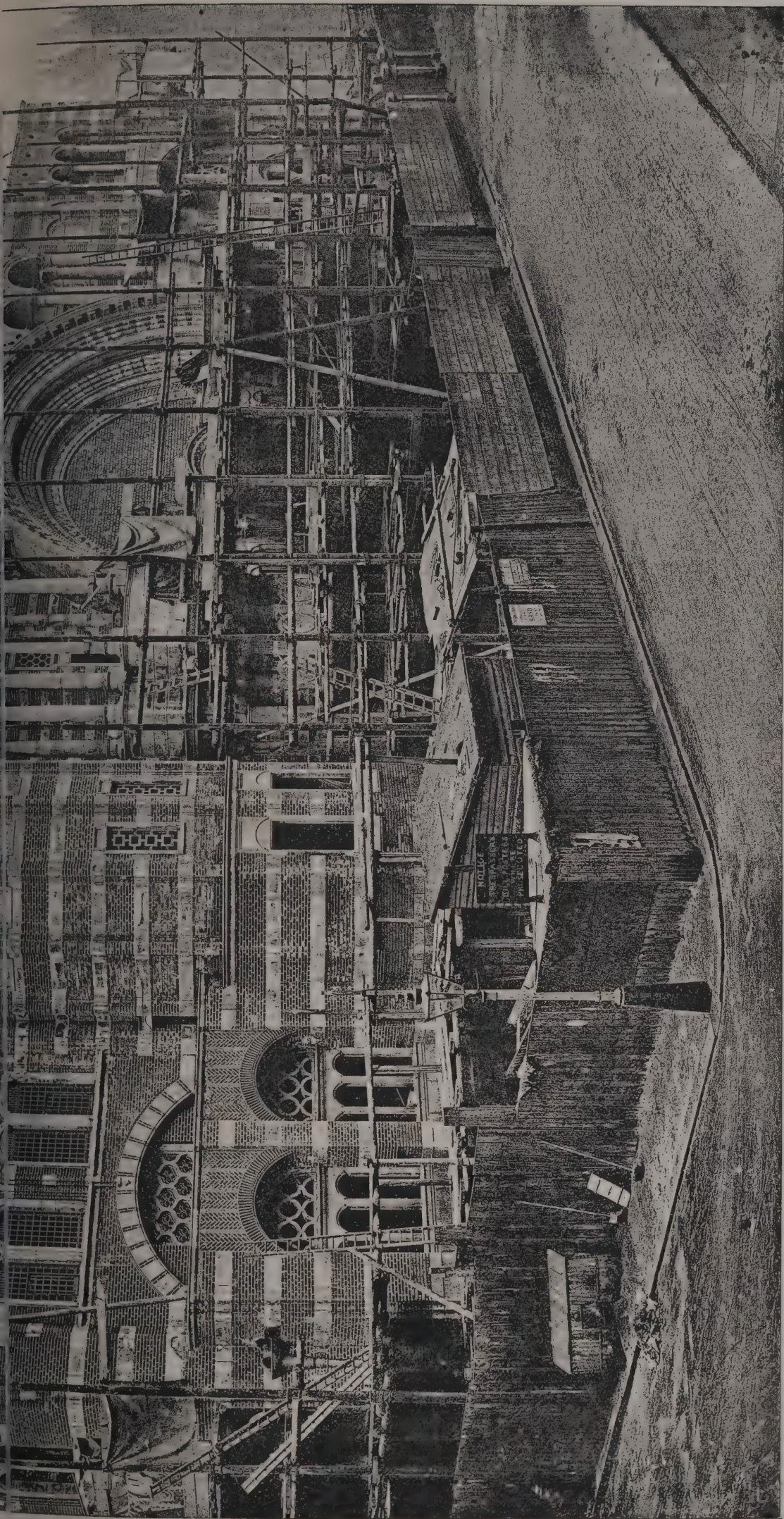
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The Architect, Feb 14<sup>th</sup> 1902.







PHOTOGRAPHED BY S. B. BOLAS & CO. 69, OXFORD STREET, W.

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# WEST FRONT, ROMAN CATHOLIC CATHEDRAL, WESTMINSTER: GENERAL VIEW.

J. F. BENTLEY, Architect.



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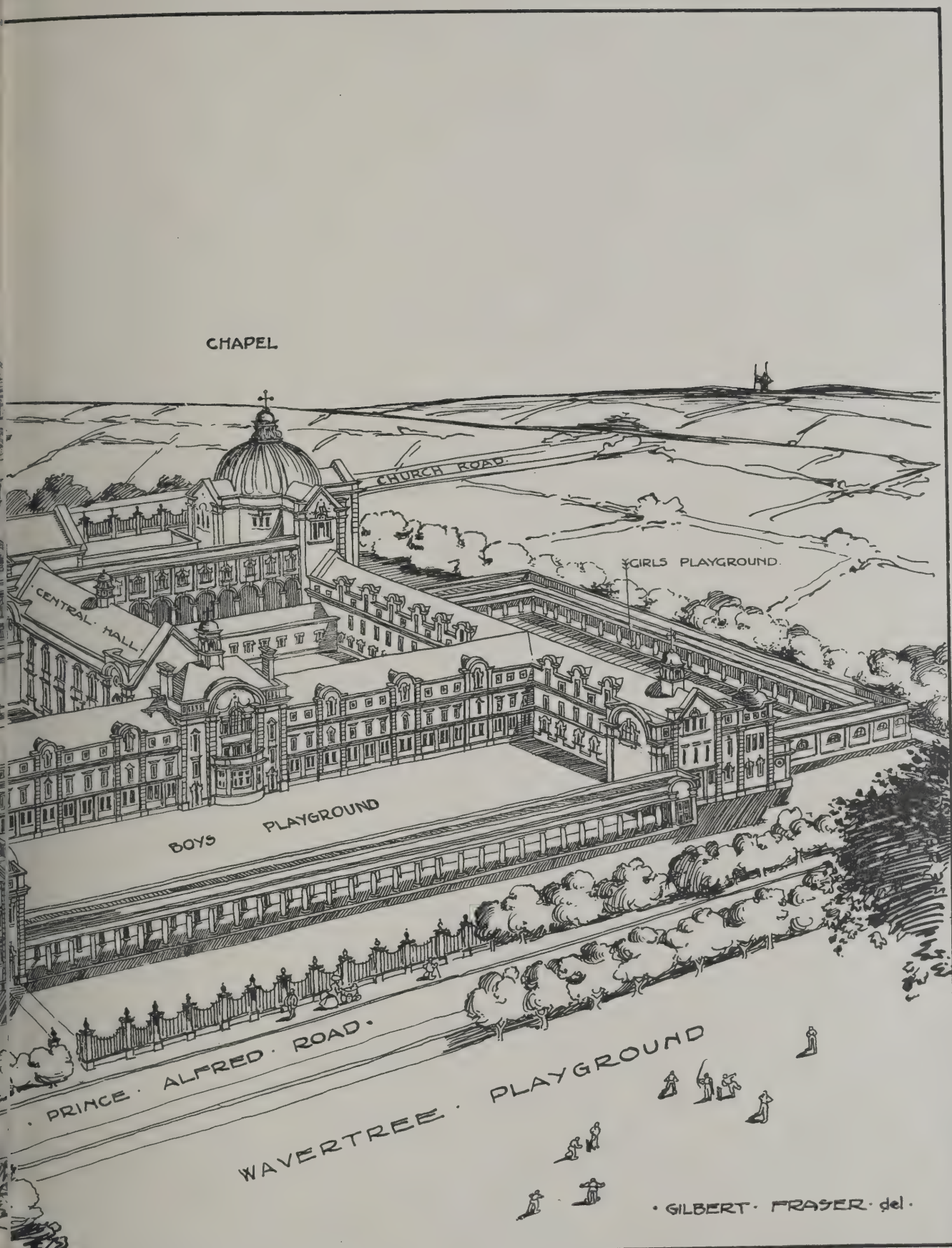




NEW BLUE COAT

Messrs. BRIGGS & WOLSTENHOLME, F.F.R.I.B.A.,





• GILBERT FRAYER del.

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WAVERTREE, LIVERPOOL.

and ARNOLD THORNELY, A.R.I.B.A., Architects.



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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**ALDERSHOT.**—March 1.—Plans are invited for laying-out as a pleasure ground about 6 acres of land in the centre of Aldershot. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

**ALDERSHOT.**—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for first, second and third best plans. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. All information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, Westminster.

**DUNSTABLE.**—March 14.—Plans are invited, with estimate of expense, for a six-bed infectious diseases hospital to be erected near Dunstable. A premium of 5l. 5s. offered for plans selected. Mr. C. Crichton S. Benning, town clerk, Dunstable.

**HARROGATE.**—May 14.—Competitive designs are invited for a new town hall, the cost of which must not exceed 40,000l. Premiums of 150l., 100l. and 75l. are offered for the three selected designs. Mr. F. Bagshaw, borough engineer, Municipal Offices, Harrogate.

**IRELAND.**—Feb. 26.—A premium of £20 is offered for the best and cheapest report, plans, specification and estimates, &c., for providing the town of Kanturk with a wholesome supply of water. Mr. Mt. Timothy Guiney, clerk to the Kanturk Rural District Council, at the Boardroom of the Workhouse.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200l., 150l. and 100l. respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**NEW MALDEN.**—March 5.—Designs, &c., are invited for public offices, fire-station, cart sheds, stables and mortuary to be erected at New Malden, Surrey. Total cost of buildings not to exceed 5,100l. Premiums of 25l. and 10l. respectively are offered for the best and second best design. Mr. C. T. Lewis, clerk to The Maldens and Coombe Urban District Council, 7 Market Place, New Malden.

## CONTRACTS OPEN.

**ACCRINGTON.**—Feb. 17.—For erection of shops, offices, stores and assembly-rooms. Messrs. Haywood & Harrison, architects, Post Office Chambers, Accrington.

**ASHTON-UNDER-LYNE.**—Feb. 18.—For extensions to the county police station at Hurst, near Ashton-under-Lyne. Mr. Henry Littler, architect, County Offices, Preston.

**AVONMOUTH.**—Feb. 17.—For construction of a new dock having a water area of about 30 acres, with an entrance lock and entrance channel from the river Severn, a graving dock, embankments, sea-walls, &c. Mr. W. W. Squire, engineer, Underfall Yard, Cumberland Road, Bristol.

**BIRKENHEAD.**—Feb. 24.—For construction of conveniences in the market hall. Mr. Charles Brownridge, borough surveyor, Town Hall, Birkenhead.

**BIRKENHEAD.**—Feb. 25.—For extension to the electric tramway car-shed in Laird Street. Mr. Charles Brownridge, borough surveyor, Town Hall, Birkenhead.

**BIRKENHEAD.**—Feb. 25.—For supplying and fixing machinery required in the tramways repair shop at the Laird Street dépôt. Mr. Alfred Gill, town clerk, Town Hall, Birkenhead.

**BOURNEMOUTH.**—Feb. 21.—For supply of a motor generator. Mr. F. W. Lacey, borough engineer, Municipal Offices, Bournemouth.

**BRACEBRIDGE.**—March 3.—For alterations and additions to the present buildings of the Bracebridge Asylum, near Lincoln. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, S.W.

**BRADFORD.**—Feb. 17.—For erection of a caretaker's house at Carlton Street school. Mr. C. H. Hargreaves, architect, Exchange Buildings, Bradford.

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BRADFORD.—Feb. 18.—For extension of the Rawson Place markets. Messrs. T. C. Hope & Son, architects, 23 Bank Street.

BRADFORD.—Feb. 20.—For erection of Eastbrook Mission Hall and adjoining premises in Leeds Road. Messrs. W. J. Morley & Son, architects, 259 Swan Arcade, Bradford.

BRIGHTON.—Feb. 18.—For supplying and fitting of book-cases, indicators, counters, &c., and for construction of a gallery and staircase at the public library, Church Street. Mr. Francis J. C. May, surveyor, Town Hall, Brighton.

BRIDGWATER.—Feb. 24.—For construction of collecting trenches and other works upon the Willoughby estate. Messrs. E. D. & Henry Marten, engineers, Cheltenham.

BRISTOL.—March 8.—For supply and delivery in Avonmouth Dock of a self-propelling steam fire float. Mr. W. W. Squire, engineer, Cumberland Basin, Bristol.

BROCKLEY.—Feb. 24.—For erection of a refreshment house at Hilly Fields. Quantities and other particulars may be had at the General Section, Architect's Department, County Hall, Spring Gardens, S.W.

BURY.—For alterations and additions at St. Stephen's school, Elton, Bury, Lancs. Mr. D. Hardman, architect, Agar Street, Bury.

BURY.—Feb. 19.—For supply of laundry plant, disinfectant and cooking apparatus at the infectious diseases hospital, Bolton Road. Mr. John Haslam, town clerk, Corporation Offices, Bank Street, Bury.

BURY ST. EDMUNDS.—For sinking well in the parish of Shimpling, near Bury St. Edmunds. Mr. H. Biddell, Playford, Ipswich.

CANNOCK.—Feb. 26.—For providing and laying about 6 miles of 3-inch and 4-inch cast-iron mains, with all necessary fittings, valves, &c. Mr. W. E. Rogers, engineer, Anson Street, Rugeley.

CANTERBURY.—Feb. 27.—For construction of an underground convenience at the cattle market. Mr. Arthur C. Turley, city surveyor, Tudor Chambers, Canterbury.

CARLISLE.—Feb. 20.—For erection of a temporary wooden bridge, 40 feet wide, 145 feet long, in five spans, over the river Caldew, Carlisle. Mr. Henry C. Marks, city surveyor, 36 Fisher Street, Carlisle.

CLACTON-ON-SEA.—Feb. 19.—For construction of two filters and a covered service reservoir. Mr. Geo. T. Lewis, clerk, Town Hall Buildings, Clacton-on-Sea.

COVENTRY.—For alterations and additions to two houses, St. John's Street, Coventry. Messrs. Harrison & Hattrell, architects, 23 Hertford Street, Coventry.

CROYDON.—Feb. 17.—For supply of ten double-deck double-truck cars, equipped complete with motors, &c., for overhead trolley system. Mr. E. Mawdesley, town clerk, Town Hall, Croydon.

CROYDON.—Feb. 21.—For enlargement of Croydon Crown Post Office. Particulars may be obtained of the Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.

CUMBERLAND.—Feb. 20.—For erection of a dwelling-house at Seascale. Mr. George Boyd, 33 Queen Street, Whitehaven.

DARLINGTON.—Feb. 24.—For erection of offices for the Weardale and Shildon Water Company. Mr. William Harding, Crown Street Chambers, Darlington.

DARLINGTON.—March 1.—For erection of a new classroom at the Bowes Grammar school. The Rev. C. B. Wardale, the Vicarage, Bowes.

DERBY.—Feb. 25.—For erection of three cottages for the fire brigade in Jury Street. Mr. H. F. Gadsby, town clerk, 15 Tenant Street, Derby.

DERBY.—Feb. 26.—For boilers and engineering and sanitary work in connection with new public baths, Reginald Street. Mr. John Ward, borough surveyor, Babington Lane, Derby.

DEVONPORT.—Feb. 17.—For alterations and renovations to the Falstaff inn, Marlborough Street. Messrs. Ellis, Son & Bowden, surveyors, Exeter.

DEVONPORT.—Feb. 25.—For erection of workmen's dwellings in Ordnance Street. Particulars can be obtained on application to the Borough Surveyor, 30 Ker Street, Devonport.

EAST HAM.—Feb. 22.—For supply and erection of 500-kw. continuous-current multipolar generator, direct-coupled to an 800 i.h.p. horizontal cross-compound slow-speed engine and extension to switchboard; two water-tube boilers, condenser, feed-pump, steam and exhaust piping and cooling tower. Mr. W. C. Ullmann, engineer, Electricity Works, Nelson Street, East Ham.

ESHER.—Feb. 25.—For erection of a new post-office. Particulars may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

FENWICK-CUM-MOSS.—March 2.—For erection of boundary walls, lych gate, &c., at St. John's Church, Fenwick-cum-Moss,

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Doncaster. Rev. Fras. H. Allen, vicar, Moss Vicarage, Doncaster.

GATESHEAD.—Feb. 24.—For erection of workshops at West Street and Brunswick Terrace, Gateshead. Mr. L. H. Armour, 16 West Street, Gateshead.

HALIFAX.—For erection of a pair of semi-detached villas on the Moorside estate. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

HALIFAX.—Feb. 17.—For erection of four shops and workshop in Queen's Road. Mr. Fred. Fielding, architect, 7 Fountain Street, Halifax.

HALIFAX.—Feb. 17.—For erection of three shops in Pellon Lane, and for works in connection with the improvement of a portion of Ovenden Road. Mr. James Lord, borough engineer, Town Hall, Halifax.

HALIFAX.—Feb. 17.—For erection of a store shed at the Gibbet Street tram depôt. Mr. James Lord, borough engineer, Town Hall, Halifax.

HALIFAX.—Feb. 18.—For erection of boarding, &c., and covering in of the south-west gallery in the borough market. Mr. James Hall, borough engineer, Town Hall, Halifax.

HALIFAX.—Feb. 18.—For erection of house adjoining the late California inn, Brinton Terrace. Messrs. Joseph F. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

HALIFAX.—Feb. 22.—For erection of a pair of semi-detached villas in Linden Road. Mr. Arthur George Dalzell, architect, 15 Commercial Street, Halifax.

HASTINGS.—Feb. 27.—For erection of boundary walls, fencing, drainage, &c., at the borough cemetery. Mr. P. H. Palmer, engineer, Town Hall, Hastings.

HELSTON.—Feb. 28.—For erection of a police-station and appurtenances at Helston, Cornwall. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

HEREFORD.—For erection of a chapel at Hereford for the Primitive Methodist trustees. Mr. W. W. Robinson, architect, Hereford.

HOLLOWAY, N.—Feb. 26.—For sinking of a tubular well and the provision of the necessary pumping gear at the central electricity works, 50 Eden Grove. Mr. Wm. F. Dewey, town clerk, Town Hall, Islington, N.

HUDDERSFIELD.—Feb. 21.—For new shop-fronts and structural alterations to the Green Dragon property in West-

gate and Market Street. Town Clerk, Town Hall, Huddersfield.

ILKLEY.—Feb. 19.—For erection of the Cowpasture bridge over Backstone Beck. All information may be obtained on application to the Surveyor, Urban District Council.

IRELAND.—Feb. 17.—For erection of three dwelling-houses at Summer Hill South, Cork. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

IRELAND.—Feb. 20.—For erection of twenty-four villa residences at Dromalane. Mr. Wm. James Watson, architect, Benvenue, Rostrevor.

IRELAND.—Feb. 22.—For erection of a bank-house, shop and offices on the site of 114 and 115 Grafton Street, Dublin. Messrs. W. H. Stephens & Son, surveyors, 13 Donegall Square North, Belfast.

IRELAND.—Feb. 25.—For erection of a new branch office on the Shankill Road, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

IRELAND.—Feb. 26.—For erection of the technical institute, Belfast. Mr. Samuel Stevenson, architect, 83 Royal Avenue, Belfast.

IRELAND.—Feb. 28.—For erection of new National schools in Windsor Avenue, Lurgan. Mr. H. Hobart, architect, Dro-more.

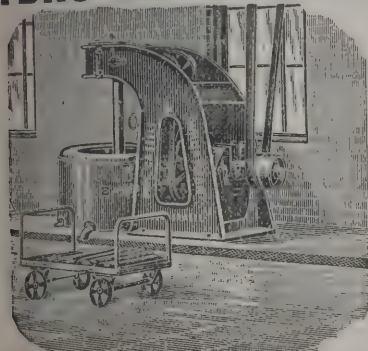
ISLEWORTH.—Feb. 18.—For supplying and fixing cooking apparatus at the new workhouse in course of erection at Isleworth. Mr. W. H. Ward, architect, Paradise Street, Birmingham.

ISLEWORTH.—Feb. 18.—For supplying and fixing two Lancashire boilers, &c., at the new workhouse in course of erection at Isleworth. Mr. W. H. Ward, architect, Paradise Street, Birmingham.

ISLEWORTH.—Feb. 18.—For supply and fixing laundry machinery at the new workhouse. Mr. H. Ward, architect, Paradise Street, Birmingham.

ISLE OF WIGHT.—March 5.—For providing and delivery at Chale, Isle of Wight, of 2,530 9-feet lengths of 3-inch, 227 9-feet lengths of 4-inch and 21 9-feet lengths of 5-inch cast-iron socket pipes, with bends, branches, &c.; excavating for, carting and laying about 7,600 yards of 3-inch, 700 yards of 4-inch and 65 yards of 5-inch cast-iron socket pipe, with bends, branches, &c., and the providing and fixing of sluice valves, hydrants, air valves, &c., in connection with the Chale water

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JARROW.—Feb. 24.—For alterations and additions at the Higher Grade school. Mr. T. H. Spencer, clerk, School Board Offices, Jarrow.

KING'S LYNN.—Feb. 21.—For supply and erection of one Lancashire boiler, with steam and feed pipes, &c. Mr. J. W. Wolstencroft, town clerk, King's Lynn.

LEAMINGTON.—Feb. 21.—For sinking a well about 50 feet deep and 6 feet diameter. Mr. Leo. Rawlinson, town clerk, Town Hall, Leamington.

LEEDS.—Feb. 22.—For erection of laundry, boiler-house, bakery, kitchens, &c., and for the erection of receiving wards block, with porter's lodge, &c., at the workhouse, Beeston Road, Holbeck. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

LEIGHTON BUZZARD.—Feb. 28.—For laying and jointing of about five miles of 5-inch, 4-inch and 3-inch cast-iron water-mains, including fixing valves, hydrants, &c.; erection of brick service reservoir and filter-beds, sinking well, the erection of pumping station, &c., at Linslade. Mr. R. J. Platten, clerk to Urban District Council, Linslade, Leighton Buzzard.

LEYLAND.—Feb. 22.—For a new 18-inch and 10-inch boring, 425 feet deep, and for widening portion of an existing borehole, Leyland, Lancs. Mr. Wm. Wrennall, engineer, 9 Harrington Street, Liverpool.

LIMEHOUSE.—Feb. 18.—For erection of a block of artisans' dwellings, Queen Catherine Court area, Dorset Street. Mr. Geo. W. Clarke, town clerk, Municipal Offices, 15 Great Alie Street, Whitechapel, E.

LISCARD.—Feb. 20.—For supply and erection of feed-water heater, &c., at the electric supply works, Sea View Road, Liscard. Mr. J. H. Crowther, engineer, Great Float, near Birkenhead.

LONDON.—Feb. 18.—For delivery and fixing of three 13 feet long by 5 feet diameter Cornish steam boilers, induced-draught plant and feed-pump, and reconstruction of the arrangements for the heating circulation and the hot-water supplies, provision of steam and condensation mains, and the enlargement of the coal store at the infirmary, Archway Road, Highgate, N. Mr. J. Allan Battersby, clerk, Guardians' Offices, Clerkenwell Road, E.C.

LONDON.—Feb. 26.—For (Contract No. 1) two 50-kw. steam dynamos and boosters, (2) four dry-back marine boilers, (3) storage battery, (4) wiring about 2,000 lights. Mr. E. J. Mott, clerk to the Guardians, 75 Fulham Place Road, S.W.

LONDON.—Feb. 26.—For (Contract No. 5) erection of chimney-shaft (120 feet high) at the electric-lighting works, Fulham. Mr. E. J. Mott, clerk to the Guardians, 75 Fulham Palace Road, S.W.

LONDON.—Feb. 26.—For erection of casual wards, clothes store, laundry and other buildings at Gainsborough Road, Hackney Wick. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONDON.—March 4.—For erection of four small blocks of artisans' dwellings on Plumber's Place area, City Road, E.C. Mr. Rowland Plumbe, architect, 13 Fitzroy Square, W.

LONDON.—March 4.—For supply and delivery into carsheds in South London of 100 double-decked double-bogie electric trams, for the London County Council. Each car is to be equipped with a plough for working on a conduit system, and to be capable of seating about 68 persons. Particulars at the County Hall, Spring Gardens, S.W.

LONDON BRIDGE.—Feb. 17.—For widening of London Bridge. Drawings and specification may be seen at the office of the City Surveyor, Guildhall.

MANCHESTER.—Feb. 19.—For erection at the Stuart Street generating station and sub-stations of electric overhead travelling cranes for generating station, hand-driven overhead travelling cranes for sub-stations. Mr. F. E. Hughes, secretary, Electricity Department, Town Hall, Manchester.

MANSFIELD.—For erection of two houses in Princes Street, Mansfield, Notts. Mr. J. Longden, 17 Derby Street, Mansfield.

MELTHAM.—Feb. 19.—For the construction of a 70-foot diameter gasholder and tank at Meltham, Yorks. Mr. William Carter, clerk, Town Hall, Meltham.

MINSTEAD.—Feb. 20.—For alterations and additions to the Trusty Servant hotel at Minstead, Hants. Messrs. Lemon & Blizard, architects, Lansdowne House, Castle Lane, Southampton.

NEWMARKET.—March 17.—For erection of new female infirmary, additions to male infirmary, nurses' home, maternity ward, administration buildings, laundry, porter's lodge,

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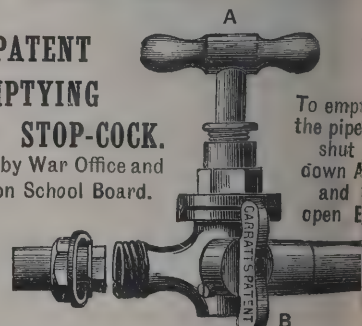
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receiving wards, alterations to existing buildings, &c. Messrs. Holland & Sons, architects, High Street, Newmarket.

OLDHAM.—Feb. 18.—For lake works at Alexandra Park. Mr. S. A. Pickering, borough surveyor, Town Hall, Oldham.

PORTSMOUTH.—Feb. 25.—For alterations and additions to the Kent Street Board school, Portsea. Mr. A. H. Bone, architect, Cambridge Junction, Portsmouth.

ROCHDALE.—Feb. 25.—For supply, delivery and erection of one complete traction switchboard and accessories. Mr. James Leach, town clerk, Town Hall, Rochdale.

ROTHERHAM.—Feb. 17.—For excavation of trenches for the laying of water-mains in Midland Road and Kimberworth Road. Mr. H. Hampton Copnall, town clerk, Town Hall, Rotherham.

SALFORD.—For alterations to the house in Drinkwater Park as an administrative block for smallpox cases. Mr. Henry Lord, architect, 42 Deansgate, Manchester.

SALISBURY.—For erection of a pair of cottages in Hamilton Road. Messrs. John Harding & Sons, architects, 58 High Street, Salisbury.

SALISBURY.—Feb. 22.—For erection (from plinth level) of a residence at Milford Manor, Salisbury. Mr. Fred Bath, architect, Crown Chambers, Salisbury.

SANDBACH HEATH.—Feb. 28.—For erection of new Wesleyan chapel and school at Sandbach Heath, near Sandbach. Mr. Alfred Price, architect, Sandbach, Cheshire.

SCOTLAND.—Feb. 15.—For additions and alterations at Inverdrue House, Grantown. Mr. William Cameron, Royal Bank Buildings, Grantown.

SCOTLAND.—Feb. 18.—For erection of two cottages and scour-valve chamber at Gelly Burn, Downfield, Dundee. Mr. George Baxter, engineer, 93 Commercial Street, Dundee.

SCOTLAND.—Feb. 18.—For erection of dwelling-house, Brownhill of Pitglassie. Messrs. J. Duncan & Son, architects, Turriff.

SCOTLAND.—Feb. 19.—For erection of a new auction mart at Cornhill, Elgin. Mr. Charles C. Doig, architect, Elgin.

SCOTLAND.—Feb. 19.—For additions to boiler-house at Gorbals Baths, Main Street, Glasgow. Mr. J. Lindsay, clerk, City Chambers, Glasgow.

SCOTLAND.—Feb. 21.—For supply to the Glasgow Corporation of material for switchboard extensions. Mr. John Young, general manager, 88 Renfield Street, Glasgow.

SCOTLAND.—Feb. 24.—For construction of two additional storage reservoirs, the providing and laying of cast-iron and fireclay pipes, &c., at the waterworks. Mr. Will Allan, town clerk, Bathgate.

SCOTLAND.—Feb. 28.—For additions and alterations to the Lochwinnoch Bridge, Lochwinnoch. Mr. P. D. Alexander, engineer, Dunmyat, Bridge of Weir.

SETTLE.—Feb. 24.—For trench-cutting and laying cast-iron pipe conduit and water-main, fixing valves, hydrants, &c.; provision and construction of a concrete covered service reservoir, collecting well, drains, and other works in connection with the new water supply. Mr. J. C. McGrath, clerk, Town Hall, Settle.

SHEFFIELD.—March 1.—For supply of one Lancashire steam boiler, 30 feet long, 7 feet 6 inches diameter, with valves and fittings complete. Mr. Hanbury Thomas, general manager and secretary, Gasworks, Commercial Street, Sheffield.

SHOREDITCH, E.C.—March 4.—For erection of four small blocks of artisans' dwellings on Plumber's Place area, City Road, E.C. Mr. H. Mansfield Robinson, town clerk, Town Hall, Shoreditch.

SKIPTON.—Feb. 18.—For additions and alterations to residence, new stabling and carriage-house, &c. Mr. James Hartley, architect, Swadford Chambers, Skipton.

SOMERSET.—Feb. 20.—For reconstruction of sections of retaining walls on the Bath New Road, Radstock. Mr. Geo. H. Gibson, surveyor, Radstock, Bath.

SOUTHEND-ON-SEA.—Feb. 19.—For erection of a chapel in the borough cemetery, Sutton Road. Mr. S. I. Adams, architect, Weston Chambers, Weston Road, Southend.

SOWERBY BRIDGE.—Feb. 26.—For erection of a three-storey block of offices, smithy, fitting shop, shed and other works at Bank Foundry, Sowerby Bridge, Yorks. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

STAFFORD.—Feb. 18.—For erection of an isolation hospital at the county asylum, Stafford, and for raising of the boundary wall next Crooked Bridge Road and erection of a shelter in one of the airing courts. Mr. Walter H. Cheadle, architect, Stafford.

STAMFORD.—Feb. 17.—For erection of an engine-house, cottage and outbuildings thereto, in Albert Road. Mr. J. B. Everard, engineer, 6 Millstone Lane, Leicester.

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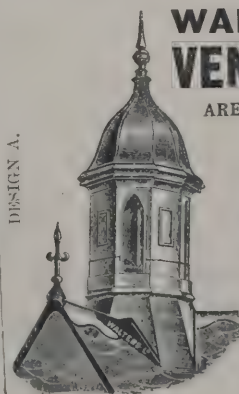
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**SUNDERLAND.**—Feb. 28.—For supply of workshop tools at the Hylton Road station. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**SUTTON VENY.**—For alterations and additions at Church farm, Sutton Veny, Wiltshire. Mr. Hans F. Price, architect, Weston-super-Mare.

**TODMORDEN.**—Feb. 17.—For stripping and resheeting of one 80-feet telescopic double-lift gasholder. Mr. Henry Hawkins, Town Hall, Todmorden.

**TOTNES.**—For pulling-down and rebuilding the King William IV. hotel, Totnes. Messrs. Starkey, Knight & Ford, Ltd., Brewery, Paignton, Devon.

**TOOTING GRAVENEY.**—Feb. 26.—For repairing, draining and ventilating certain subways at the Grove hospital. Mr. T. Duncombe Mann, clerk to Metropolitan Asylums Board, Embankment, E.C.

**WALES.**—For erection of four houses, Pontnewynydd. Mr. Geo. H. Daniel, Clarence Chambers, Pontypool.

**WALES.**—For construction of a reservoir embankment, &c., at Ysceifiog, near Mold. Mr. T. B. Farrington, engineer, Trinity Square, Llandudno.

**WALES.**—For alterations and additions to Shirenewton Hall, Chepstow. Messrs. Newland, Davis & Hunt, architects, 19 Commercial Street, Newport, Mon.

**WALES.**—Feb. 17.—For erection of twenty-four cottages at Abertillery, Mon. Mr. Geo. C. Willard, architect, Market Chambers, Abertillery.

**WALES.**—Feb. 17.—For erection of school at Bargoed. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

**WALES.**—Feb. 18.—For erection of an ammonia still, capable of extracting all the ammonia from three or four tons of liquor per 24 hours. Mr. John Smith, engineer and manager, Gasworks, Bangor, North Wales.

**WALES.**—Feb. 20.—For erection of a public reading-room at Abercanaid, Merthyr Tydfil. Mr. T. Aneuryn Rees, clerk to Urban District Council, Town Hall, Merthyr Tydfil.

**WALES.**—Feb. 20.—For rebuilding the Treivor Arms, Penywn, Dowlais, and the Narrow Gauge inn, Merthyr. Messrs. D. Williams & Co., Taff Vale Brewery, Merthyr.

**WALES.**—Feb. 21.—For erection of schoolroom, alteration to chapel, and new joinery at the Primitive Methodist chapel,

Garnfach, Nantyglo. Rev. S. Bryant, Worcester Street East, Brynmawr.

**WALES.**—Feb. 21.—For extending the Abereistedd sewer outfall about 92 feet or thereabouts, and supplying and laying down a length of  $\frac{3}{4}$ -inch and 2-inch galvanised iron pipes, building brick tank, providing street-watering post and fixing urinal, and for providing and fixing seven ventilating columns, &c. Mr. Morris Williams, surveyor, Criccieth.

**WALES.**—Feb. 22.—For erecting increased accommodation at the Tynwydd Board school, Ogmere Vale, for 390 children. Mr. T. J. Thomas, architect, Bridgend.

**WALES.**—Feb. 22.—For erection of a Wesleyan chapel at Pontardawe. Mr. W. W. Williams, 63 Wind Street, Swansea.

**WALES.**—Feb. 24.—For alterations and extensions to St. Peter's Roman Catholic school, Cardiff. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

**WALES.**—Feb. 26.—For erection of a minister's house, Blaenannerch. Mr. Richard Evans, Crynga Mawr.

**WALES.**—March 1.—For improvements to cottage adjoining Zoar Baptist chapel at Pandy. Mr. Edwin Foster, architect, Bella Vista, Abergavenny.

**WALES.**—March 4.—For converting the Penrhiwceiber (Mountain Ash) footbridge into a bridge for vehicular traffic. Mr. John Williams, surveyor, Town Hall, Mountain Ash.

**WALTHAMSTOW.**—Feb. 25.—For erection of a committee-room at the Walthamstow parochial cemetery, Queen's Road. Mr. G. W. Holmes, engineer, Town Hall, Walthamstow.

**WHILTON.**—March 3.—For rebuilding Whilton (Western) Bridge and part rebuilding and widening of Whilton (Eastern) Bridge, Northamptonshire. Mr. C. S. Morris, county surveyor, County Hall, Northampton.

**WHITBY.**—Feb. 17.—For excavating and concrete to foundations of gasholder tank, and construction of steel tank 102 feet diameter, 20 feet 9 inches deep, and single-lift holder with guide framing. Messrs. Thomas Newbigging & Son, engineers, 5 Norfolk Street, Manchester.

**WHITEHAVEN.**—Feb. 17.—For pulling-down and rebuilding 111 Duke Street, and thoroughly overhauling the exterior of the present baths and washhouses in Duke Street, &c. Mr. Thomas Brown, town clerk, Town Hall, Whitehaven.

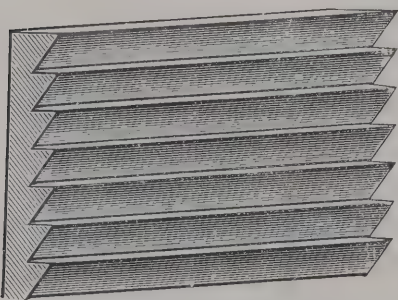
**WILLENHALL.**—Feb. 22.—For rebuilding and widening of Morfital Lane Brook bridge, Willenhall, Staffs. Mr. T. Edgar Fellows, surveyor, Town Hall, Willenhall.

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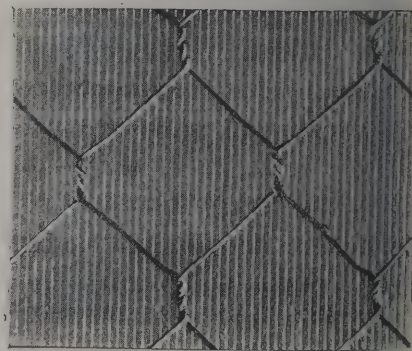
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WRENHAM.—Feb 18—For reconstruction of the main  
ern lights along the roof of the butchers' market, &c, and  
construction of market sanitary arrangements and conveni-  
ces. Mr. Thomas Bury, town clerk, Guildhall.

TENDERS.

ALTON.

For erection of new cells and cubicles at the police-station,  
Alton, Hants. Mr. W. J. TAYLOR, county surveyor, Win-  
chester.  
W. H. Tigwell . . . . . £1,074 0 0  
Martin, Wells & Co. . . . . 1,030 0 0  
G. Jackson . . . . . 1,010 0 0  
Tompsett & Co. . . . . 998 10 0  
MUSSELLWHITE & SON, Basingstoke (accepted) 911 0 0

BECKENHAM.

For street works in Bevington Road and Warwick Road,  
Beckenham. Mr. JOHN A. ANGELL, surveyor.  
Bevington Road.  
Fry Bros. . . . . £497 13 6  
W. Pearce . . . . . 482 10 10  
Mowlem & Co. . . . . 471 0 0  
H. S. Crouch \* . . . . 465 11 3  
Warwick Road.  
Fry Bros. . . . . 709 14 0  
W. Pearce . . . . . 704 1 0  
Mowlem & Co.\* . . . . 681 0 0  
H. S. Crouch . . . . . 679 15 10  
\* Recommended for acceptance.

BURY (LANCS).

For construction of about 630 lineal yards of brick sewer,  
3 feet 6 inches internal diameter, with manhole, &c, from  
Warth Fold to Starkies.  
J. BYROM, Woolfold, Bury (accepted).  
For erection of a central tramway depôt in Rochdale Road,  
Bury, Lancs.  
J. BYROM, Woolfold, Bury (accepted).  
For erection of gas offices and showrooms in Broad Street,  
Bury, Lancs.  
J. BYROM, Woolfold, Bury (accepted).

CHELM-F. RD.

For installation of a borehole pump at the water-works pump-  
ing station at Ingatestone Mr. JAMES DEWHIRST,  
engineer, Avenue Chambers, Chelmsford.  
Mather & Platt . . . . . £500 0 0  
G. Waller & Co. . . . . 490 0 0  
R. Warner & Co. . . . . 480 0 0  
T. Matthews . . . . . 479 0 0  
Glenfield & Kennedy . . . . . 430 0 0  
A. Goodwin & Son . . . . . 427 0 0  
A. Potter & Co. . . . . 390 0 0  
LE GRAND & SUTCLIFF, Bunhill Row, London  
(accepted). . . . . 360 0 0  
Richards & Co. . . . . 325 0 0  
J. Thom . . . . . 253 0 0  
E. Timmins & Sons, Ltd. . . . . 245 0 0

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ham (accepted).

CLECKHEATON.

For erection of a warehouse at Clarence Mills, Cleckheaton,  
Yorks. Messrs. THOMAS BARKER & SON, architects,  
5 Bank Street, Bradford.  
Accepted tenders.  
Hirst & Son, mason.  
J. Burnhill & Son, carpenter and joiner.  
Taylor & Parsons, iron and steelwork.  
J. Roberts, slater.  
H. H. Bentley, plumber and glazier.  
Idle & Barber, plasterer and concreter.  
W. Drake, painter.  
Total, £3,497.

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R. Grave & Sons, joiner.  
Fisher & Co., plumber.  
Boyd & Sons, painter, &c.

**DAGENHAM.**

For erection of twenty loose boxes and alteration and additions to stand and enclosures, Parsloes Park, Dagenham.  
Mr. J. M. H. GLADWELL, architect, Boston House, 63 and 64 New Broad Street, E.C.

W. Cooper, Ltd.	£834	0	0
A. E. Symes	645	10	0
C. G. Finegan	613	10	0
F. Smith & Co.	605	0	0
Croggon & Co. (stabling only)	437	10	0

**DARLINGTON.**

For erection of a pair of semi-detached cottages at the Corporation farm.

*Accepted tenders.*

W. Robinson, excavator, bricklayer, stonemason and plasterer	£335	10	0
J. H. Stephenson, carpenter and joiner	163	2	0
Wharton Bros, slater	59	10	10
T. Armistead, plumber and glazier	52	0	0
W. Hornby, painter	12	6	8

**DUDLEY.**

For erection of a dwarf boundary wall and entrance gates piers at the new cemetery, Stourbridge Road.

OAKLEY & COULSON (*accepted*).

For sewerage works in two new streets off the Buffery Road, and street works in Hill Street, off Peel Street, Dudley.

W. WESTWOOD, Worcester (*accepted*).**DURHAM.**

For shop-fittings for new shops, &amp;c., Annfield Plain. Mr. GEO. THOS. WILSON, architect, 121 Durham Road, Blackhill.

J. MADDESOR, Medomsley Road, Consett (*accepted*) .£273 10 0**EAST MOLESEY.**

For alterations and additions to Langton House. Mr. D.

ANDREW, architect, Bridge Road, East Molesey.

B. E. Nightingale	£695	0
E. Petit	565	0
Highby & Robson	528	0
R. Atkinson	521	0
E. Chamberlin	518	0

**EDBURTON.**

For alterations and additions to The Grange, Fulking Hill, Edburton, Sussex. Mr. FRANCIS J. C. MAY, borough surveyor, Town Hall, Brighton.

W. A. FIELD & CO., Brighton (*accepted*) .£1,524 0**FULHAM.**

For supply of transformers, mains, conduits, lamp-posts, street boxes. Mr. R. M. PRESCOTT, town clerk, Town Hall, Walham Green, S.W.

BRITISH INSULATED WIRE CO. (*accepted*) .£27,689 8**GUILDFORD.**

For street works in Stoughton Lane, Stoke-next-Guildford. Mr. JOHN ANSTEE, surveyor.

W. Coker	£2,753	8
A. C. Soan	2,323	16
G. A. Franks	2,322	18
E. H. King	2,307	18
Mitchell Bros.	2,208	10
A. & A. Streeter & Todhunter	2,137	18
W. NORRIS, Hale, Farnham ( <i>accepted</i> )	1,997	0

**HASTINGS.**

For erection of galleries in the electric light station, East Street. Mr. P. H. PALMER, borough engineer.

J. HARVEY, St. Leonards-on-Sea, (*accepted*).**HESSLE.**

For erection of a pair of semi-detached villas at Hessle, Hull. Mr. A. T. MARTINDALE, architect, 66 Wellington Road, Bridlington.

*Accepted tenders.*

Hill & Stephenson, Hull, bricklayer, plasterer and joiner	£1,021	0
Lawson, Hull, plumber	120	0
F. W. Rudeforth, Scarborough, slater	62	0
Stainforth Bros., Hull, painter	26	0
J. F. Brown, Hessle, mason	25	10

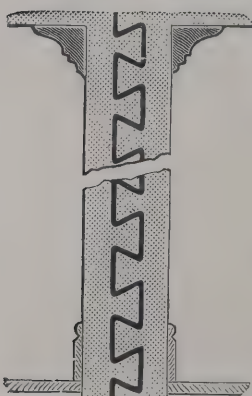
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by Mr WM. E. GILL.

J. & J. Coates	£2,080	0	0
D. Diggle	2,050	0	0
Blakeley & Wild	1,930	0	0
W. Henderson	1,900	0	0
J. Twelves	1,870	0	0
J. Poole	1,855	0	0
Thompson & Brierley	1,813	0	0
Endersby & Mutch	1,799	0	0
W. Cryer	1,784	0	0
J. Berry	1,745	0	0
W. A. PETERS & SONS, Rochdale (accepted)	1,725	0	0

HULL.

erection of new central police-station for the Corporation.			
G. Longden & Sons	£23,750	0	0
F. Sweeting	22,953	0	0
F. Southern	22,492	13	2
F. Blackburn & Son	22,099	0	0
E. Good & Son	22,014	14	1
T. Goates	21,159	0	0
M. Harper	20,974	0	0
J. T. Levitt	20,852	0	0
BOWMAN & SON (accepted)	20,769	0	0

erection of the new police station at the corner of  
Parliament and Alfred Gelder Streets.  
BOWMAN & SON, Hull (accepted) . . . £20,769 0 0

IPSWICH.

construction of concrete quay at Shotley, near Ipswich.			
Mr. THOS. MILLER, engineer, Ipswich.			
W. E. French	£1,110	0	0
G. Double	1,019	0	0
J. Moran & Son	936	0	0
F. Bennett	888	0	0

HUNSLET.

For electrical equipment of new workhouse and infirmary at  
Rothwell Haigh, near Leeds. Contract No 1 comprises  
electric-lighting plant, combined engine and dynamos,  
booster, motor, storage-cells and switchboard. Contract  
No. 2 comprises complete system of wiring and under-  
ground mains for the electric lighting of the various build-  
ings, wiring for electrical clocks and the supply and wiring  
of electric telephones.

Accepted tenders.

Contract No. 1.			
Greenwood & Batley, Ltd, Leeds	£1,647	6	0
Contract No. 2.			
W. B. Parker, Bond Street, Leeds	1,455	19	0

IRELAND.

For boring and sinking a well at Darkley, and boring and  
sinking a well at Allistragh, Armagh  
J. HENDERSON & SONS, LTD., General Terminus, Paisley  
Road Toll, Glasgow (accepted).

For erection of a teachers' residence at Lisnaskea.

W. Cowan	£296	10	0
J. BLOOMFIELD, Brookborough (accepted)	295	0	0

KETTERING.

For supply of granite and slag.

Accepted tenders.

Ellis & Everard, Enderby & Co., and Groby Granite Co., granite.			
Kettering Iron Co., slag.			

LEEDS.

For erection of four houses and shops, including post-office, in  
Church Lane. Messrs. T. A. BUTTERY & S. B. BIRDS,  
architects, Exchange Buildings, Queen Street, Morley.

Accepted tenders.

J. W. Banks & Sons, Clough Street, Morley, joiner	£169	0	0
J. Brayshaw, Hudley Terrace, Leopold Street, Leeds, mason labour only	150	0	0
J. W. Banks & Sons, slater.	42	0	0
A. Fawcett, Peel Street, Morley, plumber	25	10	0
E. Wilson, Westfield Road, Morley, plasterer	15	2	4

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**LEEDS.**—*continued.*

For erection of additional buildings at the City Hospital at Seacroft.

*Accepted tenders.**General contract.*

H. Arnold & Sons, Leeds and Doncaster . £179,809 0 0

*Plumbingwork.*

H. Braithwaite & Co, Leeds . . . . . 18,700 0 0

**LEWISHAM.**

For road works.

*Paving De Frene Road.*

Fry Bros. . . . . £435 0 0

*Brockley Grove (part 2).*

Fry Bros. . . . . 283 0 0

*Crofton Park Road (part 2).*

Fry Bros. . . . . 969 0 0

**LONDON.**

For installation of electric light in the Poplar Town Hall and Bow and Bromley Vestry Hall.

Ryan & Co. . . . . £826 18 3

Tamplin & Makovski, Ltd. . . . . 794 12 8

Haselgrove . . . . . 770 2 6

P. W. Fellows . . . . . 758 15 0

C. Peacock & Co. . . . . 718 9 6

A. W. Penrose & Co. . . . . 642 9 3

W. H. Marshall & Co. . . . . 530 0 0

Jackson Bros. . . . . 499 2 6

Werton & Co. . . . . 466 0 0

Barlow, Bros. & Co. . . . . 459 0 0

Johnson & Phillips . . . . . 405 14 0

W. SIMMONS, 134 The Grove, Stratford, E. (accepted) . . . . . 398 5 6

**MIRFIELD.**

For widening of the main road at Snakehill, Mirfield, Yorks.

Mr. F. H. HARE, surveyor.

Hill & White . . . . . £826 0 0

J. W. Blackburn . . . . . 793 15 2

J. W. Schofield . . . . . 791 13 6

W. & P. MILNER, Mirfield (accepted) . . . . . 777 5 8

**MARPLE.**

For erection of National schools. Messrs. JAMES HUNSONS, architects, 4 Warren Street, Stockport.

R Neill & Sons . . . . . £2,500

R Partington & Son . . . . . 2,500

J. T. Pott . . . . . 2,342

W. C. Broadhurst & Co. . . . . 2,300

J. Broadhurst . . . . . 2,290

J. Briggs . . . . . 2,220

D. Eadie . . . . . 2,178

M. Lane . . . . . 2,150

S. ROBINSON & SONS, Hyde (accepted) . . . . . 2,119

**MARLBOROUGH.**

For providing and laying about 25 yards of 12-inch cast-iron sewer, and construction of cast-iron storage tank, screening chamber, engine-house and pump well, together with the duplicate gas-engines and pumps and all accessories; also for the construction of septic tanks in duplicate, eight bacterial filters, and laying-out the land necessary for filtration, &c. Messrs. FAIRBANK & SONS, engineers, 13 Lendal, York.

J. Coker . . . . . £8,812

Playfair & Toole . . . . . 8,444

Johnson Bros. . . . . 7,074

A. Wills & Sons . . . . . 6,720

T. Pedrette . . . . . 6,516

J. Jackson . . . . . 5,993

H. Tyson . . . . . 5,958

Grisenthwaite & Newton . . . . . 5,943

G. BELL, Tottenham (accepted) . . . . . 5,513

**NANTWICH.**

For erection of a technical institute in Beam Street. Mr. C. DAVENPORT, architect.

J. Williams . . . . . £2,696

H. Price . . . . . 2,628

Cox & Vaughan . . . . . 2,530

J. Stringer . . . . . 2,468

Micklewright & Sons . . . . . 2,436

Stretton & Gibson . . . . . 2,405

J. Morley . . . . . 2,402

S. Manley . . . . . 2,315

Birchall Bros. . . . . 2,296

F. MATTHEWS, Nantwich (accepted) . . . . . 2,195

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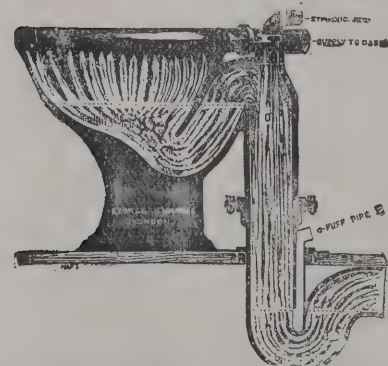
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This Closet has been adopted in Windsor Castle, Buckingham Palace, the residence of the Marquis of Salisbury, the Surveyors' Institute and Institution of Civil Engineers, Westminster Hotel Cecil, Broadmoor and Hanwell Asylums, the various Railway Stations, and public and private Buildings of all kinds.



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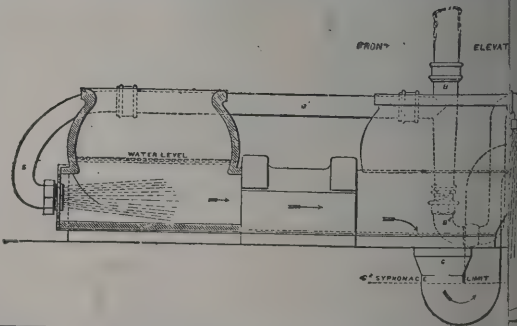
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MUNDESLEY.

Construction of about 1½ miles of brick and stoneware pipe  
sewers, manholes, ventilating shafts and other works in  
connection with the sewage of Mundesley. Mr. T. INGLIS  
GOLDIE, engineer, Bank Plain, Norwich.

Rackham . . . . .	£4,999	0	0
3lyth . . . . .	4,456	0	0
Case Sea Defence Syndicate . . . . .	4,114	8	7
& T. Binns . . . . .	4,096	14	0
Burgoyne & Son . . . . .	4,094	5	2
3 Cooke & Co. . . . .	4,060	0	0
Hipperson . . . . .	3,955	0	0
Johnson & Langley . . . . .	3,936	18	5
Lock & Andrews . . . . .	3,694	0	0
BRADSHAW & CO, 52 Queen Victoria Street, London (accepted) . . . . .	3,647	0	0

NEWBIGGIN-BY-SEA.

Erection of sixteen cottages Messrs. BOOLDS & HARDY,  
architects, Morpeth. Quantities by architects.  
GIBSON BROS., Newbiggin (accepted) . . . . . £2,376 0 0

Note.—Eight other tenders.

NORWICH.

Erection of a picture gallery at the Castle Museum. Mr.  
ARTHUR E. COLLINS, city engineer.

G. E. Hawes . . . . .	£1,578	0	0
Chapman & Son . . . . .	1,538	0	0
Downing . . . . .	1,526	0	0
Gill . . . . .	1,494	0	0
S. Smith, Norwich* . . . . .	1,454	10	0

\* Recommended for acceptance.

NOTTINGHAM.

For erection of a pair of semi-detached villas on Sherwood  
Rise. Messrs. COLLYER & SLATER, architects, 8 Bridle-  
smith Gate, Nottingham. Quantities by architects.

A. B. Clarke . . . . .	£1,200	0	0
J. Hutchinson & Son . . . . .	1,150	0	0
T. Cuthbert . . . . .	1,140	0	0
S. Parnell . . . . .	1,120	0	0
G. T. Lovett . . . . .	1,100	0	0
T. Long . . . . .	1,050	0	0
A. T. Key . . . . .	1,033	0	0
W. Appleby . . . . .	1,020	0	0
W. Maule . . . . .	1,015	0	0
T. WHITTAKER, Nottingham (accepted) . . . . .	1,010	0	0

Note.—Plumbing, electric lighting and painting will be let  
separately.

SCOTLAND.

For the construction of bacteria beds, &c., at Crossgates,  
Dunfermline. Mr. DAVID MACKENZIE, master of works,  
County Buildings, Dunfermline.

Moir Bros. . . . .	£2,125	14	11
W. B. Street . . . . .	1,799	10	0
Street Bros., Ltd. . . . .	1,694	9	9
J. Martin . . . . .	1,421	14	9
G. Dick . . . . .	1,415	13	5
Brown Bros. . . . .	1,323	13	2
J. Miller & Sons . . . . .	1,275	8	2
Bald & Templeman . . . . .	1,244	5	2

Adams's Patent Sewage Co., Ltd., patent  
automatic bacteria bed apparatus . . . . . 204 16 0

Consideration of tenders referred to the public health  
committee.

For reconstructing tramways in Holborn Street and King  
Street, and for strengthening rail joints and equipping for  
electric traction existing lines in Holborn Street, King  
Street, Albyn Place, Queen's Road, Fountainhall Road,  
&c, Aberdeen. Mr. WM. DYACK, burgh surveyor.

Accepted tenders.

J. McAdam & Sons, sections 1, 2 and 4 . . . . .	£11,927	18	11
P. Tawse, section 3 . . . . .	1,499	19	1

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## SNARESBROOK.

For alterations to the Cuckfield hotel. Mr. J. M. H. GLADWELL, architect, Boston House, 63 and 64 New Broad Street, E.C.

H. Evans Jones & Co.	£537	0	0
A. Webb	489	0	0
A. E. Symes	445	0	0

## SOUTHAMPTON.

For supply, delivery and fixing of engine-bed stones and stone flooring at the Otterbourne waterworks.

Coston & Co.	£306	0	0
Jenkins & Sons, Ltd.	225	0	0
F. Osman	224	12	0
H. Stevens & Co.	210	0	0
Exors. of W. Franklin	200	4	4
GARRET & HAYSOM, Southampton (accepted)	151	11	3
Forest of Dean Stone Firms, Ltd.*	142	17	4

\* Subject to Forest of Dean stone being substituted for Portland stone.

## ST. GEORGE'S-IN-THE-EAST.

For sanitary works at the infirmary.

R. P. Beattie	£4,369	0	0
H. Wall & Co.	3,796	0	0
M. Calnan & Sons	3,635	0	0
Strange & Sons	3,587	0	0
Hampton & Sons	3,520	0	0
Durbin & Catesmark	3,093	0	0
B. Finch & Co.	3,000	0	0
B. E. Nightingale	2,996	0	0
Vigor & Co.	2,960	0	0
H. C. Horswill	2,890	0	0
F. & T. Thorne	2,710	0	0
J. GIBBS, Cable Street (accepted)	2,685	0	0
Doulton & Co.	2,650	0	0
W. Pearson	2,617	0	0
W. & T. Cooper	2,578	0	0
A. E. Innes	2,560	0	0

## SURREY.

For erection of a small house in Dorset Road, Merton Park. Mr. H. G. QUARTERMAIN, M.S.A., architect.

BURGES & SONS, Wimbledon (accepted)	£985	0	0
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## SWINDON.

For supply, delivery and erection at the electricity works Swindon, of three Lancashire boilers and economisers, jet condensers, feed pumps, pipework and accessories, water-cooling tower, 10-ton overhead travelling crane.

Accepted tenders.

Boilers, economisers, &c.

J. Carter & Sons, Stalybridge	£6,667
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Water-cooler.

Couper, Schwarz & Co., Liverpool	535
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Travelling crane.

Carrick & Ritchie, Edinburgh	235
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## TULSE HILL.

For finishing two partly-erected houses near station. SADGROVE, architect, 22 Surrey Street, Strand, W.C.

J. Westbrook	£2,450
C. Wheeler	2,300
F. A. Moat	2,250
Truett & Steel	2,193
W. Read	2,136
F. & W. Pearce	2,030
A. Faulds	1,968
G. LAWRENCE, Catford, S.E. (accepted)	1,725
C. Watts	1,700

## WALES.

For (Contract No. 1) construction of roads, footpaths, sewers, and the erection of boundary walls, gates, &c. (2) erection of buildings, comprising administrative block, fever wards block, isolation wards block and laundry block in connection with the infectious diseases hospital at Llandough, Penarth. Mr. EDGAR I. EVANS, surveyor, Arcade Buildings, Penarth.

Contract No. 1.

C. Beame & Nephew	£2,262
J. Allan	2,108
E. R. Evans Bros.	1,917
J. Jones & Sons	1,875
T. Rees	1,851
J. E. Evans	1,769
B. T. Pomeroy	1,733
D. G. Price	1,690
J. Prout	1,634
W. Britton	1,572
T. BEVAN, Albert Road (accepted)	1,443



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or street works in High Street from Salem Lane to St John Street. Mr. E. SHARMAN, surveyor, Market Square, Wellingborough.  
W. STEVENS, Wellingborough (accepted), 3s. 7½d. per yard super.

WORTLEY.

or erection of a lodge to Wortley cemetery, Leeds. Mr. FREDK. W. RHODES, architect, Upper Wortley, Leeds.  
*Accepted tenders.*  
H. B. Wain, Wortley, brick and stone . . . £58 10 0  
F. O. Farrell, Wortley, joiner . . . 22 7 0  
J. H. Brook, Armley, plasterer . . . 9 0 0  
J. Hoyle, Wortley, plumber . . . 2 10 6

TRADE NOTES.


HE Isolation Hospital, Maidenhead, is being warmed and ventilated by means of Shorland's patent Manchester stoves, supplied by Messrs. E. H. Shorland and Brother, of Manchester.  
HUTCHESONTOWN Congregational church, Glasgow, now course of erection, is being ventilated by means of Mackay's tent direct-acting ventilators and air inlet panels, supplied Messrs. Cousland & Mackay, ventilating engineers, Glasgow and Manchester.  
At a Newlyn (Penzance) Council meeting held February 4, 1902, several consulting engineers having been considered, Messrs. Merryweather & Sons, of London, were selected to prepare a scheme and plans in connection with the proposed water supply.  
THE Hôtel Cecil extension works are now practically completed and ready for occupation, and in view of the influx of visitors which may be expected in connection with the coronation festivities, it is worthy of note that all the sanitary arrangements and fittings have been carried out by the eminent firm of G. Jennings, Ltd., of Lambeth, in their best manner, a fact which should give confidence to intending visitors as to the sanitary condition of the building.  
MR. G. M. MANSELL, of the Blackfriars Art Metal and Casting Works, Manchester, announces that owing to the rapid increase in his business, which comprises prismatic

pavement lights, staircases, revolving shutters and patent collapsible gates, he has been compelled to largely increase his works, which, in fact, he has now doubled, so that he has every facility for executing orders with the greatest despatch. The following are among the buildings for which he has orders in hand:—Grand Hotel, Llandudno; Grand Hotel, Scarborough; Hôtel St. George, Liverpool; Owen Owens, Liverpool; Post Office Arcade, Liverpool; Walton Schools, Liverpool; Royal Insurance, Liverpool; new shops, Berry Street, Liverpool; Economic Assurance, Manchester; Manchester and Liverpool District Bank (five branches); Union Bank (five branches); Manchester and County Bank; Manchester Race Course.

BUILDING AND BUILDERS.

THE Local Government Board have sanctioned a loan of 1,600l for the purposes of Sandsend (Whitby) sewerage scheme.  
TENDERS have just been invited by the Corporation of West Bromwich for laying down, &c., twelve miles of tramways. The cost, including buildings, is estimated at 128,500l.  
A NEW mission-hall and Sunday school which have been erected in connection with St. Cuthbert's, Everton, Liverpool, at a cost of about 2,600l., was opened on the 6th inst.  
THE extensive scheme of water supply for Barnsley is rapidly approaching completion; 170,000l. has already been expended, but it is estimated that it will cost another 130,000l. to complete the work.  
IT is intended to build a new police-station for Bedale, Yorks. A site has been selected nearly opposite the Greyhound inn at Askew, where the standing joint committee propose to erect a house for the resident inspector with police-station attached. This improvement has been long needed.  
SOME large works are about to be put in hand by the Corporation of Ripon. Additional waterworks are to be built at a cost of 30,000l. Street improvements are to be made at a cost of 3,500l. Public abattoirs are to be erected at a cost of 1,500l., and several other works are contemplated.  
THE plans received in the recent architectural competition for a set of baths at the junction of Broad Lane and Calverley Lane, Bramley, have been on view during this week in the Central Court at the City Art Gallery. The premiums were awarded to competitors as follows:—(1) Mr J. Lane Fox, East

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Parade; (2) Mr. William Bakewell, Park Square; and (3) Messrs. Dixon & Hill, Park Lane.

IN our account published on the 31st ult. of the opening of the Bermondsey Electricity Works, we described the destructor as consisting of six cells and capable of destroying 50 tons of refuse in 24 hours. We are asked by Messrs. Hughes & Stirling, the builders of the destructor in question, which is known as the "Stirling" Refuse Destructor, to make the following correction, *i.e.* that "each cell is capable of easily destroying 15 tons of refuse per day of 24 hours, making a total of 90 tons per day," a request with which we gladly comply.

IN response to the invitation to arbitrate between the masters and men in the building trade dispute at Maidstone, the Board of Trade has written to Mr. M. L. Crow, secretary to the Master Builders' Association, and to Mr. W. H. Oram, secretary to the Allied Trades, intimating that it has appointed Mr. G. R. Askwith, barrister-at-law, of 2 Pump Court, E.C., to act as arbitrator. The secretaries are now in communication with him as to the date and place of the meeting; it is expected that the arbitration will be held in Maidstone.

THE managers of St. Ann's Roman Catholic schools—which are to be pulled down along with the cathedral in pursuance of the street improvement scheme which the Leeds Corporation are carrying out at the junction of Park Row and Cookridge Street—have secured a convenient site for the new schools. These will be erected in Woodhouse Square, where some 2,000 yards of land have been purchased at a cost of 1,800*l.* Building will be commenced shortly, and it is calculated that several thousands of pounds will be spent on the schools. The architect who has designed the new cathedral, Mr. Eastwood, of Cheniston Gardens, London, has also drawn the plans for the schools.

THE directors of the North-Eastern Railway Company have invited tenders for the erection of twenty-four houses for their servants in a field near the Bellendean Road, in close proximity to Tweedmouth station. The houses will be built in two rows—one of thirteen houses and the other of eleven. They will each contain five apartments—a kitchen, front room downstairs, with three bedrooms upstairs. All the houses will be provided with a pantry, wash-houses, gas and water. They will be constructed of brick, and will have a pleasant view overlooking Spittal and the mouth of the Tweed. Applications have already been received from the servants of the company for the occupation of the houses. A large signal cabin

has just been erected at Tweedmouth station for the working of the points, and a new turn-table is being made.

ACCORDING to the latest trimestrial report just issued by the Amalgamated Society of Carpenters and Joiners, the income of the society during the three months dealt with was 1,071*l.* 9*s.* 3*d.*, which, added to the previous balance, gives a total of 1,532*l.* 12*s.* 6*d.* The total disbursements were 499*l.* 16*s.* 1*d.*, and the balance at the end of the year was 1,032*l.* 16*s.* 4*d.* In his remarks Mr. F. Chandler, general secretary, says wages questions continue to cause trouble in different districts, in spite of the resolution of the National Federation of Building Trade Employers, which recommends the removal of restrictions on labour, the limitation of apprentices and interference with business management as subjects of more pressing importance than reductions of wages. Reports from Scottish branches referring to the end of January nearly all state that trade was dull.

AT the last meeting of the Birkenhead School Board, plans of Mr. Thomas W. Cubbon, architect, of Birkenhead, were adopted for an important block of educational buildings, including a pupil teachers' college and two higher elementary schools for 300 boys and 300 girls respectively. The teachers' college has accommodation for about 150 students, consists of the usual science and other classrooms, also an examination hall, library, dining-room, &c. The higher elementary schools are planned according to the regulations of the new Minute of the Board of Education, and include, in addition to ordinary classrooms, central chemical and physical laboratory, drawing classroom, gymnasium. The boys' school also includes manual-room, the girls' school cookery and laundry accommodation. The site is in a commanding central position adjoining the General Post Office, and has cost 6,000*l.* The whole block of buildings is expected to cost about 30,000*l.*

### ELECTRIC NOTES.

THE directors of the Electric-Lighting Boards (E.L.B.) Manufacturing Company, in answer to the numerous communications they have received, ask us to announce that inquiries, correspondence, &c. should be addressed to the head office, No. 7 Pall Mall, S.W., and directed to the company rather than to individuals.



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Members of the Dublin lighting committee appointed coming year paid a visit of inspection on Monday to the new electric-lighting works at the Pigeon House. Members of the committee present were:—The Right Hon. Lord Mayor, the chairman (Councillor Irwin, J.P.), Mr. Lord Dodd (deputy chairman), Alderman O'Reilly, Mr. Lord Dowd, Councillor Booker, Councillor Begg and Mr. Lord Leahy. They were accompanied by Sir Thomas Martineau, J.P., Mr. John Clancy, T.C., Mr. Robert Hammond (building engineer), Mr. W. Stewart, building contractor, Mr. Spencer Harty (city engineer), Mr. Henry Campbell (clerk), Mr. E. W. Eyre (city treasurer), Mr. Ruddle (chief electrical engineer), Mr. Collard, Mr. Lewis and Mr. Ellicott (Mr. Hammond's assistants in office), Mr. D. O'Sullivan and Mr. F. J. Allan (secretary). On the full inspection of the building works, the progress of which the committee expressed satisfaction at, Councillor Irwin, on behalf of the lighting committee, called upon the Lord Mayor to lay the corner-stone of the engine-house. The Lord Mayor performed the ceremony and expressed the hope that the electric-lighting scheme would turn out the great success which all the citizens wished it. The members of the committee and the other visitors were subsequently entertained at a formal luncheon by the chairman.

### VARIETIES.

Mr. H. GARBUTT, town clerk of Marylebone, has resigned his appointment owing to failing health.

Mr. J. B. COLWILL, surveyor, 6 Alma Road, St. Albans, announces that he has taken into partnership his son, Mr. J. Gould Colwill, and that they will continue to practice as quantity surveyors at the above address under the style of Colwill & Son.

It is announced that the accident department of the Lancashire and Yorkshire Fire Insurance Company, which has been the absorption of the Equitable, been worked from the company's branch office in Manchester, is now transferred to the head office of the company at 45 Dale Street, Liverpool.

The Lambeth Borough Council have opened negotiations with a view to securing a site for a new town hall and municipal offices which, in their opinion, will be more worthy of the

borough's new-born dignity than the present structure in Kennington Road.

THE Local Government Board refuse to allow the well sunk by the parish of Bardney, Notts, to be used for a public supply. The Welton Rural District Council have consequently resolved to submit the scheme as first recommended by their engineer, Mr. J. R. Elliott, of Nottingham, for their approval. A loan of 3,000*l.* is to be applied for.

A NEW Volunteer drill hall at Twickenham was opened recently. The building, which is a substantial brick structure capable of seating six or seven hundred persons, was built partly by a grant given from the Middlesex County Council fund for the development of the Volunteer forces of the county and partly by local subscriptions.

A NEW edition of the excellent "Map of Metropolitan Railways, Tramways and Municipal Improvements," published by Mr. Edward Stanford, Long Acre, is now ready. It comprises a description of all the schemes for improvements of various kinds, the plans for which were deposited in November 1901 for consideration in the present session, and shows as well schemes which are already passed. The new boroughs are indicated in distinctive colours, which will be found very useful, and the price of the map is 6*s.*

AT Sheffield on Wednesday the design of Mr. Alfred Turner, of Stratford Studios, Kensington, for a memorial of the late Queen Victoria opposite the Sheffield town hall, was accepted by a committee, acting on the advice of the late Mr. Onslow Ford and Mr. E. W. Mountford. The memorial will cost upwards of 3,000*l.* The figure of the Queen will be in bronze on a stone pedestal. The prizes offered to competitors were won by Mr. Oliver Wheatley, of Chelsea (100*l.*), Mr. Horace Mountford, Clapham (50*l.*) and Mr. F. Lynn Jenkins, Chelsea (25*l.*).

THE first annual dinner of the Aberdeen Association of Civil Engineers was held at the Imperial Hotel, Aberdeen, on Saturday, when there was a large attendance. The chair was occupied by the president, Mr. P. M. Barnett, engineer-in-chief, Great North of Scotland Railway. After the loyal and patriotic toasts, Mr. Charles Stewart, M.A., headmaster, Robert Gordon's College, gave the toast of the evening, "The Aberdeen Association of Civil Engineers." In the formation of the Society, he said, they had been animated with the spirit of the times, and its objects were mainly educational, and their special care was that the young engineer's education might

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be kept on sound lines throughout the critical period of his life, the period on which would depend his future usefulness. Mr. J. Barron, vice-president, M.Inst.C.E., replied. He regretted that Aberdeen did not supply the education which was necessary to those entering the profession of civil engineering in respect that there was no chair of engineering in the University. However, they hoped that before the new university buildings were completed this defect would be rectified. Mr Charles Hawksley, president of the Institution of Civil Engineers, London, proposed the memory of Thomas Telford. In doing so, he referred to the great works of Telford under the conditions in which he laboured. Before sitting down Mr. Hawksley encouraged the Aberdeen Society to further and continued success, and spoke of the many excellent engineers that were Aberdonians. Other toasts followed.

### ELECTRIC FIRE ALARMS ON RAILWAYS.

IN order to prevent a recurrence of the disastrous fire which took place just before Christmas in the Dingle tunnel of the Liverpool Overhead Railway Co. the directors of that company have had the May-Oatway electric fire-alarm system installed, and for the purpose of testing this a large number of fire brigade and insurance representatives, together with commercial men, on Saturday proceeded from Pierhead to Dingle station by a special train provided by the company. The Overhead Company is the first railway concern that has adopted this system, and hence it was that those in any way connected with fire insurance or extinguishing evinced a keen interest in the result of the tests. To make these of an entirely independent character the following committee, which includes several fire insurance companies' representatives, was appointed:—Messrs. G. Bowler, Paul Lange, J. R. Grant, C.C., J. W. Marsden, E. J. Hiddin (National Telephone Company), J. W. Cowper (Westinghouse Company), R. Harrison, K. G. Walton, Perkin (Messrs. Lever Bros.), Halladay (Messrs. Rylands) and R. R. Bevis (Messrs. Laird Bros.), together with Superintendents Thomas (Liverpool fire brigade), Smith (Birkenhead) and Roberts (Bootle). There were also present Messrs. S. B. Cottrell (general manager of the Overhead Railway Company), R. C. F. Arnett (honorary secretary Liverpool Engineering Society), G. H. Oatway, &c.

The committee having examined the appliances, the whole company assembled in the Park Road booking-hall to witness

the result of the experiments. The detectors of the system were placed at various points in the tunnel, in the signal-box, the station buildings, and in case of an outbreak of fire one of these points an alarm will be automatically given only to the employés if they be on duty, but also to the fire brigade at Hatton Garden. Furthermore, on arrival at railway station the brigade will discover by means of a cator where the fire is situated, and the amount of time required to reach it. The experiments consisted of oil-saturated asbestos in one of the signal-boxes, 40 seconds set the alarm gong going; and, secondly, a similar "outbreak" in the booking hall, which again set the detector and sounded the alarm in about a minute. The system gave every satisfaction to the committee and members of the company present, and, on the proposal of Mr. Paul Lange, a cordial vote of thanks was passed. Interesting demonstrations and the kind hospitality of Mr. Cottrell and Mr. Oatway responded, and subsequently the visitors returned to Pierhead by the special train.

We understand that in consequence of the successful nature of the experiments, Messrs. Bell Brothers & Co., the well-known ship-store dealers, &c., have arranged to install their extensive premises in Redcross Street shall be fitted with a similar appliance.

### SOLIHULL NEW INFIRMARY.

THE workhouse accommodation at Solihull has been increased by the completion of the new buildings which have been lately opened. These consist of an infirmary and wards which have been built to the designs of Mr. W. G. G. architect, of Birmingham, by Messrs. W. & S. Thompson, Solihull.

The infirmary block provides accommodation for a hundred patients. The ground floor consists of two large wards, adjoining which are two separation wards with two bathrooms, lavatory and sanitary accommodation is provided on most approved modern principles. At either end of the block small special wards are provided for use in special cases requiring isolation. These wards have independent accommodation. On the first floor are two large wards, separate wards, similarly fitted up to those on the ground floor. The administration block is in the central part of the infirmary and is so arranged as to reduce labour and cost of administration.

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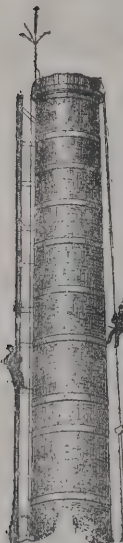
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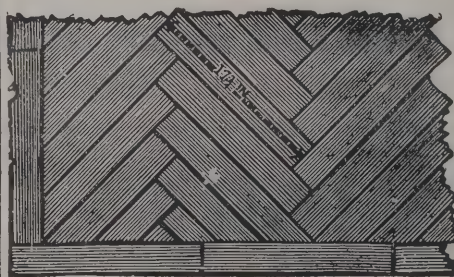
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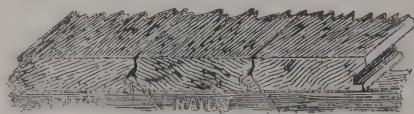
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a minimum. Connected with the infirmary building is a ward for the use of convalescents, and the maternity ward which is exceptionally well appointed. The wards are all fitted with the most modern appliances. Provision is made on the separate cell system for eight male patients, and there is immediate communication with the infirmary cells. There are also associated wards for thirty-two patients, these being subdivided and classified. On the first floor is separate cell accommodation for the female patients. The tramp master and mistress have commodious quarters, with clothes-drying and receiving-rooms and other conveniences. The work is executed in red brick, with stone dressings and brick strings, &c., the roofs being covered with tiles. The ward floors are laid with polished oak, the corridors, lobbies, lavatories and bath-rooms are covered with encaustic tiling. The wards are heated by means of gas-burnt double-fire stoves, and a steam boiler supplies all the water for radiators in the corridors, linen-rooms, &c., as well as for hot and cold-water supplies. The buildings have been erected in strict accordance with the requirements of the Local Government Board, and the cost per bed is about £100.

## ELECTRIC PASSENGER ELEVATORS.

Meeting of the Institution of Junior Engineers held at the Westminster Palace Hotel on February 7, the chairman, Mr. Marshall, presiding, a paper—"The Electric Passenger Elevator"—was read by Mr. William J. Cooper. The principal requirements of an effective electric elevator are safety, reliability, effective control, economy of space, and were divided into two clearly defined classes, having reference to (1) the winding machine in operation, while the elevator was in use with the safety devices, which were usually inactive, but had to come into play as soon as a portion of the hoisting apparatus failed or got out of order; (2) the car with its safety gear moving up and down the shaft. The chief features of an ordinary gear were the armature of the motor coupled to a worm with ball or collar bearings to take the thrust of the worm; a worm wheel submerged in an oil bath and fixed in a suitable bracket, entirely protected from dust or grit; a grooved winding drum or vee-drum fixed to the worm wheel or mounted on the same shaft.

Such machines were almost exclusively operated on the overbalance system. This had the advantage of economy of power by making the system balanced when the average load was in the car, in which case the elevator had no gravity work to perform, and resulted in the most economical type of hoisting apparatus.

The electric motor and winding machinery could be erected either at the top or at the bottom of the hoistway as desired. If fixed at the top, one face of the drum could be plumb over the centre of the car and the other face plumb over the counterbalance weight. Under special circumstances the machinery might be placed at a distance from the hoistway and the ropes guided over diverting sheaves, but it was obvious, however, that the fewer sheaves employed the less would be the wear on the ropes and loss by friction. The arrangement of placing the machinery at the top of the hoistway was particularly adapted to the electric elevator, as the current was easily conveyed by the cables to the motor and controller.

The author dwelt on the importance of an effective form of brake. It might be mechanically operated from the switch-gear shaft by the controlling rope, or be an automatic magnetic solenoid brake, the type now generally adopted. A solenoid and magnet of small dimensions could be made to give a pull of 500 to 600 lbs. through one-half inch.

To meet the severe demands of the elevator, motors of a somewhat distinct class had been introduced, constructed so as to need little attention. A comparatively small motor could be used, as in all cases the maximum load was of short duration, the motor standing idle for at least half the time. Shunt motors were self-regulating if the potential was constant, and were now almost invariably adopted, but with about 10 per cent. of series winding added on the field magnets to enable the motor to develop a powerful torque at the moment of starting.

Considerable ingenuity had been expended over the starting and controlling switches, the operation of which might be effected in various ways, either by a hand rope, a hand wheel, a lever, or by a push-button device. The controller had to perform three general functions:—

1. Make and break the current for motor, and reverse the armature circuits.
2. Cut out the starting resistance automatically, and with fixed steps.
3. Cut in the resistance for stopping and applying the brake.

The push-button controller was to be recommended for

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private houses, or places where an attendant was not required, the elevator being operated by the passenger. The machine was of the ordinary drum type, the controlling being entirely electric, and operated by simply pushing a button.

Various automatic safety devices were used in connection with the working controller or push-button switches. These devices were operated by both the car and the hoisting machine, to cut off the power and apply the brakes at the limits of the car's travel.

The safety apparatus and the bottom guide shoes were attached to the bottom of the car, which was surrounded by the girdle irons or a steel channel crown bar of special section for lightness, securely connected to the under frame by side bolts fitted with adjustable guides of gun-metal or cast-iron and movable guide sheaves for the hoisting ropes to pass over to the bottom of the car to prevent undue wear.

To guard against the car falling unretarded to the bottom of the hoistway in the event of the hoisting ropes breaking or becoming unshipped there were several types of safety gears employed, attached to the bottom or platform of the car, and arranged to operate by gripping the fixed guide posts or backings, either by the action of the compressed springs or levers, or by the combination of springs and centrifugal governor.

Reference was made to accidents arising from the insecurity of entrances to the hoistway.

An electrical locking apparatus should be fitted to all electric elevators, by which all the hoistway doors or gates would remain locked except when the car itself was in position at the landing and stationary. The opening of any door was arranged to break the main circuit of the motor, and it was impossible for the motor to be started again until the gate was shut and locked and the circuit remade.

It was shown that electric elevators of the type described were safe, reliable, easily controlled and noiseless, while economy was claimed in cost of maintenance and power used. In most towns and cities the cost of electrical energy for power purposes was between 2d and 4d. per B. O. T. unit. The first cost in many cases compared very favourably with that of hydraulic or other elevators. The electric elevator was adapted to standardisation. The whole of the hoisting gear could be kept in stock, and ready for assembling when an order was received, and the voltage, speed of travel and load known. The length of the travel did not enter into consideration so far as the driving-gear was concerned, the motor having

simply to run somewhat longer, and the increased travel was thereby attained.

In conclusion, the author pointed out that the current used in an electric elevator was in direct proportion to the number of persons or load carried, while with one, hydraulically it was necessary to fill the cylinder with water whether the load was light or heavy.

A discussion followed the reading of the paper, and of thanks having been passed to the author, the proceedings closed with the announcement of the ensuing meeting on February 22 to the new baths and washhouses at Fulham, the next meeting on March 7, when a paper on "The Engineering Models" would be read by Mr. Percival Marshall.

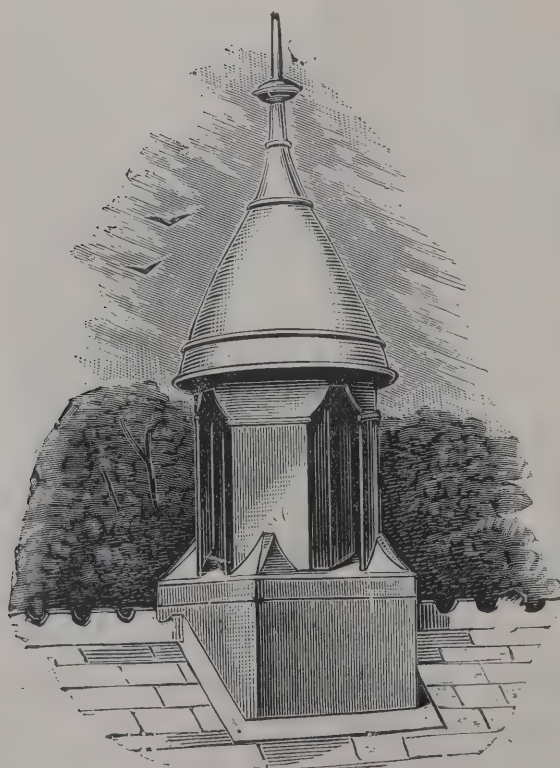
### DUBLIN MASTER BUILDERS.

THE annual dinner of the Master Builders' Association took place on Saturday evening in the Antient Concert Hall, Dublin. Mr. James Beckett, president, M.B.A., occupied the chair. There were present the Right Hon. the Lord Mayor, the President of the College of Surgeons, Mr. R. Bolton, Mr. Serjeant Dodd, Messrs. Wm. Mitchell, Maurice Dockrell, J.P.; John Good, hon. sec., Alderman Cotton, J.P.; the city architect; J. P. Murray, R.H.A.; Sir Thomas Drew, president, R.F.C. chairman of the Pembroke Urban Council (Mr. J. Perry), Sir Thomas Pile, Bart.; Messrs. Wm. Field, W. Kaye Parry, M.A., B.E.; James Martin, A. Todd, Louis Byrne, M.D.; Sir Charles Cameron, C.B.; the Sheriff, Mr. Thomas Connolly.

After dinner the President said it was now twelve years since there passed over them a great sorrow by the death of Her late gracious Majesty, Queen Victoria, who left to them a noble life as an example to him who should follow in her footsteps. Amid the general gloom of that time they met under happier auspices, and he asked them to join in a toast to the health of their gracious King Edward VII.

The company rose, and with great enthusiasm they sang the "God Save the King" which was splendidly sung by Mr. T. Cowle, J. Mayston, W. Scott and J. Kelly, and with the course of the evening sang some choice quartettes.

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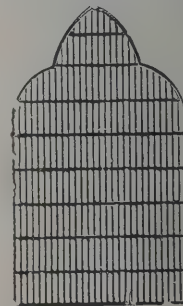
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Thomas Connolly said he had been asked to propose a toast which he was sure would be warmly received by all. It was the toast of "The Right Hon. the Lord Mayor." In no company of Dublin citizens was it necessary to say the many good qualities in the character of the Lord Mayor who had filled with great credit to himself, and with advantage to the citizens of Dublin, the high office to which he had been elected. During his occupancy of the civic chair, he had made hosts of friends. His colleagues in the office, who were the best judges of the impartial manner in which he discharged the duties of his office, re-elected him Lord Mayor, in responding, said he was aware how much the Lord Mayor had been, and rightly, associated with the interests of the city, and should naturally feel deeply interested in an Association such as theirs, on which the future of the city so much depended. He had only to complain that the Lord Mayor had turned what was really an official toast into a personal compliment to himself (the Lord Mayor). He could only accept it as a compliment to himself in so far as he had endeavoured to live up to the high traditions of the office to which he had been elected. The position of a Lord Mayor was not always an easy one, but from his experience during his past year of office, he could say that he had met persons of every class and condition in the city, and he believed they were all ready to treat him as the occupant of the civic chair, if they found him worthy of it. They might differ on political and religious questions, but he believed the higher they went in the social scale, the more they found the highest and deepest respect was accorded for the high office which he held. He shared the feelings of many of his colleagues when he said it was deeply felt by them that citizens possessed of more property and position did not take a deeper interest in the civic affairs, for they could largely afford to devote more time to manufactures and other interests of the city. Men of leisure could better afford the time to study the importance to the well-being and growth of the city, and should be ready to devote more of their time to the public interest. Differences of political opinion existed between them, and there was a deep cleavage on some of the great questions, but there was no reason why Irishmen should not unite those differences. He could not see why they should not credit for sincere convictions to those opposed to them, and work side by side on many questions where they could be united and attached to a nation of great wealth and

great resources, but unhappily for them they only came in for a small proportion.

A Voice: "Question."

The Lord Mayor said he was not going to raise any political question, or give offence to anyone present. The progress of their city should depend largely on that loyal co-operation for the common good, and putting aside certain issues they were all proud of their common country and common nation. In conclusion the Lord Mayor said he hoped that when the time should come when he would have to retire from his office he should do so without having given offence to those who differed from him.

Mr. John Good proposed "Trade and Commerce," a toast which he was sure all creeds and all classes of Irishmen would honour. The building industry was a large factor in connection with trade and commerce. It gave employment in the city to upwards of 12,000 hands, but in common with most other industries it felt that wave of competition which now seemed to be so rampant, and for which they should be prepared if they desired to withstand it. Capital should be vigilant and attentive, but unless it was backed by the efforts of labour it would be without avail. Labour in the present day should be improved in quality. They should have a higher standard of education for their mechanics so that they might be equal to those of other cities. He would couple with the toast the names of Sir Thomas Pile, of the President of the Pembroke Town Council, and of Mr. Maurice Dockrell.

Sir Thomas Pile, in responding, spoke of the connection between the Master Builders Association and the trade and commerce of Dublin. They were all, he said, proud of the buildings of the city, which were mostly designed by Irishmen and carried out by Irish hands. Within the last few years great progress had been made in the city, and he was glad to observe the friendly relations which at present existed between capital and labour in the city. He believed there was a great future before the city, and he was glad to think that technical education would enable their working men to compete with labour on the other side of the Channel. The Port and Docks Board were at present promoting a Bill in Parliament which possessed one of the greatest features of their time, and if it passed Dublin would soon take rank as one of the finest ports in the United Kingdom. He looked forward to the time when the main drainage and the electric lighting of the city would be completed, when Dublin would be worthy of themselves and a great emporium of trade and commerce.

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Mr. Perry, in responding, defined what was trade and what was commerce, and speaking of the work done by the master builders, he said they carried out the conceptions of great architects, and the result was that in every street noble premises were erected which were worthy of the city. With regard to commerce, an enormous number of steamers traded to the port of Dublin, and within the last fifteen years great store-houses had been built, traffic was increased in their streets, and everywhere there were signs of progress and improvement.

Mr. Maurice Dockrell, J.P., in responding, said he could not pretend to be bowed down with the weight of years, yet he remembered the time when year after year in the Mansion House in this city it was customary to attempt to entertain a body of quiet and respectable citizens with statistics supplied by the Registrar-General of Ireland, with the result that many of the guests fell asleep, while those who did not suffered next day from a bad attack of congestion of the liver. The industry with which the Master Builders' Association was connected was in a flourishing condition compared with that of the metropolis in the North of Ireland and of cities across the water. As to trade and commerce, the toast opened up a subject which they dare not attempt to handle at a gathering like that, but he should say that a great deal depended on the facilities which were given for the trade and commerce of a city. He was proud to have the opportunity of saying that the Lord Mayor was largely responsible, and in a high personal degree, for the success of the Bill which was now being brought into Parliament for the improvement of the port of Dublin, and for affording the facilities required for the advancement of trade and commerce. Most of those present remembered the small craft which visited the city a comparatively few years ago, and they saw what progress had since been made along their quays. Large vessels now arrived in the port, but they should not delude themselves and live in a fool's paradise by being content with what had been done. He was one of those who, having been educated at two of the best public schools in Ireland, considered that that education had been absolutely wasted on him. A great deal of time in public schools was lost in the study of Greek verbs and on other subjects which had nothing to say to the industries of the country. The Government had established an Agricultural Department, but that was only the beginning of what should be done. He had unbounded faith in the capacity of Irishmen. Anything that any white man could do could be done by an Irishman. He had not lost

faith in his country. They should stand shoulder to shoulder and work for the trade and commerce of the city and old Ireland which all loved so well.

The company marked their appreciation of Mr. I. speech which he delivered in dashing style by singing with great spirit, "For He's a Right Good Fellow."

Mr. Wm. Mitchell, R.H.A., proposed "The Builders' Association," and coupled with the toast the President.

The toast was received with applause.

The President, in responding, paid a high tribute to the energy and capacity of the late Alderman Macgibbon, who gave so much of his time to the interests of the city. He also mentioned the late Alderman Toole and Mr. The Master Builders' Association came into existence to a strike. They had at that time—some five or six years ago—the good fortune to receive help from the Roman Catholic Archbishop of Dublin in settling the dispute which existed between themselves and their workmen, and since that time, no quarrels, no questions between the members of the Association and the workmen in their employment. That was a happy state of affairs, and they did not experience any trouble in settling their disputes. He believed this largely due to the excellent temper and spirit of the members of the city towards them that the work of the trade was carried on without friction. He was sorry to call it a trade, but it was an art, and an art it was still regarded in other countries. The President then complained of what he considered a shocking system of competition when every pound of nails or pound of putty had to be taken into account in contract pay. He hoped that in the near future the contracts would be of an equitable character as between man and man.

Mr. R. Denne Bolton proposed "Our Guests," and with the toast the names of Sir Thomas Drew, the President of the College of Surgeons and of Serjeant Dodd.

Sir Thomas Drew said that for the last forty-three years he had been associated with the builders of Dublin, who were his friends. After the many years he had spent in Dublin he did not want to leave it for any place else, for they were one family, and he was happy amongst them.

The President of the College of Surgeons said that Mr. Dockrell complained that he had been imperfectly educated, though he had been at two public schools, and might

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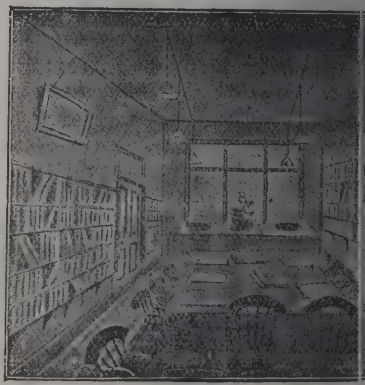
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on Myles) say that his education began and nearly in a national school, and that he was therefore afraid he was in a position of hopeless inferiority? The President then said that he came to Dublin in 1873, and he remarked on the improvements which had been made in the city since that time.

Mr. Serjeant Dodd, in responding, congratulated the company on the arrangements which had been made in connection with the exhibition, observing that they had the toast of "The King," and that they had been responding to it with becoming loyalty and enthusiasm.

They were entertained with good music and they heard good speeches. Referring to Mr. Dockrell's speech, Mr. Serjeant Dodd thought Mr. Dockrell was speaking against a liberal education, but Mr. Dockrell, in his own speech and in his person, had afforded an argument against the theory that a liberal education was propounding, for if public schools could produce such a result, Mr. Dockrell, then great credit was due to public education.

The education which he had received enabled him to do his fellows in public life, and had made him a competent speaker, as he was that night. But after hearing the speech of the College of Surgeons saying that he had never attended a public school in his life, he (Serjeant Dodd) almost came to the conclusion that public schools were a fraud. In the end, Mr. Serjeant Dodd said it was a liberal education to which he was referring in his speeches of the President and of the other gentlemen who had spoken that night.

### ELECTRICITY IN MANCHESTER.

Mr. H. LAW, Local Government Board Inspector, held a meeting recently at the Manchester Town Hall into an inquiry made by the Corporation for permission to borrow money for extensions connected with the electricity undertaking. Mr. T. Hudson, deputy town clerk, took charge of the proceedings for the Corporation, and amongst those present were Mr. Alderman Box, Dr. Bishop (chairman of the electricity committee), Mr. W. H. Hesketh (deputy chairman), and Mr. Beastow, Bowes, Cowan, Howarth, Jennison and others, members of the City Council.

Mr. Hudson described the electric undertaking of the Corporation. Under various Acts of Parliament Manchester supplied electric current for lighting and other purposes and electricity for the working of tramways in the city and in the districts. The Corporation was responsible for sup-

plying current to Levenshulme, Heaton Norris, Withington, Moss Side, Droylsden, Audenshaw and Denton, and for working electric tramways in Failsworth, Droylsden, Audenshaw, Gorton, Denton, Levenshulme, Heaton Norris, Stockport, Middleton, Stretford, Withington and Moss Side. When the tramways system was completed the length of lines would be something like 150 miles. Taking the present application in sections, Mr. Hudson said the first part of it was concerned with the completion of a scheme laid before Mr. Boulnois at a similar inquiry held in 1901. That was the scheme of Dr. Kennedy for the construction of plant to give 15,000 horse-power at Stuart Street, and the amount now required was 82,000*h.p.* At the inquiry held by Mr. Boulnois five only of the ten sub-stations were dealt with. The present inquiry was concerned with the remaining five stations and with additional matters. The second part of the inquiry was to deal with a proposed new installation at Stuart Street, which had been designed by Mr. Metzger. This would provide an additional 12,000 horse-power and cost 350,000*l.* The third part of the inquiry related to the Dickinson Street low-tension station, where it was proposed to replace four small belt-driven sets by two new turbo-generator sets. The new sets would provide 6,000 horse-power as against 1,600 horse-power provided by the four old ones. The estimated cost of these new sets was 43,861*l.* Existing machinery had cost 13,861*l.*, and the Corporation proposed to deduct that and borrow the balance, viz. 30,000*l.* The remaining item to be submitted was a sum of 15,000*l.* for additional mains to be carried between Ashton Old Road and the Corporation transforming station at Denton. To show the necessity for the proposed additional outlay, Mr. Hudson submitted figures relating to the whole equipment of the undertaking. The existing plant at Dickinson Street provided 12,000 horse-power, and the plant at Bloom Street, when completed, would provide 14,000 horse-power. Dr. Kennedy's installation at Stuart Street would provide 15,000 horse-power, and Mr. Metzger's installation at the same station, which was the subject matter of that inquiry, would provide an additional 12,000 horse-power, making a gross total of 53,000 horse-power actually in operation, already sanctioned or about to be sanctioned. This power was appropriated as follows:—The existing private consumers, down to Christmas 1901, represented 15,000 horse-power, allowing a slight margin for reserve; the additional present demand for lighting, also allowing a margin, represented 7,000 horse-power; the additional demand for traction within half a mile of

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Bloom Street represented 3,500 horse-power; the current from Dr. Kennedy's ten sub-stations, chiefly for tramways, absorbed 7,500 horse-power; four additional tram routes not provided for in the first figures, 2,500 horse-power; additional requirements for lighting and power, including the General Post Office, 5,000 horse-power; and ten additional sub-stations connected with Mr. Metzger's scheme and reserves and increased demand, absorbing 12,000 horse-power. These figures showed, Mr. Hudson said, the necessity for the outlay, and the Corporation were unanimously in favour of the application.

Dr. Bishop, as chairman of the electricity committee, gave evidence as to the growth of the demands upon the department. The progress of the undertaking had been more rapid than the committee could cope with, so much so that during a considerable portion of the last twelve months the committee had had to ask that applications for power should be deferred.

Mr. Hudson: I think on one occasion you were threatened with legal proceedings for not supplying current?

Dr. Bishop: Yes, and the committee had some difficulty in obviating those proceedings. Dr. Bishop gave figures showing the growth in the number of consumers. There were 1,981 in 1898 and 3,980 to-day. The names of 170 applicants who were waiting for connections were on the books. To meet the present and the prospective demand the committee considered these extensions absolutely imperative.

Mr. W. H. Hesketh, Dr. Kennedy, Mr. Metzger, Mr. Allott, the engineer, and Mr. T. de Courcy Meade, city surveyor, gave additional details of the various schemes, and the inspector afterwards visited the Corporation power station and other works under the control of the electricity committee.

#### BRIGHTON MASTER BUILDERS' ASSOCIATION.

THE annual dinner of the Brighton Master Builders' Association was held on the 4th inst. under the presidency of Alderman W. Botting. Mr. A. V. Treacher proposed, "Continued Success to the Association of Master Builders," and congratulated the members upon the excellent choice of a chairman they had made in Alderman Botting. The principal object of the Association was the promotion and protection of the interests of the building trade of Brighton and the district by having, among other things, unity of action in the settlement of all questions arising between employers and their

workmen. No strikes of any importance had arisen since the constitution of the Association ten years ago. That was a matter for congratulation, and, so far as he knew, the relations between employer and employed were exceedingly friendly. He thought that an Association of this class had the effect of promoting increasingly friendly relations between master and man. As to life assurance, he pointed out that the Association had an offspring, the Employers' Liability Insurance Company, the object of which was to insure a builder against accidents to his workmen. It had been very successful during the three or four years it had been in existence, because, after paying respectable dividends and all expenses, the company had saved nearly 50 per cent.

The Chairman, in acknowledging the compliment, pointed out the fact that the formation of the Association was the result of a very severe strike in Brighton, which placed the building trade of Brighton in a great fix ten years ago. Then, in 1900, the belief that they were in the right, the master builders put the trade on foot down, and now they were reaping the benefit. They had gone through ten years without any interruption worth mentioning, and to-day they had neither rules in their workshops nor did they allow the men to demand what they should receive for their wages. They were paying as much as any other town in the country to the town, more than in many cases, and therefore they were just to their men. In other parts of the country the master builders had gone so much in favour of the workmen that the National Association of Master Builders had just passed a resolution deciding to abolish rules in all workshops throughout the building trade, so that the master should be really the employer and the only consideration in engaging workmen should be a fixed wage for certain work. In most towns there were no strikes, but in Brighton they would not suffer in the slightest thanks to the stand they took ten years ago. He believed it would be for the benefit of the building trade generally, and also for the workmen, that workshop rules should be done away with, because through them it had become almost impossible for master builders to carry on under existing conditions. The Association had been very successful, and Brighton master builders were in a much better position than the majority throughout the country. Lately legislation had gone much in their favour, boycotting and picketing being illegal. The insurance company started four years ago in connection with their Association had been so successful that after paying 5 per cent. they had 5,520% to meet any demand that might be made upon them for compensation.

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# The Architect.

## THE WEEK.

FOR a long time past manufacturers in the neighbourhood of railways have complained of the absence of facilities on the part of the railway companies by declining to allow sidings to be constructed, or by issuing regulations which are an obstacle to business. The creation of the Railway Commissioners was mainly owing to protests of this kind. The Commissioners have, however, to accept the law as it is found in private Acts, and consequently the grievances of manufacturers in many parts of the country have not been much diminished. A case was heard in the Court of Appeal on Monday, in which the parties were the Lancashire Brick and Terra-cotta Company and the Lancashire and Yorkshire Railway Company. In 1894 the plaintiffs took land near Baxenden station to start works on a large scale. An agreement was entered into with the railway company for the laying-down of sidings, which were to be used only for the company's traffic unless with the consent of the railway officials. The Brick and Terra-cotta Company afterwards let a part of their land to a manufacturer of chemicals, who also by authority used the sidings. The railway company, although expressing willingness to aid the additional traffic, gave notice to determine the agreement. Application was accordingly made to the Railway Commissioners by the Brick and Terra-cotta Company, who decided in their favour. The railway company, however, appealed. The Court of Appeal considered that the railway company could not be forced to allow a connection to be made between their line and a siding. This was owing to the form under which the Railway Companies Act, 1845, had been drawn. The notice was therefore legal. The judgment is remarkable, for if allowed to remain it will have the effect of increasing the obstinacy of railway companies. It is true that sidings promote traffic, but they cause some trouble to officials, and in consequence of the dislike of the latter the internal commerce of the country is impeded to an extent that outsiders are unable to imagine.

MR. G. R. ASKWITH, barrister, as arbitrator appointed by the Board of Trade to arrange the differences between builders and their workmen at Maidstone, has presented his award. The following is the principal part:—Having ascertained that the matters in dispute were hours to be worked in the winter months and the overtime rule in rules proposed by the Maidstone Building Trades' Association, Mr. ASKWITH announces that rule 2 shall read, "From first Saturday in December work to terminate at 4.30 P.M.; dinner, half hour, except in case of shops, when one hour may be allowed for dinner, in which case work will terminate at 5 P.M.," and rule 3 shall read, "All overtime made at the request of the employers to be paid at the rate of time and a quarter. Overtime shall not be reckoned until each full day has been made, except where time is lost by stress of weather. On Saturday overtime shall commence at noon. Christmas Day, Good Friday, Sundays and all bank holidays shall be paid for at the rate of time and a quarter. Bricklayers employed in gauged and fire work, except domestic work and foundations to boilers or ovens, to be paid 1s. per hour extra. Men employed for well work, involving work below ground-level or superintendence at well mouth, to be paid 1s. per hour extra." The award is to be accepted as final and binding. Work has been resumed. The hearing of the evidence occupied no more than a couple of hours, and the prompt settlement is therefore a satisfactory testimony to the efficiency of the power entrusted to the Board of Trade and its temporary representatives.

A CORRESPONDENT writes:—"My client wants to pull down his present ancient shop and rebuild at the corner of a narrow street in the busy part of a town, which the authorities desire to widen if he does pull down. Can they refuse to pass my plans if he does not consent to set back? Or, can they compel him to set back and sell them what

land they would like?" Local authorities have now powers to propose and raise money if necessary for street improvements. The value of any land taken from private owners will be paid, the amount being determined either by private arrangement or by arbitration. Where an improvement is contemplated by the local authority it would hardly be fair to pass plans which would never be carried out unless the improvement was postponed. The authority cannot decline to pass plans without giving some reason, and a sufficient time is generally allowed for deliberations before arriving at a decision on the subject. In the majority of such cases it is wiser to show a desire to aid in facilitating the improvement, for opposition does not enhance the value of the property.

THE church of St. Bride, which stood on the site of the existing building near Fleet Street, was among those which succumbed to the Great Fire in 1666. The font, which bears the inscription, "Deo et Ecclesie ex dono Henrici Hothersall, A.D. 1615," is the only relic that has survived. There is also a stone which belonged to a vault which bears the date 1657. The main body of the new church was built by WREN in 1681, and the steeple was added in 1699. The latter was originally 8 feet higher than it is now, but when after the steeple suffered by lightning in 1764 the spire had to be taken down, it was judged advisable to reduce the height. For some time past there has been apprehension about the safety of the spire. The ironwork which was employed to strengthen the different stages has corroded the stonework. It will therefore be necessary to take down the spire and to rebuild it in its present form. By many it is thought to be WREN'S most successful attempt to produce a steeple in the Italian style. St. Bride's, with St. James's, Westminster, and St. Andrew's, Holborn, are reported to be the three churches best adapted for preaching in London.

CANON ROUTLEDGE once more appeals for funds to continue the explorations in St. Augustine's Abbey Field, Canterbury. The expenditure has amounted to nearly 700l., but at least 1,000l. more is needed. In return for the outlay the plan of the Saxon chapel of St. Pancras has been revealed. A considerable part of the crypt of the abbey church of St. Peter and St. Paul has been excavated to a depth of 11 feet. The diggers have revealed the eastern apse with a surrounding ambulatory, out of which open a central and two flanking apsidal chapels, rich in painting and architectural features, each with its own altar; also eight massive pillars, arranged in a semicircle to the west of the ambulatory, and two small stone columns, which with others may have formed the supports of the high altar above. If funds are obtained, it is proposed to complete the excavations of the crypt westward and to explore the chapter-house.

THE new volume of *L'Art*, which is edited by M. PAUL LEROI, starts under favourable conditions. An etching by M. LALAUZE after FREUDEBERG is in four colours, and recalls similar work of the eighteenth century. "La Portes des Jardies," by the late DANIEL MORDANT, represents an old gate and wall in Ville d'Avry, but it is admirably adapted as an example for tyros in etching; it is at once simple and effective, every stroke showing the master's hand. For many the three plates of reproductions of Greek and Roman coins from the collection of Count FRANZ VON WOTCH will be still more interesting, as from the care taken in the process the heads and symbols stand out in sculptural power. They are therefore infinitely superior to the diagrams which are commonly employed in books on numismatics. It is remarkable that in modern times designs equally valuable are not obtainable. M. AD. JULIEN writes about GOSSEC, who was one of the eighteenth-century composers of music in France, and whose works are now almost entirely forgotten. A curious inventory is given of the property of BARTHELEMY, who was one of the imitators of PALISSY'S work. It is dated 1615, and was drawn up by a notary. M. PAUL LEROI continues his articles on recent examples of art industry, and gives several illustrations of electric lamps of a remarkable character.



## THE VIBRATION REPORT.

IN one sense, "the report of the committee appointed by the Board of Trade to inquire into the vibration produced by the working of the traffic on the Central London Railway" can be considered satisfactory. When the vibration was first felt there was naturally alarm. So much has been written about the weaknesses of London houses, it is almost impossible to resist the misgiving that there is some truth in the allegations of unsoundness. All at once an extraordinary test was applied, and a great many timid people assumed that the noise and the vibration were forerunners of the crack of doom. The ordinary journalists anticipated a series of catastrophes, and prepared the way for them by all the artifices of their rhetoric. But after a great many months' experience not one of the houses between Shepherd's Bush and the Bank has succumbed, and not one case of serious damage to a building has been brought before the law courts. We doubt if in any other city in Europe so reassuring a result could be recorded under similar circumstances.

The actual, as distinguished from the imaginative, effects of the railway are shown by the report of the committee appointed by the President of the Board of Trade. They were to investigate to what extent the working of the traffic on the Central London Railway produces vibration in the adjacent buildings. There was no narrowing of the scope of their operations; the subject could be dealt with in any manner they pleased. That vibration which is sufficient to cause serious annoyance is felt in many of the houses, the members of the committee ascertained by personal observation. But they do not refer to a single instance where injury was done to the walls or other parts of a house. This is a remarkable testimony to the stability of the houses along a line running from the east to the west of the Metropolis, and some of which would be classed as of inferior character. We hope it will have the effect of converting those who make a pretext of declaring that London is a huge province of jerry-built structures, that the materials as well as the workmanship are dangerous to the inmates, with many other erroneous conclusions.

We believe, moreover, that no manner of building could prevent the vibration from being felt. There is no material sufficiently sound-proof or elastic to withstand the effect of the force represented by the trains. Witnesses who live along the route declare that early in the morning they suffer most when the workmen's trains pass, also between 5 and 8 P.M. when people return from business, and when the last night trains are running. This statement may be considered to be one of the prejudices due to the imagination, which have their origin whenever there is a grievance. At certain times the weight of the trains is no doubt increased by the crowded state of the carriages. But on those occasions the stoppages at the stations do not appear to give any extraordinary shock to the passengers; whether in the trains or on the platforms. During the early morning and at night the sound arising from the traffic may be more audible, and it is erroneously concluded that greater vibration must also be endured. The scientific evidence which the committee obtained did not justify the belief in a connection between excessive vibration and the morning, late afternoon or night trains. It was, however, demonstrated that the disturbances caused by successive trains are very unequal. Special observations were taken during a whole day by a band of competent witnesses. The phenomena which they recorded, when reduced to order for the benefit of the committee, showed (a) that it was a matter of chance whether a given train caused a slight or a severe vibration; (b) that trains causing a severe vibration in one house were as likely as not to cause only slight vibration in the others; (c) that different rooms in the same house were not similarly affected by the same train. These seemingly contradictory results may one day be reconciled and explained, but at present they baffle other judges beside the committee. It is possible the differences in the character of the buildings, owing to their manner of construction, slight variations in the subsoil, the presence of sewers and other conduits, may all be factors in preventing uniformity in the degree of vibration, and, if so, it would be an endless task to deal with such data.

The committee under the circumstances could not wait

to explain the particular instances, and at once sought a cause of vibration in general in the character of the way and its engines. In May 1901 a joint Parliamentary Committee on Underground Railways came to the conclusions that vibration arose chiefly from—(1) The proportion of the weight of the locomotives not borne by springs, and (2) want of rigidity in the rail. Now engines on the Central London Railway carry on each an excessively large load unrelieved by springs. The spring-borne load carried on each of the four axles of a locomotive is 8 tons, making 32 tons in all. This construction was adopted in order to obviate the necessity of gearing, and the committee could not but connect this difficulty with the magnitude of this unsprung-borne load. The railway company, who are anxious to carry out whatever will diminish the inconvenience, ordered two types of locomotives to be constructed in which the unsprung-borne load would be reduced; but they had to be manufactured and some delay was caused. On trial of the new engines the committee considered that a great improvement had been attained by the diminution of the parts which were unsprung-borne. The vibrations decreased sometimes to the extent of one-third. They therefore recommended the adoption of a type of locomotive or motor in which the load not carried on springs is reduced as far as possible. This may be arrived at, it is said, by using gearing as in geared locomotive or motor carriages, or by using a geared locomotive in which an elastic connection is employed between the driving axle and the motor.

The next subject which came up for consideration was the rail. On ordinary railways the old bridge-rail has generally superseded, but that section is employed on the Central London Railway. The committee wished to know the effect of a heavier and stiffer rail. But economy was so despotic throughout the construction it was found impossible to employ a slightly deeper rail without encroaching too much on the narrow margin between the tunnels and the tops of the carriages. The air pressure in front of the trains is believed to be increased by the limitation of the open area in the tube, but the enlargement, however slightly, would no doubt amount to a big saving. The rails are carried on longitudinal sleepers, but it is not thought the arrangement affects the vibration. It is remarkable, however, that the principal source of disturbance is ascribed to the unevenness of the surface of the rails. It is usually supposed that the top of a rail is almost a perfect plane. But the committee say that rails as they leave the rolls are usually curved, and the process of straightening by local bending beyond the limits, however skilfully carried out, inevitably leaves certain waviness. As the unsprung-borne part of the rail follows the rail over the crests and hollows of the way, it is subject to vertical accelerations which cause the pressure on the support to become variable. When there are no springs and the speed is high, a state of things is reached in which the pressure on the rail momentarily disappears and the load is on the point of jumping out of the hollows. Such part of the load as is carried by the springs moves nearly in a horizontal line without following the waviness of the rails, and the pressure on the support corresponding to it remains nearly uniform, and accordingly innocuous. When very high speeds are contemplated it may become a question whether a higher standard of straightness should not be aimed at. It appears that the irregular impulses given by uneven rail surfaces have the effect of establishing and maintaining an oscillation of the rails and road-bed, the whole being regarded as an elastic support loaded with those masses which are carried by springs.

It is hardly possible to obtain more level rails than those which are usually employed, and the committee do not propose any change in rolling. They consider a deeper rail would be an advantage, but there is not sufficient room to allow of its being introduced. In new railways of the same class they advise that room should be allowed for the introduction of a deeper rail. The final conclusion of the committee is that, without altering the permanent way of the Central London Railway, the change of motors which they have recommended will effect a practically complete cure of the disturbances or vibration. If that desirable



achieved, the committee will deserve the thanks of many shareholders, occupiers and other people who have a stake in property. It will be observed that throughout the report a word is said to suggest that the inconvenience was in at least degree caused or increased by the manner of the construction of the houses. There is no doubt the daily passage of trains is a severe test of their stability, but as houses have withstood it so long, we may be assured they remain secure in the future.

### NEW CONDITIONS OF CONTRACT.\*

"Woe to the State where lawyers flourish" was the exclamation of JOHN SELDEN, and no one was better entitled to give a judgment on the subject than the author of the "Dissertation on Fleta." It may be said with no less truth, "Woe to the fine art of which the followers have to possess a knowledge of law, and to act not only as lawyers but as judges." In the old days the architect's business was to design and superintend the carrying out of a building, and it is possible he made the design in parts as the works progressed. He rarely was obliged to trouble himself with litigation, for his supremacy and infallibility were acknowledged by all the men he directed. The few cases in which architects were made to suffer for breaches of laws or regulations are sufficient to give their general immunity. Modern investigators do not believe in the legend of the death of APOLLODORUS in the order of HADRIAN, and if it occurred it was not for an offence against Roman law, but rather from the jealousy of the Emperor. The imprisonment of SANSOVINO on account of the fall of the roof of the library in Venice is the most serious of the recorded cases in which architects suffered. In Venice, however, offences against the State were judged in an arbitrary manner. SANSOVINO'S punishment was quickly recognised as excessive, for he was liberated and the money paid for his fine was returned to him.

We need not, however, trouble ourselves with ancient foreign practice. In this country until recent times buildings were erected without giving opportunities for lawyers. The cases mentioned in law books are modern, and do not extend beyond the nineteenth century. FARNSWORTH BARRARD is one of the oldest, and it was decided in 1877. The reasons for the change which can be ascribed are manifold, and we suppose it would be as easy to transform Great Britain into Arcadia as to bring back the days when contracts with builders were brief, simple and stereotyped in form—we might also add, and rarely referred to. There was confidence all round. The builder was acquainted with the architect, and was prepared to make a sacrifice rather than have a dispute with so high an authority. The architect knew the weak points of foremen as well as of employers, and was able to provide against them without difficulty. The building owner looked on the architect as a friend and trusted him as if he were a family lawyer. With so happy a condition for working in, the wonder is that the buildings were not all as harmonious as the relations between the parties concerned in them.

To-day an architect's main concern in the majority of cases is to safeguard his client and himself against any appearance in the law courts. He must begin to be wary from the time the drawings are prepared. Metropolitan borough regulations have to be steered through with caution. He has to look ahead for the possible light-and-sound cases which may be looming in the distance, although at the outset there is no indication of their existence. He may know little of the contractor to whom he has to trust the execution of the works, and in any case he must be anxious about various financial questions until the works are completed and the accounts settled. With all a host of troubles does the one word "bankruptcy" menace an architect. Mr. MACEY, in his new "Conditions of Contract relating to Building Works," tells us how "An

architect does not guarantee to the employer that the contractor is solvent, or that he is capable of performing the contract. But it is the duty of the architect to inquire into these matters, and to inform the employer if he knows or hears of anything detrimental to the contractor and to advise the employer accordingly." The case relied on about the duty referred to a house agent's responsibility, but it might be held to apply also to an architect. How can a man give his attention to details when he is disquieted by apprehensions of an impending failure on the part of the contractor, and knows the difficulty of preventing the works from being completed under the sanction of the Courts in a careless but cheap manner? An architect may have from the first to consider bankruptcy as inevitable, and to prepare for that event in the contract deed. Here is a passage that would amaze the old school of English architects:—

The Bankruptcy Acts, 1883 and 1890, do not give the trustee in bankruptcy the right to elect to proceed with contracts that are "personal." An ordinary contract for ordinary building work has been held not to be a "personal contract" (*Marshall v. Broadhurst*, 1831), but whether a contract for building work can be made "personal" by agreement it is somewhat difficult to say, as, although the contract may stipulate that it is to be considered a "personal contract," yet the Court may hold that such a clause would be bad law within the strict meaning of the term "personal contract."

To paint a picture or to sing at a concert are both "personal contracts." To build a lighthouse has been held to be a "personal contract" (cited in the case of *Wentworth v. Cock*, 1839). Therefore it seems that a contract may be considered to be "personal" when the person selected to perform it is chosen on account of some special attribute on his part or on account of some skill peculiar to himself alone, and of which another person is not equally or similarly possessed. Hence, if a contract can be so worded as to show that the contractor's personal qualifications are relied on, the Court may hold the contract to be a "personal contract" within the legal meaning of the term. Then in that case a clause determining the contract on bankruptcy would certainly seem to be good law against the trustee in bankruptcy.

Here is another suggestion. Omit the bankruptcy clause altogether from the contract, and make the contract a "personal contract" by a special stipulation to that effect. There would then in such case be no evidence by the contract that the employer was endeavouring to oust the trustee in bankruptcy from his rights. And if the Court held that the contract under these circumstances was "personal," then the trustee would not have the right to elect to proceed with the work. The contractor would, however, have the right to do so, if he could get financed.

To these straits an architect is driven in order to avoid the trusteeship system of completing contracts. It suggests that he cannot expect to have that equanimity when creating or adapting which is considered indispensable for painters and sculptors. His power of design must suffer when he is anticipating legal difficulties to arise, and which a client is assured an architect can avoid. HOGARTH'S "Enraged Musician" was a happy man if compared with the architect who has to deal with an unfortunate contractor in difficulties, and consequently attended by a flock of harpies.

There is much else besides the contractor's financial resources which must engage the architect's attention. He must be prepared to meet in one way or another fires, claims of easements, advertisements on hoardings, analysts, bad weather, combinations of workmen, workmen's compensation, insurances, liens, obstructions, &c. The Vitruvian requirements or the more ample encyclopædic knowledge which Dr. ISAAC WATTS considers essential for young logicians are insignificant in comparison with the technical lore which is expected to be possessed by every architect whose practice is general. It must be remembered also that on the accuracy of the architect's knowledge large sums of money will be involved, and that what in other affairs might be considered as no more than a trivial inaccuracy may cause serious losses. This weight of responsibility has to be accepted, but the effort to sustain the onerous realities is not conducive to the development of the imaginative or artistic faculties.

It is not surprising that under the pressure of finance and other agencies there should be a desire for greater stringency in the conditions of contract in order to secure

\* *Conditions of Contract Relating to Building Works.* By Frank Macey, architect. Revised as to the strictly legal matter by B. Leveson, barrister-at-law. (London: Sweet & Maxwell, Ltd., and B. T. Batsford.)



a satisfactory conclusion of the works. Mr. MACEY'S model is precise throughout, and gives definitions and clauses which are not always considered necessary. For instance, it is said about the word "best," which is often used with laxity:—"The word 'best,' as applied to materials, articles and workmanship, shall mean that in the opinion of the architect there is no superior quality of materials or finish of article in the market, and that there is no better class of workmanship obtainable." Another clause makes it a necessity for a contractor to study the conditions so that a plea of ignorance cannot be afterwards set up. He is also expected to "visit the site and make himself thoroughly acquainted with its nature and with the requirements of the works." It is distinctly announced that "the bill of quantities shall not form the 'basis of the contract,' but shall be used solely as the schedule of prices of work, labour and materials upon which the contractor based his tender," until after the contract is signed.

VANBRUGH, in one of his comedies, makes a character say, "Look you, sir; some folks we mistrust because we don't know them—others we mistrust because we do know them—and for one of these reasons I desire there may be a bargain beforehand." In a similar spirit modern contracts have to be arranged. The bargain must provide for every possibility of failure, and allow no loophole for the escape of any of the parties. It may seem odd that such a subject as vaccination should have a place in a contract for building. But there may be occasions when the operation is necessary, and Mr. MACEY'S clause provides for it, as well as the provision that if the contractor refuses or fails the contract can be determined and the employer can recover any loss or damage sustained through such determination. There was a time when the wages paid by a contractor was not considered a subject with which the building owner or his architect was concerned. A dispute over wages can, however, retard the progress of works, and the contractor in Mr. MACEY'S conditions has to agree to pay "not less than the minimum standard rate of wages as recognised for the respective trades and branches of the trades in the locality in which the work is being done." If the clauses appear too rigorous the architect can of course modify them, but it is better in the end for a contractor to understand his exact position than to imagine he can evade or misinterpret difficulties because the language of the specification and conditions fails in undisguised exactitude.

The order of the conditions for carrying out works is a natural one. Hoarding and fencing, shoring, delivery of plant and materials, arrangements for workmen, watchmen, examinations, tests, deviations, payments, &c., are treated in succession. In Mr. MACEY'S "Specifications in Detail" each item is described at so much length as to make the volume a treatise on building materials and appliances as well as construction. The clauses in the "Conditions of Contract" are treated in a similar manner, and the pages become a manual of the law of building. One work is the complement of the other, and both form a complete guide to modern architectural practice.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. W. Emerson, president, in the chair.

The Hon. Secretary announced the decease of the following members:—The late Marquis of Dufferin, elected honorary fellow 1866; the late Mr. James Stevens, elected fellow 1877; and the late Mr. E. W. Barnes, of Bristol, elected fellow 1882.

Mr. F. W. BEDFORD read a paper, illustrated by lantern views, descriptive of the life and works of

#### Baldassare Peruzzi.

The son of a weaver of Volterra who had settled in Siena, Peruzzi, the architect-painter, was born in 1481. As a youth he delighted in frequenting the workshops of the goldsmiths and others who practised the art of design. At the age of twenty he was appointed assistant to Pinturicchio, who was engaged in painting the chapel of San Giovanni. He shortly after went to Volterra and painted a chapel near the Florentine gate, and then was persuaded to go to Rome.

Here, entering the workshop of the father of Maturino, he greatly impressed his master and other artists by his power of

design and painting. Agostino Chigi, a rich Siensese banker, befriended and supported him while he devoted himself to study of the architectural antiquities of ancient Rome. During his stay in Rome, from about 1503 to 1522, he painted and designed a great many buildings. He then spent some time in Bologna, whither he had gone by invitation of the wardens of St. Petronio, that he might take part in the competition for the completion of that church. From Bologna he was almost compelled to return to Siena to prepare designs for the fortifications of the city. After completing this work he returned to Rome, and became engaged on St. Peter's. In the sack of Rome in 1527 he was made prisoner, was maltreated and shamefully tormented, lost all he possessed. He was ransomed by the republic of Siena, and was appointed to superintend the fortification of that city. In 1529 he was sent by the Pope to help the Papal and Siensese armies in subduing the city. After the war returned to Rome and became engaged in the erection of various palaces and on St. Peter's. He found time, too, to study astrology and mathematics, and became so expert in the art of perspective drawing as to surpass all other masters of the day. He commenced also a book on the antiquities of Rome, with a commentary on Vitruvius, and prepared many drawings for the illustrations. Many writers speak in eloquent terms of Peruzzi's nobility and modesty of mind, which, however, were imposed upon by his patrons, so that in his old age he was very poor. As he lay on his death-bed, to which he had been brought not without a suspicion of poison, Pope Paul III. sent him 100 scudi and many promises. He died on January 1537, and was buried in the Pantheon by the side of Raphael.

Mr. Bedford then treated of Peruzzi's architectural work, some still to be seen in Italy, others spoken of by various authors but no longer existing, and others which have been attributed to him. Among the former mentioned were the Palazzo Massimi, admired by Peruzzi's contemporaries, since held to be among the masterpieces of the Renaissance. The beauty of the plan and the refinement of the details have never been surpassed. The cortile of the Palazzo Massimi is one of the most charming in Rome. A still more famous work is the Villa Farnesina, a work which Baron von Geymüller attributes to Raphael. The paper dealt with the subject at some length, and suggested weakness in the regard adduced by Baron von Geymüller in favour of Raphael as architect. The piercing of the frieze with windows, as at the Villa Farnesina, was a favourite motif with Peruzzi, and is to be seen in many others of his buildings in Siena and at Bologna. The monotony Monaldini complains of in the architectural details of the Farnesina no doubt resulted from the exquisite taste Peruzzi always displayed when he wished to combine painting with architecture, when he was careful that the structural work should not interfere with the more delicate lines of his painting. A number of other buildings undoubtedly Peruzzi's, generally attributed to him, and Peruzzi's share in the various designs and plans made for St. Peter's were referred to. Vasari states that Pope Leo X., desiring to bring the building, which had been commenced by Julius XI after the designs of Bramante, to a conclusion, and finding the edifice too large, resolved to have a new model constructed, "wherein he committed the work to Peruzzi, who prepared a model, which is truly ingenious and of a magnificent character." Vasari on this point is confirmed by Serlio, who publishes Peruzzi's model. Vasari also states that the facade of the principal chapel, which had been commenced by Bramante, was completed by Peruzzi, who constructed it in peperino marble. Peruzzi was appointed architect to St. Peter's on August 1, 1520—less than five months after the death of Raphael—and held the post until May 6, 1527, and from 1527 to 1531, and again from May 1535 to January 6, 1537, the day of his death. The author expressed his disagreement with the view of Baron von Geymüller, who states that the plan published by Serlio is really Bramante's, that the plan or model mentioned by Vasari was only a combination of Bramante's nave with the choir of Rossellino, and that most of the drawings in the book which have been attributed to Peruzzi, one or two of which are signed with his name, were made by Peruzzi for Bramante, while he was the latter's draughtsman. That Peruzzi was Bramante's assistant is not recorded by Vasari—who mentions both, and who published his book of "Lives" in 1550, thirteen years after Peruzzi's death—or by Serlio, who was Peruzzi's pupil. That Peruzzi was greatly influenced by Bramante, and was a sincere admirer of his work, on which he founded his own style, is undoubted; but there is no reason to suppose that the many plans and perspective sketches by him were made for Bramante, and were not the expression of his own ideas.

In Siena, Peruzzi's chief work was the rebuilding and strengthening of many parts of the city walls; he built towers or gateways, four of which—the Porta Laterina, the Porta Pisipini, the Porta St. Prospero and the Porta Capuana—still remain. His most interesting work in Siena is



Palazzo Pollini, or Celsi—one of the most refined and dignified of the palaces in Italy. The Palazzo Turchi, outside the Porta S. Maria, was built about the same time as the fortifications of the Palazzo Pollini, for in the cornice, which is of terracotta, Peruzzi has not only used the same enrichments, but has employed the same moulds for the casting. The details of the frieze, architrave and cornice are almost Greek in their ornament. A number of other buildings by Peruzzi, or attributed to him, were referred to. Many of his designs for the church of St. Domenico in Siena are preserved in the *Uffizi*. Leaving Siena, the description went on to buildings designed by Peruzzi at Carpi, Ferrara, Vallepiatta, Viterbo, Capranica and Caprarola. Vasari says that "Peruzzi prepared the design and model for the cathedral of Carpi. . . . The structure was built under Peruzzi's direction, and according to the rules laid down by Vitruvius." Baron von Geymüller does not dispute Peruzzi's authorship, but remarks that the design is based on the elements of Bramante's design for St. Peter's. Bedford considered, however, that from the style of the building, from the fact that Peruzzi was in Rome when Alberto Bruni, for whom the Duomo was built, wrote to his agent that he was sending the model from Rome, and that several writers named Peruzzi as the architect some few years later, the weight of evidence is in Peruzzi's favour.

The paper concluded with some remarks on Peruzzi as a painter. His paintings were classed with the best of his day. Most of them were executed as fixed decorations, and very few of his easel pictures exist. The influence of Pinturicchio, doubtless his first master, is seen in all Peruzzi's paintings. After he owed much to Sodoma and to Raphael. Some of the paintings on the ceiling of the loggia in the Farnesina are in imitation of stucco-work in relief. Vasari says that he consulted the Cavalier Tizian, a most excellent and renowned painter, to see them, and he could by no means be persuaded that they were painted, and remained in astonishment when, changing his point of view, he perceived that they were paintings. Some of his most celebrated paintings are those in the Villa della Pace. They were done in 1515 or 1516, and are strongly influenced by Sodoma and Raphael. The paintings in the Villa Belcaro, which belong to Peruzzi's later years, are among his best, and show great decorative power. They are dated 1535, and are the last he did in Siena. Neither Vasari nor any other ancient writer speak of Peruzzi's designs for tapestry, but in the collection of Prince Sigmaringen there is a sketch of the Adoration of the Magi, which was attributed to Raphael, but which is really by Peruzzi. The tapestry is now in the Vatican.

Peruzzi is said to have been the most elegant painter among architects, and the most ingenious architect among painters. He was unfortunate in that he happened to live at the same time as the three greatest geniuses of the Renaissance—Bramante, Raphael and Michel Angelo—whose influence permeated the whole of the artistic world, and made it impossible for any other artist to achieve anything free from the charge that he owed the idea to one or the other. But although he learnt much from them, he still preserved more of his originality than his other contemporaries, and infused a spirit of refinement into his work which has never been surpassed. That modern architecture owes to Peruzzi, and what architects owe to him, it is impossible to estimate; but no architect, excepting perhaps Brunelleschi and Bramante, did more in the development of the application of Roman architecture to modern times.

Sir HENRY HOWORTH proposed a vote of thanks to the author of the paper. He said the history of architecture was too much an impersonal one; the lives of the architects themselves were seldom touched upon. It would be well, therefore, for a new departure to be made and a more personal history of the men given, with their works. It was curious that Rome itself had little influence on the arts of Italy. Rome was a waste between the close of the ninth century and the beginning of the thirteenth. The return of the Popes to Rome restored its prestige. Money was spent lavishly, and attracted thither the great men of genius.

Professor BERESFORD PITE seconded the vote.

### THE LATE JOHN NORTHWOOD.

MR. JOHN NORTHWOOD, whose name is celebrated in the annals of the glass trade as the modern discoverer of the long lost art of the cameo decoration of glass, died at The Cedars, Wall Heath, on Thursday, the 13th inst., at the age of sixty-three years. His reproduction of the Portland Vase, says the *Birmingham Post*, was a unique event in the glass trade, and excited the utmost interest among connoisseurs generally when it was announced, proving as it did that the cameo vases of the glass makers of classical days could at least again be made. Of the few cameo works in glass which have come down to the moderns, the Portland

Vase is the most famous. It is a cinerary vase, and is supposed to have contained the ashes of a member of the imperial family of Alexander Severus. It was found in a marble sarcophagus, near Rome, in the early part of the seventeenth century, and for a time rested in the Barberini Palace at Rome. It came at last into the possession of the Portlands—hence its modern name of the Portland Vase—who in 1810 placed it in the British Museum. Here, in 1845, it was smashed by a lunatic, but it was so skilfully put together again that it is still "a thing of beauty and a joy for ever." The vase represents, or is supposed to represent, Thetis consenting to be the bride of Peleus in the presence of Poseidon and Eros, and the two former are also represented on the reverse side. What is so remarkable about the vase is the way in which the artist has worked out the subject in the brittle material of glass. The ground of the Portland Vase is dark blue glass, and the figures upon it are cut out in cameo style from an outer layer of opaque glass. This now presents no insuperable difficulty to the skilled glass decorator trained in this class of work, but when Mr. John Northwood set to work, he had to start *ab initio*, and even to make the tools which he used in puzzling out the secret of the ancient workers in glass. He spent three years over the task, and during the progress of the work a flaw showed itself in the vase, which developed till the vase split in two, but, like the pieced original, it was successfully joined together, and what occurred was no detriment to the happy conclusion of Mr. Northwood's labour. At the end of the eighteenth century Josiah Wedgwood made fifty copies in fine earthenware of the Portland Vase, and we understand that it was one of these that Mr. Northwood had as a model. It was on the day that he started to London to compare his own work with the original in the British Museum that the flaw showed itself of which we have spoken. The vase which Mr. Northwood produced is now in the possession of Mr. P. Pargiter, of Stourbridge, and its value runs into four figures. Mr. Northwood began his career in the glass trade at Wordsley in the works of the late Mr. Benjamin Richardson, a noted manufacturer, and was engaged in the etching and enamelling departments. Afterwards, in conjunction with his brother, he started etching in a workshop in Wordsley, and it was whilst here that he tried his hand at cameo work, and developed it to the remarkable extent he did. Besides the replica of the Portland Vase, he made the handsome vase presented to the Birmingham Art Gallery by Sir Benjamin Stone, and other important works. For the last twenty years or more he has been the principal manager at the glass works of Messrs. Stevens & Williams, where his artistic abilities and skill have had congenial exercise, and where certain improvements in glass-making itself have been effected by him. His reputation in the glass trade will long live after him.

### ROYAL SCOTTISH ACADEMY.

A GENERAL assembly (which includes Academicians and associates) of the Royal Scottish Academy was, says the *Scotsman*, held on the 12th inst. for the election of three painter Academicians and one architect Academician, in terms of a resolution come to at a previous meeting. The vacancies were caused by the deaths of Mr. G. W. Johnstone, Sir Noel Paton, Mr. J. B. McDonald, and by the removal of Mr. John Lavery to London, who loses thereby his rights as an Academician, though he may still continue to use the letters of R.S.A. after his name.

The result of the voting was that Messrs. Thomas Scott, George Henry, Glasgow; and Mr. R. B. Nisbet were elected painter members, and Mr. G. Washington Browne the architect member. Messrs. Thomas Scott and R. B. Nisbet are water-colour artists.

The voting was as follows:—

First scratching for painter members, including proxies—Mr. Thomas Scott, 24; Mr. George Henry, Glasgow, 23; Mr. R. B. Nisbet, 22; Mr. Robert Noble, 16; Mr. A. D. Reid, Aberdeen, 15; Mr. A. K. Brown, Glasgow, 15; Mr. Pollok S. Nisbet, 13; Mr. Henry W. Kerr, 5. (Nine names received under five votes and were dropped.)

Second Vote—Scott, 24; Henry, 25; R. B. Nisbet, 23; Robert Noble, 17; A. D. Reid, 15; A. K. Brown, 17; Pollok S. Nisbet, 6; H. W. Kerr, 5 (Nisbet and Kerr dropped)

Third Vote—Scott, 26; Henry, 23; Nisbet, 24; Noble, 15; A. D. Reid, 18; A. K. Brown, 17. (Noble dropped.)

Fourth Vote—Scott, 25; Henry, 25; Nisbet, 28; A. D. Reid, 20; Brown, 16. (Brown dropped)

Final Vote—Scott, 24; Henry, 21; Nisbet, 20; Reid, 17.

Vote for Architect Member.—Scratching—G. Washington Browne, 23; A. Marshall Mackenzie, Aberdeen, 11; John James Burnet, Glasgow, 8. Two others having fewer than 5 votes were dropped.

Second Vote—Browne, 23; Burnet, 10; Mackenzie, 10.



In a vote between Burnet and Mackenzie the former got 20 and the latter 18.

Final Vote—Browne, 23; Burnet, 12.

The members of the Academy meet on the first Wednesday of March to determine on the number of associates to be elected to fill vacancies. On the second Wednesday of next month they meet to confirm their resolution, and on the third Wednesday they proceed to election.

At the Scottish Arts Club in the evening there was a large attendance of members, and the health of the new Academicians was proposed by Mr. W. G. Stevenson, R.S.A.

The following are a few notes on the careers of the new Academicians:—

*Mr. Tom Scott.*

The son of a clothier in Selkirk, Mr. Scott was born in that border town in 1854. He was educated at the Grammar School, and worked for some years at his father's business. He commenced his art studies at the Royal Institution in 1877, and afterwards attended the life school of the Royal Scottish Academy. He is a painter in water-colour, and has exhibited almost entirely in the Royal Scottish Academy Exhibitions, his painting ground being largely the romantic scenery of the Borders. Some of his more important works are, "The Otter Hunt," the "Meet of the Duke of Buccleuch's Hounds at Riddell," "Return to Selkirk from Flodden," "The Legend of Ladywood," "Moss Troopers Returning from a Raid," "The Riever's Ride," "A Mosstrooper Scout," "Hornshole, 1514," "The Wood Waggon," "Newark Castle," "St. Mary's Loch," &c. He was elected an associate of the Academy in 1888. From time to time he has had sketching trips in France, Switzerland, Italy and Tunis, going to Florence and Rome and Naples to see the works of the old masters. At present he is engaged on two pictures, one from the Border ballad, "The Border Widow's Lament," and the other from "Autumn Leaves," one of J. B. Selkirk's poems. For many years Mr. Scott has been much interested in the collection and preservation of Border antiquities, and has made a large and interesting collection of prehistoric relics belonging to the Border counties. Of these a large selection was shown at the recent Glasgow International Exhibition, and attracted a good deal of attention from people interested in the subject. Along with other water-colour artists exhibiting at the Royal Scottish Academy, Mr. Scott vigorously protested against the method of hanging works in that medium at the Mound exhibitions, and as no redress could be obtained, he did not send any works to the last exhibition, and he does not exhibit on this occasion either.

*Mr. R. B. Nisbet.*

Mr. R. B. Nisbet, who is a native of Edinburgh, commenced life as an apprentice in a Leith shipping office. He took to art in 1879, and went with his brother Pollok to study at Venice. Returning, he joined the Board of Manufactures' School, where he drew from the antique and life. His first exhibits at the Royal Scottish Academy were in oil, but soon he took entirely to water-colour. He has sketched mostly at Cromarty, Gullane, St. Andrews, North Berwick, the Fifeshire coast, Selkirk, Surrey and Yorkshire. He first exhibited in the Royal Academy in 1888, in which year he was elected to the Royal Society of British Artists. In 1892 he was elected to the Royal Institute of Painters in Water-Colours, and in the following year was elected to the rank of an associate of the Royal Scottish Academy. He is also a member of the R.S.W. He leans to the romantic side of his art, but is catholic enough in taste to admire all styles. He owes his own admirable style chiefly to strong admiration for the works of De Wint, Cox and Cotman in water-colour, and Chrome and Constable, along with the Barbizon school, in oil. Some of his works which brought him into prominence before he was made an associate were "Evening Stillness," bought by the Chantrey Bequest; "Solitude," "Harrowing," "Forenoon" and "Sunset on a Border Moor," and since then in a broad and free method he has exhibited many charming works in which his aptitude for painting cloudland and sky have been very marked. Mr. Nisbet's art has had wide recognition both at home and abroad. He has been made an honorary member of the Royal Belgian Water-Colour Society, and he gained at the Vienna Jubilee Exhibition the only gold medal for water-colour in the English section. He was also awarded a medal at the Antwerp International Exhibition; he holds various diplomas, and pictures of his have been bought for the permanent collections in Berlin, Dresden, Lille, Durban, Adelaide, Pittsburg and other towns. He took an active part in the formation of the Society of Scottish Artists, and has held office in that body.

*Mr. George Henry.*

Mr. George Henry, who made his name as an early member of the "Glasgow school," does a good deal also in designing. Landscapes with figures or cattle formed the subjects of his earlier pictures, but he has shown remarkable versatility in his

choice of themes, and his power of expression has been equally marked, whether the subject is treated in oil, water-colour or pastel. The decorative quality of colour and line in his work became more pronounced after 1883, and is specially noticeable in his "Willows," painted two years later. About the same time his "Mushroom Gatherer" attracted considerable notice, and one of his most notable works, though it provoked some criticism at the time, was the "Galloway Landscape," exhibited in 1889. Another notable picture was "The Druids," a voyage to Japan, rendered necessary on account of his near blindness, was productive of many studies illustrative of Japanese life, pictures, whether in oil, water-colour, or pastel, showing a thorough grasp of the characteristics of his subjects. Two of the most notable of the class were "A Japanese Belle," exhibited at the Water-Colour Society's Exhibition of 1894, and "Brown Kimono," shown at the St. Louis Exposition in 1904. On his return to this country in 1895, Mr. Henry took to portrait painting, and proved equally successful in depicting children, women, or men. Among the best known of his group are the portraits of Dr. Campbell Black and the child of Mr. T. G. Arthur. He was elected an associate of the Royal Scottish Academy in 1892.

*Mr. G. Washington Browne.*

Mr. G. Washington Browne was born in Glasgow, and received his early training there. He afterwards proceeded to London, where he served under one or two architects of distinction, and gained the Pugin Travelling Studentship, being the first Scotsman to secure the honour. His drawings made in connection with this studentship, and while travelling in France, Italy, and Spain, were afterwards published in a folio volume, and with much acceptance. On returning to Scotland, he became a partner with Dr. Rowand Anderson, and afterwards by himself carried out the Edinburgh Public Library, the Children's Hospital and Messrs. Redfern's buildings in Prince Street. He has made a special duty of library planning and construction, and besides erecting several libraries throughout the country, has acted as adviser and assessor to library committees. Some years ago he entered into partnership with J. M. Dick Peddie, and the firm has erected a considerable number of banks and insurance company buildings, two of which are shown on the walls of the present exhibition. Among the most recent of this description of building with which the firm's name is identified are those of the Standard Assurance Company in George Street, Edinburgh, the office of the Scottish Provident Institution, to which considerable additions were made, and the buildings of the Scottish Equitable Life Assurance Society, both in St. Andrew Square, Edinburgh. Mr. Browne was elected an associate of the Royal Scottish Academy in 1892.

## SCOTTISH ACADEMY'S EXHIBITION.

THE exhibition of the Royal Scottish Academy was opened on Saturday. It is, according to the *Scotsman*, a good strong, average exhibition, with some outstanding and welcome features, while the general body of the work, both by academicians, associates and those outside the academic circle, is of a varied and interesting nature. Several beautiful pictures have been obtained on loan from foreign and our artists, notably one from that accomplished French artist M. Dagnan-Bouveret; and there is a small show of paintings and drawings by the late Sir Noel Paton, and of paintings by the late Mr. J. B. MacDonald, which have a melancholy interest. Several of the academicians are painting strongly at present, and do themselves credit by the works they exhibit. An effort has been made, chiefly owing to the exertions of Mr. Pittendrigh Macgillivray, who is a member of Council this year, to revive an interest in the sculpture department by obtaining from two or three French, Belgian, Russian and London sculptors examples of their work, which, with local busts and fancy figures, are decoratively disposed throughout the entire length of the galleries. This for the first time probably, there is a small but elegant collection of what the French call "objects of art," included under that heading being many choice pieces of jewellery, which should be specially attractive to ladies who wear it and craftsmen who make it. The old dispute as to the placing of water-colours and architectural drawings has not yet been satisfactorily solved. The water-colours are hung in several places, and it would almost appear as if that and other points of a similar kind could only be met by the Academy boldly facing the question, which cannot much longer be delayed, of getting more accommodation, either in the present buildings, the Royal Institution or elsewhere. As usual the number of works entered in for consideration was large. Of all classes the number was 1,782, and of these there have been placed 789, which is fewer than last year. The details of the figures may be interesting. They are:—Oils—accepted, 100; doubtful, 359; rejected, 400; total, 859; water-colours—accepted, 56; doubtful,



rejected, 253—560; miniatures—accepted, 16; doubtful, 1; rejected, 2—33; sculpture—accepted, 18; doubtful, 22; rejected, 5—45; architectural drawings—accepted, 10; doubtful, 1, 26; rejected, 18—54; black and white—accepted, 11; doubtful, 29; rejected, 18—58—in all, 1,609. Members' and their works by request, 173; grand total, 1,782.

The loan exhibits in sculpture, if not great in number, are certainly remarkable for variety and quality, comprising, as they do, examples from three or four of the most prominent masters of the art in Europe. The names have only to be mentioned, and the interest of the connoisseur will be immediately aroused. They are Rodin, Dalou, Dillens and Prince Rouhetskoi, the great Russian sculptor, who made such a mark for himself in the last Paris International Exhibition. He sends here a most artistically-handled equestrian group, entitled "Tolstoi," also a sketch for a monument to Dante, an original conception which strikes a profound note. Dalou sends his "Lavoisier," the intense concentration of which, in pose and expression, at once arrests attention. The technique may be thought a little dry, but there can be no doubt of the keen, nervous quality of every line in it. It is the portrait of a scientist, and all that masterly science in the art of sculpture can do is to be seen in the production of it. It is the Frenchman at his best in a medium allied with a subject that he is master of. From this he turns to "Eve," by Rodin, and finds a quite different attitude towards the medium. In this work is to be seen the struggle to express in material form the vague qualities of things abstract. Between these two works ("Eve," by Rodin, and "Lavoisier," by Dalou) the history of modern sculpture might be written and all the battles of its criticism. In Dillens we have a master of the Belgian school, whose forte is decoration. He is here represented by a bronze from his study for the figure "La Gloire," which stands in the Botanic gardens of Brussels. It is one of a series of about fifty pieces of sculpture commissioned by the town of Brussels to aid the cultivation of sculpture in Belgium. Many of the subjects given were personifications of plants. "La Gloire" represents the laurel, a sprig of which in token of victory the youth thrusts aloft. There is a fine enthusiasm and abandon about the work—a broad picturesqueness which speaks of the northman as against him of the Latin race. It has been suggested that the Board of Manufactures, or whatever other authority has charge of the aid for the benefit of the Scottish National Gallery, might see their way, in the interest of sculpture, to add this piece, "La Gloire" and the superb "Lavoisier," to the national collection. The Royal Scottish Academy make, as has been said, a new departure this year, and so follows in the wake of progress elsewhere by showing a fine collection of jewellery—sculpture in little. Works in this genre have been honourably placed and regarded in all the academic exhibitions in Europe and in the Royal Academy at home, and the Royal Scottish Academy need make no apology for these pleasing exhibits. Two of the cases contain works from architects, that of H. Wilson being the more important. He also sends a crucifix and chalice of great beauty. Mr. Cromer Watt, Aberdeen, shows three charming necklaces jewelled and partly enamelled. Nelson Dawson also shows a fine collection of work in silver and enamel. All these works are personally designed and mainly executed by the hand of the artist, and are therefore as much to be regarded as expressions of character as the productions of other mediums. Art more readily accepted by the public. There is a large medal from Mr. Pickford Marriot, London, in rich inlay of mother-of-pearl and painted gesso, which will surely prove an object of pleasure to many. His Madonna in last year's Royal Academy, and another large panel in mother-of-pearl and precious metals, received great attention. The medium is a revival of an art which had come to be regarded as almost forgotten or lost. In Marriot's hand it receives a new grace and a higher artistic quality, perhaps, than it ever had before. Taken altogether, the sculpture-room will have more interest this year than formerly, and the standard shown will, it is to be hoped, have a highly educative influence on those students of the art in Edinburgh, who must doubtless sometimes suffer from the absence of that vitalising element in surroundings which is the favour of their confrères abroad. The local sculptors also are well represented.

### THE DREI MOHREN, AUGSBURG.

ACCORDING to the *Frankfurter Zeitung*, a famous hostelry, the Drei Mohren, in Augsburg, having fallen in evil days, is about to come under the hammer. Built in the early years of the sixteenth century by Hans Herwart, a wealthy merchant of Augsburg, and bought from him in 1560 by Jacob Fugger, the Rothschild of his time, the house passed through the hands of various private owners, until in 1723 it was

bought by one Andreas Wahl, and by him converted into an hotel. It is probable that the Emperor Charles V. stayed in the house in Herwart's time, and the Emperor Maximilian is known to have been Jacob Fugger's guest there in 1566. The list of illustrious and famous personages who visited the house during its palmy days as a hostelry, when Augsburg was a much-visited town—apart from its own attractions, it was a kind of half-way house between Ulm and Munich and a natural halting-place on the journey to and from Switzerland and Italy—seems an endless one, and the guest-books of the hotel, which seem to have been carefully preserved, must be very interesting reading. In 1792 Kaiser Francis II. stayed there with his wife Maria Theresa. In 1801 Napoleon stopped at Augsburg, and many of his generals stayed at the Drei Mohren, Napoleon himself occupying the episcopal residence. The Empress Josephine was a guest in 1805 on her way to Munich, whither Napoleon had summoned her. Late in December of the same year the Bavarian Major von Hausmann signed the guest-book, and opposite his name appears the statement that he came "to occupy our free town in the name of the Prince of Bavaria." On March 3, 1806, the formal delivery of the town to the Bavarian Commissioners was celebrated by a great banquet at the hotel. In 1810 the Archduchess Marie Louise stopped there with a great suite on her journey to Paris to supplant the divorced Josephine. During the later Napoleonic wars there was much journeying of soldiers and diplomats backwards and forwards through Augsburg, and we find in the guest-book of the Drei Mohren the names of Metternich, Castlereagh, Canning, Wellington, Talleyrand, and others entered, on their journey to the Congress of Vienna. Soon, however, the stream was turned in the opposite direction, and there was great journeying of notables to France, where Napoleon had reappeared and was showing very scant respect for the decrees of the Congress.

After Napoleon's final fall the Drei Mohren sheltered Jerome, Fouché (who signed himself Duke of Otranto), Count Walewski, Gustavus Wasa and other of the great Corsican's protégés who had shared in his fall. In the following decades we find names whose fame is of a different kind—Feuerbach, Lamartine, Walter Scott, Paganini, Spontini, Uhland. In 1866, on August 24, the German Federation was dissolved in Augsburg, and here again the Drei Mohren was the scene of the formalities. This was Augsburg's last appearance as a "Weltstadt," and since then, though the Drei Mohren has extended its hospitality on several occasions both to the old Emperor William and to his son, who as Crown Prince was immensely beloved in Augsburg, as indeed throughout Bavaria, and whose visits were always made occasions of great rejoicing, both Augsburg and its famous *Gasthof* have suffered eclipse. Augsburg is no longer a great place of call; the travellers who would once have stayed there are now whisked past it in the Orient express, and the Drei Mohren is fallen from its high estate—fallen so far that its present proprietor after long struggle against the inexorable kind of adversity which changed social conditions often bring with them, finds himself compelled to offer the historic old house to the highest bidder.

### STONEHENGE.

THE charities and records committee of the Wilts County Council, after exhaustively considering several important matters connected with Stonehenge, have reported to the County Council in favour of a recommendation to the Commissioners of His Majesty's Treasury that negotiations with Sir Edmund Antrobus be initiated or renewed with a view to the acquisition of Stonehenge as a national monument, and that the Treasury be further informed that after such acquisition the Wilts County Council would be willing to undertake the guardianship of the monument. The Amesbury Rural District Council have failed to take action on a representation from the Amesbury Parish Council with reference to a petition as to the obstruction of an alleged public right of way leading to Stonehenge, and it has been decided to appoint a committee of the County Council, consisting of the chairman, the Marquis of Bath, and Mr. J. M. F. Fuller, M.P., to hold a public inquiry into the subject-matter of the petition.

The Improvements Committee of the Glasgow Corporation has recommended the acquisition of about 50 acres of ground on which to erect houses for the poorer and labouring classes who may be displaced by the improvement operations of the Corporation under existing Acts of Parliament, or in exercise of the powers which may hereafter be conferred upon them for dealing with insanitary and congested areas within the city. For the acquisition of the ground the committee recommend that power be asked to borrow 750,000*l.*



## NOTES AND COMMENTS.

THE contest before the Examiner on Standing Orders over the Brighton Electric Railway Bill is being fought with a vigour which recalls the old days of railway campaigns. It would seem that the practice of opposing Bills on points of another class than plans and sections has not been favourable to accuracy, for some of the surveyors employed on the new line have been strangely careless. The allegations on account of defective plans were unusually heavy in number, and several have been already decided in favour of the opponents and against the promoters of the Electric Railway Bill. In one instance it was shown that the railway could not be constructed as laid down on the plans without going through a station of the London and Brighton Railway Company. In fact, Mr. MORGAN, the chief engineer, said that in cases where the Ordnance map was followed there was accuracy, but where anything was added there was error. In one case a whole valley seemed to have been left out. The description of houses was prepared in such a manner that, according to the Examiner, it was very difficult, almost impossible, to test the accuracy of the statements contained in it. He said it seemed to him that the statement amounted to a very perfunctory compliance with the Standing Orders, and he must, therefore, sustain the allegation. With regard to the latter point, some allowance must be made owing to the changes which have been introduced in the Standing Orders with regard to houses. Formerly it did not matter how many people occupied a house. One number on the plan and one number in the reference book sufficed, although it might contain a great many tenements. By the latest amendments one room, if a separate dwelling, must be distinguished. In such a case there may be an excuse owing to the difficulty of getting up information in a hurry. But what is to be said when railway sidings near the Streatham Hill station are shown on the plans as gardens attached to houses? The Examiner's report will be considered by the committee on Standing Orders, but enough allegations have been sustained to make it doubtful whether the Bill can ever reach the stage of the first reading.

DR. HEIN, of Vienna, is now engaged in southern Arabia in exploration of remains in the ancient kingdom of Saba, or Sheba, which is now receiving more than usual attention from archæologists. It is announced that the Turks have discovered several ruins in the districts known as Kaasa Redah and Kaasa Ans, which have been mentioned by an Arabic writer in the tenth century. They have met with an immense number of inscriptions on marble slabs, which confirm the statements of GLASER, to whom the credit is due of first suggesting the interest of the country. Figures in marble and bronze, as well as ancient coins, have been secured. There are districts as yet untouched which are described as being rich in remains. All objects found have to be sent to Constantinople, but it is never difficult for another country in favour with the Porte to obtain a liberal share of antiquities by a moderate outlay.

LITTLE is known about the works of MYRON, the Greek sculptor, although it would appear that he produced a variety of statues, some of them being remarkable for their suggestion of action. His name, however, lives through his courage in representing animals at a time when heroic figures were the fashion. MYRON'S cow inspired a great many Greek epigrams. In the eighteenth century LESSING treated at some length of so renowned an animal, and other critics have followed his example. GOETHE believed the cow was a sublime symbol suggesting the nourishing principle of nature which is presented to us in countless variations throughout the universe. A case is now before the French courts which shows that simple as the cow may seem to be as a subject, and restrained as it is in posture, it can afford an opportunity for the skill of an army of lawyers. The circumstances were almost commonplace. A porcelain manufacturer in Limousin, of which Limoges is the capital, considered an acceptable prize in the numerous agricultural shows of the district would be a group corresponding with MYRON'S, of a cow and a calf. He gave a commission to M. BUREAU, a sculptor. The artist wished

to be true to local varieties, and he used animals belonging to M. TEISSERENC DE BORT as models. He even gave the copy the names of the originals, viz. Guine-Rouge. The manufacturer sent an example to an exhibition in Paris. It was at once seized because it was alleged to be a counterfeit presentation of a group by the late M. M. Artists like MM. DETAILLE, BOUGUEREAU, CARO, DURAN, FRÉMIET, have testified to the correspondence between the two groups. On the other hand, agriculturists and various authorities in Limousin have vouched for the fidelity of the portraiture of the cow and the calf, as the originals were well known. Both sides have provided copies, and the French Court has during the hearing assembled a dealer's shop. It will take some time before a decision in so important a case is arrived at, and it is hoped to warn other sculptors against attempting to rival the reputation of MYRON.

THE Château de Vincennes is unquestionably outside the fortifications of Paris, but Parisians hardly recognise it as suburban. From this peculiarity it is less often inspected by tourists than it deserves. The society known as "Amis des Monuments Parisiens" lately visited the building and were enabled to see more than the ordinary spectators. The history of Vincennes goes back for 1,100 years. 807 it belonged to an abbey. Then it was transformed into a royal hunting lodge. St. LOUIS when king held court there, for he was able to dispense justice under the trees of the neighbouring forest. He is said to have 400 officers and servitors, and the annual expense 1,357,000 francs. Our HENRY V. died in Vincennes in his thirty-fourth year. He had set out to the relief of Calais but he became so ill at Corbeil that he was carried to Vincennes, and there after a month expired. Many discomfitures in France were the consequences. His body was buried in the cemetery of the château, but the floor which was taken from them by boiling, was removed to England. The trilogy of "Henry VI." begins with the funeral in Westminster Abbey. LOUIS XIII. preferred Vincennes to his other residences, and with him MAZARIN lived. Several of the rooms were constructed or altered under the direction of the Cardinal. The apartments now occupied by the general in command of the fortress MAZARIN died there. The last historic incident connected with the fortress was the trial and execution of the Duke of ENGHEN in 1804. The donjon, which was used as a residence by King CHARLES V., was the prison of the Duke of CONDÉ, Cardinal DE RETZ, DIDEROT and MIRABEAU. A visit to the château was one of the most interesting of those organised by M. CHARLES NORMAND, architect.

## ILLUSTRATIONS.

WEST FRONT, ROMAN CATHOLIC CATHEDRAL, WESTMINSTER. DETAIL.

THE LONDON, CITY AND MIDLAND BANK, NORTH STREET, LEEDS. THE new branch bank erected by the London, City and Midland Banking Company is situated at the corner of North Street and Meanwood Road, Leeds, holding a commanding position, and eminently suitable for banking premises. The principal entrance is at the south-west corner of the building. The banking-room is 42 feet by 29 feet by 22 feet high, with a decorated wagon-shaped ceiling; a private office is provided for the manager, and fittings are of American walnut.

The strong rooms, &c., are placed in the basement, a hydraulic elevator is erected for the service of the bank and bullion. The first and second floors are designed for the manager's residence. At the angle of the building a clock turret is placed, which is illuminated at night by electricity. The banking-room and basement are warmed by hot-water coils. The vitiated air shafts are carried above the roofs for the ventilation of the premises.

The whole building is fitted with the electric lighting. The new bank has been designed and carried out under the supervision of Mr. WILLIAM BAKEWELL, architect, Leeds.

EWING GILMOUR INSTITUTE, DUMBARTON, N.B.

MARQUETRY PANELS: S.S. "ORO TES"



## THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. W. H. Seth-Smith, president, in the

The following were elected members:—Messrs. P. W. G. Hall, C. K. Roe and B. Drummond.

Donations towards the new premises fund had been received from:—Mr. C. B. Arding, 5*l.*; Mr. Arthur Harston, 1*s.*; Mr. H. Dymoke Wilkinson, 2*l.* 2*s.*; Mr. A. H. Ryan, 2*l.* 2*s.*; Mr. H. I. Potter, 1*l.* 1*s.*; Mr. T. R. Hooper, 1*s.*; Mr. V. Wilkins, 1*l.* 1*s.* Total amount, 3,710*l.* 1*s.* 6*d.*

Miss ETHEL M. CHARLES, A.R.I.B.A., read a paper

## A Plea for Women Practising Architecture.

I appear before you to-night with a certain amount of diffidence, as the subject under discussion is not of my own choosing, and I fear I cannot do it justice. The title, to start with, is somewhat misleading. The dictionary says pleas are a lame excuse or apology. Now, I do not propose to make any lame excuses or apologies, all of which would be unnecessary under the circumstances. I shall merely bring to your notice some facts relative to woman and architecture, most of which you are, doubtless, already familiar. Then, in the title seems to suggest that I am conscious of a prejudice against women architects, and, since I read the paper for your Association, it further implies that I believe such prejudice is to be found amongst your ranks. Now, I wish it to be clearly understood that I disclaim both of these assumptions. Doubtless your committee had their thoughts directed to the choice of this subject by the knowledge of the existence of this feeling; but, personally, I have never met it. No one has ever maintained before me that a woman should not practise as an architect, and, if this view is held, I venture to say it can only be held by those outside the profession, who are consequently not acquainted with the functions, powers and responsibilities of an architect.

Since you are members of the profession, it seems superfluous to address you on the subject, as you must know better than any one what are the qualifications necessary for the exercise of the same, and therefore know better than any one that it is not a case of man or woman being best fitted to practise this art, but that it is entirely a case of personal ability.

In a back number of the *British Architect* I came across the following remark:—"Whether women, as a whole, are fit to take up the profession of architecture we hold somewhat strong and, it may be, conservative views—views which I do not think it would serve any useful purpose to discuss." It is very much that some one present holds similar strong conservative views, and that he will be kind enough to discuss them to-night, as I may tell you the subject was introduced by your committee as being a peculiarly useful and debatable one.

It would be a bold man who would assert that "women as a whole" are fitted to take up the profession, considering so many women have turned their thoughts in its direction; but it would be a still bolder man who would assert that men, as a whole, are fitted to take up the profession, *vide* the enormities we daily committed by men in the name of architecture. It is not a case of men *versus* women; it is a case of individual capability and aptitude.

However, there are some people, we are given to understand, who maintain that woman, *per se*, is unsuited for practising our art. Wherein the weak point lies we shall, no doubt, discover in the course of the evening; but as far as I can see, it lies outside the woman, and is not a defect inherent in her. I suppose the reason why woman should not practise architecture is because, except in one or two isolated cases, it is not practised it hitherto; and this is no reason at all. The same objection is brought forward every time that women have attempted to enlarge their sphere of action, and yet many new proofs are given that intellectually women can, at least in many cases, hold their own with men. The results of university examinations show it; members of the medical profession testify to it; the legal profession numbers women in its ranks, both in France and in America, though up till now in England women have only been allowed to study for, but not to practise at the Bar. "Let them study by all means," the conservatives say, "but draw the line at practise." And what is the use of instruction, I ask you, if it is to be turned to no account? What is study without an object? Knowledge without application? It is simply creating wants without satisfying them. Living is not learning.

Then, it is granted that woman is intellectually capable of dealing with the problems of architecture, are we to say that she is physically incapable of carrying on the work entailed? It were unreasonable to say her strength is unequal to the task when we see what women actually do in

this country. Take chainmakers, for instance. Hundreds of women are employed in the very heavy work of chain-making, a most arduous trade, and you must remember how two or three years ago certain philanthropists were anxious that legislation should put a stop to this, as they asserted the work was too great a strain for a woman. This intervention only resulted in the Home Secretary being besieged by indignant deputations of these same women, all protesting their competence and defiantly baring their muscular arms as evidence of the strength on which they prided themselves. Then, again, our agricultural labourers are not by a long way all men. In harvest time, when the work requires to be got through with all speed, women are called upon to labour side by side with their husbands and brothers; they toil from earliest dawn to latest twilight, through all the burning heat of the early autumn day, and so far from succumbing to this exposure, they weather it with the best of the men and live to seventy and eighty years of age. Now the bodily fatigue an architect must be prepared to undergo cannot be compared to the physical strain our women endure when employed as field farers or as chainmakers.

I do not mean to make light of the arduousness of the profession. The mere study of architecture involves a great deal of physical as well as mental strain, and since practice means the continuance of study and added to this responsibility, the profession is certainly not one to be adopted by the physically feeble. But women are not all physically feeble any more than men are all physically strong. You have heard of architects—men—breaking down through overwork, but you would not for that reason say that all men are unfitted to practise the profession. I have never heard of a woman architect breaking down, but neither do I assert that all women are fitted to practise architecture.

Those who base their objections to women architects on the fact that they are an innovation, and therefore to be suppressed, will fling their prejudices and fears to the winds when what is now an innovation comes to be a recognised institution. Already in America one town has a lady for a consulting architect, and we are given to understand that her designs for schools, prisons and railway stations compare favourably with other similar works in the country.

But there are some opponents who are more specific in their objections, and it is with these we must now deal. Their objections really arise from an imperfect knowledge of what an architect is. There is a general idea afloat that architects "make plans" and climb ladders, but beyond these two accomplishments nothing certain seems to be known. The former occupation is acknowledged to be quite a legitimate one for a woman, provided she have the necessary gifts, but the latter cannot be countenanced for a moment, even though she may be sufficiently courageous to attempt it, and can be trusted not to lose her head on the scaffolding. As far as I can gather, it is not the climbing that is objected to, but the fact that she may be seen climbing a ladder. Therein lies the difficulty. No less an architect than Wren shows us a way round, if not over it. The famous Duchess of Marlborough informs us Wren "was content to be dragged up in a basket three or four times a week to the top of St. Paul's, and at great hazard, for 200*l.* a year." No one could object to a woman being hoisted up in a basket any more than they could object to her making use of the more conventional elevator. Climbing a ladder is condemned as unwomanly, but so was riding a bicycle or being seen on the top of an omnibus not so very long ago, and yet all are now seemingly reconciled to these unwomanly practices. Besides, the ladder question could only be raised by persons who are in ignorance of the portion of a lifetime that an architect spends upon a ladder, and as this is so infinitesimal it is unworthy of consideration.

But besides the objector to innovation and the objector to ladder-climbing, there is the man who has dealt personally with architects as their client, and who knows very definitely what an architect is and what he expects from him. He must be a thoroughly artistic, scientific and practical man. He must be able to design at all possible speed a convenient, durable and beautiful building of any one of the three groups into which buildings may be roughly classified—Domestic, Ecclesiastical and Civil. He must have an intimate and familiar knowledge of every material and every trade employed in the realising of the said building, in order that none but the best of its kind and the best of technical skill may be employed. He must be a master of scientific construction, in order to prevent waste of time, material and money. He must keep all accounts relating to the work, bear in mind the interests of client and contractor and manage everything without allowing any friction to come about between the different parties concerned. This list is not complete; I have mentioned but a few of the functions required by an employer of his architect. For the sake of argument we will suppose that they appear to offer just so many obstacles to a woman following the profession.

I use the word "profession" because it covers more requirements than art, craft or faculty, and though it has been



weighed and found wanting, it appears to be the word in most general use when connected with the practice of architecture.

To succeed in architecture one must be, as I have said, artistic, scientific and practical in business matters; that is to say, success is largely a matter of natural gifts, education and experience. Now, who will assert that the necessary gifts are not and cannot be possessed by woman; that she does not receive the requisite general education, and that experience may not be acquired by her as well as by man?

Let us look first at the æsthetic side of the question. Architecture has been defined as good construction inspired by an artistic motive or by the instinct of the beautiful. Now this instinct of the beautiful, or, as the French put it better, "*ce sentiment du beau*," is as a rule more strongly developed in the woman. Nearly every woman is more or less impressionable, that is, she is an artist by temperament. Her taste will lead her instinctively and intuitively to a result which a man will reach by a series of criticisms and reasonings. He sees the truth, she feels it. The beautiful is attained by both; what matter if the paths they follow are different?

In most cases (outside the profession, be it understood) who is it who cares to be surrounded by beautiful objects and attempts as far as is possible to make the home a thing of beauty? It is certainly not the average man, who so long as he is comfortable cares little for the appearance of his surroundings. It follows, then, that it must be the woman, who will cheerfully sacrifice even comfort to her conception of beauty, if any choice have to be made between the two.

Some people go so far as to say that a woman must necessarily know how to plan a house better than a man, because her household duties suggest to her the wants and requirements that must be met. We do not agree with this view. The best housekeeper in the world may have most definite ideas as to what she requires, but she will not produce a plan, that is, the suitable disposition of spaces, till she have learned what rules and precepts must be obeyed in planning a house. And these rules, being all based upon common sense and obvious reasoning, are as patent to men as they are to women.

We must not, however, lose sight of the fact that the influence of woman in domestic architecture has been felt ever since the progress of social relations made her the equal instead of the slave of men. Woman's position in a country is the surest sign of the social progress in that country, and it was in the sixteenth century, when women began to be respected "as a whole," and not in individual instances, that domestic architecture regained its prominence. It was when a woman ruled this country, and by her personality influenced many, that castles, cathedrals and colleges—buildings designed for men by men—ceased to be the most important architectural objects erected. Elizabeth's reign is remarkable for the number of radical changes which took place, and in no direction was the change so marked as in architecture.

At the time when, under James's rule, the Scotch were dwelling in fortresses about as comfortable as a Norman keep, the English under Elizabeth were vying with each other as to who should build the most roomy, most convenient and most beautiful houses. It is noteworthy that the great queen spent not a penny herself in the interest of building, but she gave her noblemen much moral support, encouraging them to spend their thousands in erecting palaces worthy of receiving her as a guest. One of the most indefatigable builders of that time whose name has come down to us was a woman, Elizabeth of Hardwicke. Of the "three most elegant seats that were ever raised by one hand," so says her biographer, only Hardwicke Hall remains, and, judging from its monotonous symmetry and extravagant window-space, we have, it seems, little cause to regret old Chatsworth and Oldcotes. Besides her three country seats, this lady left "stately almshouses for twelve poor people" in Derby, and personally superintended the construction of "a splendid mural monument" to her own memory in All Saints Church, Derby. Her biographer, alluding to her passion for building, describes her as "a woman of a masculine understanding and conduct; proud, furious, selfish and unfeeling." Apparently we are to gather that these unattractive qualities, pride, violence and egoism, go hand in hand with a masculine understanding. If, as Hardwicke shows, she lacked artistic feeling, she was, on the other hand, a thoroughly practical woman. Of the four husbands she outlived, three were wealthy men who were able to supply her with the means of indulging in her favourite pursuit.

In France, where women stand out more prominently than in England, and during the early Renaissance, when they were most conspicuous even as politicians, warriors and poets, we find them occupied with building at an earlier date than at home. Marie de Pierre-Vive, Dame du Perron, one of the ladies of the household of Catherine de' Medici, was officially associated with Philibert de l'Orme during the erection of the Tuileries. In 1566 her name stands among the list of "*MM. les Surintendants des Bastiments du Roy*," and it is interesting to note that where she and de l'Orme signed papers together, Dame du Perron's name comes first. Her royal mistress was

another woman of "a masculine understanding," and, in on her own plans being used for her palace. *De l'Orme* to her, "*Lequel Palays je conduis de votre Grace suivant vos dispositions, mesures et commandement qu'il vous a plu faire.*"

But however artistic a woman may be, her natural alone will not suffice any more than will those of a man, out study and direction. Art has its restrictions and its limitations, which must be recognised and appreciated if true nature are to be our guides; and architecture is particularly restricted and limited in theory and in practice. In theory it is bound by those rules of art inspired by taste and traditions, and by those rules of science which can be demonstrated by invariable and absolute formulae. And in practice it is limited by structural conditions, which, if neglected, in the collapse of the building; it is limited by the physical properties of material, by the climate, by the habits and necessities of the moment.

Study of æsthetic rules produces fine designs, and scientific laws produces fine construction. Construction demands a knowledge of the principles of mathematics, besides a knowledge of the properties of building materials. Now mathematics involve logic, or the science of reasoning correctly, and hitherto logic has been held to be the prerogative of man as opposed to woman. It may be granted that among uneducated women possibly a large proportion are more illogical in their everyday conclusions than among an equal number of uneducated men; but it by no means follows from this that the brain of the average woman is less capable of mastering the science of mathematics than that of the average man of education. Now we are discussing cultivated women, and all reference to the uneducated and illogical class is beside the question. That mathematics can be mastered is proved by the successful results achieved by women at the universities, where they show peculiar aptitude for the science of mathematics, the numbers who devote themselves to this study being great, out of all proportion to those who select other schools or triposes. Again, at the École des Beaux-Arts, where the architectural course includes, among an immense variety of other subjects, a very high standard of mathematical ability, a woman, an American, has lately won the honour of carrying off the Premier Prix over the heads of her brother students.

But pure mathematics are of little use without familiarity with the properties of building materials, and this familiarity, it is argued, can only be gained by a technical knowledge of the trades employed in building. In the Middle Ages the architect was only distinguished from the workman by his conspicuous natural gifts and greater skill in technique; he was most familiar with his materials and produced the designs. The workshop was then the training-ground of the architect, and doubtless would have proved a school for a woman. But now, however much the fact is deplored, most of the architect's work is produced in an office and not in a workshop, and is due more to his intellectual activity than to his manual skill in any trade. If, then, the design depends upon the proper use of material, and the design may only be learnt through handling it, how comes it that designs are produced by men who are in no way fitted with such material, and that, on the other hand, most of the best builders who dispense with the services of an architect, many of whom are skilled in one or more trades, produce results which, though they strive after, fail to realise the architectural effect? The answer is simple. It is largely a lack of education and preparation which enables the student to grasp more readily the principles of the art than the skill. This general education is indispensable to architectural study, and since there is but slight difference nowadays in the course of education pursued by men and women, I cannot see that the absence of workshop training should nowadays be a woman more than it does a man. Do not mistake me. Education cannot create the gift of design, for design, like poets, are born not made; but it fosters and encourages this gift and calls out the highest faculties when they are latent in the student. No amount of training will make the dumb to sing; but, for all that, training is invaluable, and I say essential, to a singer who means to do his voice justice. I may be allowed a misquotation:—

Books, gowns, degrees will leave a fool a fool,  
But designs are best when the designer's been to school.

Granted, then, that woman is fully competent as far as the æsthetic and scientific sides of the profession are concerned, there remains the economic side to be considered. There are all the business transactions that take place between the architect, client and contractor, and involves the exercise of a large amount of tact in order to make matters run smoothly. Without tact a business man will not go far, and the tact and sensible quality seems universally acknowledged to be possessed out more generously to woman than to man. In France



man is born a business man, and her taste is never questioned, whereas in England it is the exception to find a man combines artistic talents with business qualities.

The stumbling-block in the business relations seems to be the architect is responsible for the quality of the work, and so has to oversee and direct the workmen. This some reason is supposed to be beyond the powers of a man; I am told, it is objected, she cannot use the necessary amount of strong language to keep the workmen up to the mark. But surely there are other ways of enforcing your will through the medium of unseemly language. There is not a man in twenty who has realised that gentleness may be a virtue. A man will boast of his want of self-control; he flatters himself that abusive language shows him to be a man of strong character, a master; he would count himself less manly were he less violent, and yet you must confess that some of the best men you know happen to be those who always get their own way and compel people to carry out their wishes whether they will or no. St. Paul's Cathedral, one of the finest examples of Renaissance work we have in England, is a living example of what workmen can produce without the stimulus of force. When held the "ungodly custom of swearing" in such reverence that he posted up an order to the effect that, upon sufficient proof, the clerk of works should dismiss any labourer guilty of this crime, and further that "if any master working on his apprentices, servants and labourers, it shall be deemed his fault, and he shall be liable to be censured by the Commissioners." Besides, swearing at one's subordinates is not as fashionable as it used to be. In the army and navy, where formerly the slightest order was accompanied by a volley of oaths, the change is strongly marked, and the man who now so far forgets himself as to swear at his men is himself open to a severe reprimand from those who are of a higher rank to that which he holds.

I think I have touched upon most of the points which might be brought forward as objections to women practising architecture, and I trust we shall all be agreed that the obstacles are more imaginary than real. But there is one other point I wish to refer to before closing, and that is the "new style" which people are clamouring for. Since women began to study architecture it has been suggested that they may supply this long-felt want, but as yet there has been little to warrant the hope that the fresh inspiration will come from that quarter. Women make intelligent interpreters and passionate advocates, but, to judge from the testimony of bygone centuries, their power stops short at creation. It may be wrong to say that woman is totally wanting in inventiveness, and it will be a question of upbringing and training. Hitherto men have always led the way, for the race is to the swift and the battle to the strong, and men have been the swift and the strong; since women's upbringing taught them only dependence and obedience, and in no way fostered originality. But nowadays women are expected to think and act for themselves, and this independence and self-reliance may prove to be the generating spark which will rouse to activity the originality and creative power which, for all we know to the contrary, may long lain dormant within them.

In any case this want of creative faculty would not make a woman architect. Architecture is a logical art, and change has taken place in it without a very obvious reason, when no reason can be adduced for original and ingenious designs, such productions are grotesque and not architectural. The truest architects are not distinguished for originality of invention so much as for careful attention bestowed on the smallest details of their work, and women, "as a rule," possess the faculty of worrying out details so small that they often are apt to escape the attention of the more comprehensive mind of men.

I do not stop now you may go away with the impression that I consider women more fitted to practise architecture than men and nothing could be further from my thoughts. May I, concluding, repeat what I said at the beginning of my paper, it is not a question of men *versus* women, but that it is simply a case of the capacity of the individual?

ARNOLD MITCHELL, in proposing a vote of thanks, said Miss Charles had so ably presented her case that she deserved criticism. The burning problem in the practice of architecture by women was the limitations of sex. Up to a certain point the man had no better capacity than the woman in following such a profession. In dealing with contractors, a man was likely to find difficulties. The speaker thought the work would afford scope for women architects, but he thought that they would find little success.

LEONARD STOKES seconded the vote, and said many difficulties beset the path of the lady architect. The discussion which followed offered poor encouragement to the lady architect, if in her ambition she hoped for more office work and interior planning.

## ARCHITECTURAL DESIGN IN FRANCE.\*

HOW do we manage matters in France? I will tell you how a Frenchman sees it, although I may speak of much well known to many. The ideal architect, now as ever, should be both the scholar and artist. He should possess very varied knowledge. He should know the theory of all arts and all sciences which have anything to do with architecture. With this he should combine taste, the fine judgment and the genius of his art. Knowledge of history, of literature, geometry, mechanics, perspective and physics is necessary. But something which is absolutely indispensable is a thorough knowledge of design, for, after all, the entire art of the architect manifests itself in design.

When an architect is consulted with regard to a work of architecture, he should be able on the spot to design mentally one or even several projects of the structure in question, in accordance with the intentions of the person who wishes to build. This mental design makes it possible for him to propose at once to the owner one or several types of structure for the proposed building. When the first general understanding has been arrived at, the architect makes a sketch, a rough tracing with the pen, indicating only the ensemble and the principal divisions, serving as a basis for the execution of the real design or the final project. The architect should be able with his sketch to give an approximate estimate of the expense, based on the cost price per metre (or foot) of surface and per floor for a structure of the character ordered.

When client and architect agree on the ensemble of the structure and its essential points, the architect starts on the execution of his project. He first draws his design with pencil and on a reduced scale. The simplest and most commonly used scale is one decimetre or two decimetres, on which one or several of the divisions as units of length are taken. If it is understood that 1 centimetre, 2 centimetres, 5 centimetres represent 1 metre measured on the ground, we say that the design executed is on the scale of 0m,01, of 0m,02, of 0m,005 per metre. The custom in France is to draw the plans at 2 centimetres per metre. The design, first executed with pencil, as we said above, is drawn in ink with ruler and pen, following the lines traced with pencil, which after this second operation are erased. The interrupted lines (— — — — —) represent axes, as e.g. the axes of the walls; the dotted lines (.....) indicate the concealed lines and outlines. The connecting lines for the sides are likewise dotted; but on the plans painted with indian ink they are often entered with red ink.

To express the design the architect must represent in form of a plan, a profile and an elevation, the building which is to be erected.

The plan gives the fundamental conception of the building. It is, in fact, on the composition of this plan that the first merit of a work of architecture depends; the usefulness, I mean, of the building modelled upon the needs and convenience of its inhabitants. The skill of the architect consists in combining the convenience of the interior connections, of the necessary exits, with a regularity which is always desirable; but to this regularity, to symmetry, to the uniform correspondence between all the parts of a plan he must not sacrifice everything else; above all it is necessary that the general and special arrangement agrees with the needs and the use of the building. The composition of the plan of a building requires also the choice of the general idea, on which the form of the building, its special physiognomy, its character must depend. The elevation depends also on the plan. If the latter is simple, the structure overground will at once show a certain stamp of simplicity.

If the plan in the design of a building must above all correspond to and satisfy the idea of convenience, we may on the other hand say that the elevation alone is directly responsible for its beauty. To express this the architect makes use of geometrical and perspective drawings.

When the architect has designed the building to be erected in plan, in profile and in elevation, he has to proceed to the representation of the secondary parts of the architectural ensemble, to the representation of the various ornaments which are to form the decoration of the building. These details, these portions of the architectural arrangement, must be represented either on a large scale or full size, so that their different parts may be clearly understood. Together with these different designs, the architect must furnish estimates and specifications. The part embracing the statement of the work is called "devis descriptif," the part concerning the cost of each detail of work is the "devis estimatif." The "devis" must show in a precise manner the projected building, in its ensemble and its parts; it must give the conditions, requirements and processes best fitted to insure a perfect execution; indicate the nature of the materials to be used, the quality of these materials, the troubles

\* From a paper by M. Alb. Allain in the *Architectural Record* of New York.



which the same may cause and which must be avoided. Of course the forms and dimensions of the rooms, their arrangement and ornamentation are exactly fixed by the designs representing the plans, profiles, elevations and the details on large scale, which form the ensemble of the project. Nevertheless, the architect will describe in his "devis" the arrangement, the decoration of each of these parts. A methodical classification is necessary in the making up of a "devis," so as to avoid the confusion which may result from the great quantity of subjects treated. We usually allow for the subject matters a certain number of principal divisions, with headings as follows:—Earthwork and excavation, foundations, masonry, carpentry, roofing, joiners' work, glaziers' work. Under each of these chapters we bring together the material, workmanship, transportation, &c., for each class of work. In spite of all attention paid to the drawing up of a "devis" in the description of the work as well as in the estimate of prices, certain errors may be committed, which will cause a variation in the amount agreed upon for the finished work; on the other side, the owner may require some changes in the course of the execution. To avoid this, in order not to be bound irrevocably, we often suppress the "devis estimatif" and retain only the "devis descriptif" after the owner and the builder are sufficiently posted regarding the cost. On the whole, in France, the work of the architect consists in furnishing the project, involving a more or less large number of designs, and the "devis." Having done so, he is responsible only for damage caused by some faulty design or specification of his.

We said above that on the composition of the plan must depend not only the form of the building, but also its special physiognomy—its character. The architect must therefore apply to the composition of the plan all his science, all his intelligence and all his talent. Of course an ideal architect would have to invent this plan, take it entirely from his own brains. Such an ideal architect would not have recourse to any work; he would even avoid thinking of a plan previously executed, because that could only interfere with his creative ideas, or at least influence them. But besides possessing very extraordinary knowledge, such an architect would have to be a man of remarkable genius. In France—as, no doubt, elsewhere—architects of genius are rare. Some have thought they were, and—were much mistaken. The greater part of those who have relied chiefly on their own imagination only did something beyond their power, and failed. As a general rule, therefore, a sensible and prudent architect will take care not to try to invent too much. No doubt it will not be necessary for him, if he knows his business well (I say "well"), to have recourse to books on architecture; that is if he knows by heart the characteristic work of his predecessors, the common points where all masters have met, the best relations between given forms, the proportions best fitted to the special character of every sort of arrangement, the details of ornament agreed upon by the most celebrated artists. No, I repeat it, a good architect need not consult any work on architecture, because, no matter what problem may be before him, he will at once see in his mind's eye a standard plan of this building. I mean to say the disposition and the distribution proper for this building, the best order and the best arrangement so far given to such and such details and to its ensemble. If by chance the architect should not have the standard plan in question present in his mind, he should, of course, be advised to look it up either in technical books or in the works of his fellow-architects. I may say that there are standard plans for all kinds of structures, from the standard plan of the labourer's dwelling to the standard plan of the church, from the standard plan of the theatre to the standard plan of the hospital, and we may lay it down as a principle that the architect, before composing the plan of his building, must know the standard plan of that kind of building, and must not let it pass out of sight—unless he is a man of genius. Of course he must not copy it; that would be too simple; besides, it might be that the standard plan would not answer sufficiently well the particular taste and wishes of his client. What is necessary is that the architect, although inspired by the standard plan in its essential lines, should follow the general ideas of his client, and add to the work yet ideas of his own. The amount of the latter will be greater or less, according to the kind and importance of the work, and also according to the power of his originality. In one word, there must be in the mind of the architect a sort of mysterious collaboration between the architect's own conceptions, the requirements of his customer and the standard plan. From this triple collaboration the composition of the plan of the building in question will originate.

In France we design usually first the plan of the ground floor and that of the second floor, then the plans of the other floors, last of all the plans of the basement and of the upper part of the building. Thereafter we execute usually two sections of the structure, the longitudinal section and the transverse section. Finally, we design the elevation of the front of the building. In this last composition the taste, the intelligence and the rhythmical sense of the architect find occasion

to manifest themselves. But in these matters one must care not to yield too much to fancy. Trying to be original one may so easily become bizarre; excess in ornamentation almost always worse than excess in soberness. Many of French architects are skilful decorators. Some, tempted to show what they can do, exaggerate the importance of ornament. A detail becomes too pretentious. People of shudder. How many new buildings are there whose front overloaded with incongruous motives. Within a few metres height, these intemperate architects have piled every imaginable in order to produce the useless. We see only without motive, senseless balconies one above another, columns on the balconies, brackets suspended anywhere. It looks as if the ornaments had broken loose from architecture. And it must be observed, it has taken much talent to get it to look so. Taken singly, some of these motives are meritorious. The trouble is that they do not harmonise with the ensemble of the building, they do not even harmonise with themselves. Of course, we have to decorate the façade. Ornament is a complement of architecture, a necessary complement; ornament gives to the general design its brilliancy and character. The ornament of a building, no matter of what nature, of what importance, must not be the work of caprice; it must justify itself by declaring something of how the building is constructed, where its points of support, its anchorages, its chief floor, &c., are. The ancient architects made good use of these elements. There lies the origin of the columns, the buttresses, simple and composite mouldings, dentils and modillions of the cornice, the lions' heads and stones, the acroteria of the roof, the railings and friezes of the façade, the corbelling-out brackets, the gargoyles of the terraces and the caryatids of the porticoes. All these motives have their reason in the structure of the building. At all epochs the ornament, in obedience to the same laws of propriety and truth, proclaims on the outside the use, the destination of the building. A good architect will not lose sight of these eternal laws. Nor will he forget them when designing the divers ornaments which are to embellish the interior of the building. In France, of all these parts, as well as of all of the outside decoration, the architect furnishes a standard design either on a large scale or in full size. Whether the designs are washed with india ink or drawn is of no consequence.

A good architect can, of course, execute, arrange, design all kinds of private or public buildings. As a matter of course, however, a good architect, a celebrated designer, will not waste his talent and his time to the construction of buildings of no architectural importance and of quite elementary execution. We have in France, therefore, two categories of architects: those which busy themselves with humble, ordinary constructions, and those who devote themselves to the most important works.

### SCOTTISH MONUMENTS.

AT the last monthly meeting of the Society of Antiquaries of Scotland, Dr. D. Christison, secretary, read an interesting paper, copiously illustrated by lantern views, on the carvings and inscriptions on the kirkyard monuments of the Scottish Lowlands, which have hitherto attracted little attention. The beauty and antiquity of the monuments of the Western Highlands had secured for them an ample share of notice, illustrated with unsurpassable artistic merit and accuracy of work by James Drummond, but the Lowland kirkyards, with their more modern monuments and comparatively run-of-the-mill designs, had been almost ignored by the artist-antiquary alike, and had it not been for a praiseworthy paper on the mural monuments of Crail by Mr. E. Beveridge, and incidental revelations in Mr. Rae's edition of Donald's heraldic papers, we should be quite ignorant of the character and appearance of the monuments of the post-Reformation period. The epitaphs and inscriptions upon them, however, had been dealt with in local magazines and more extensively for the north-eastern counties by the late Andrew Jervise. The present paper gave the results of investigations during the summers of the last six years, chiefly in the districts of Perth, Fife, Angus and Mearns, the chief object was to display the designs carved on the monuments, but the inscriptions were not neglected. Dealing with the earlier examples prior to the end of the sixteenth century, he instanced one with a black letter inscription at Kilmadock, Perthshire. At St. Mary, Hawick, is a recumbent slab to John Deinis, who came to his death "in debaich" in 1546, and the only other sixteenth-century tombstone he had met with was at Foulden, Berwickshire, dated 1592, and bearing a quaint inscription in verse to the memory of George Ramsay, of Foulden Castle. The monuments of the seventeenth and eighteenth centuries in the selected churchyards of Kilmadock (Perthshire), Logie (Forfarshire), Laurencekirk (Kincardineshire), Abercorn



man), Anstruther and Ceres (Fifeshire), were passed in view to show the varieties of monuments in different districts. They resolved themselves into three classes, recumbent slabs, erect headstones or mural monuments, the recumbent class again dividing itself into the varieties of simple slabs, table-stones and roof-shaped stones. Characteristic examples of each class were described, and attention called to curious symbolism which they so often exhibited, tending only to warn or threaten the sinner by the view of the terms of mortality, the hour-glass, angels blowing trumpets announce the Resurrection and the Last Judgment, and many quaintly-rendered allusions to the shortness of life and the certainty of death. Another kind of symbolism was extensively applied in the tools carved on the gravestones of men of various handicrafts. With regard to the art of these sculptures, considerable dignity was sometimes given to the heads of the figures, and failure was most manifest in the bodies and faces. But the ornamental carvings were often in good taste, the general effect was pleasing. The inscriptions were skillfully worked into the design, occasionally forming the chief part of it, and the lettering was well done, though sometimes unequal. It was remarkable, however, that little of decorative carving had been derived from the beautiful forms of the early Christian monuments, and Mediaeval sculpture came mainly from the domain of heraldry. The church, the Church and the graveyard supplied the scenes. The monuments were local in style, each district having its own peculiarities. Comparing the Lowlands with the Western Highlands, the absence of all warlike weapons on the tombs was in strong contrast to the Highland usage as late as towards the end of the seventeenth century. Compared with England, the range of subjects was much wider and the symbolism more varied, but perhaps the most remarkable difference between the two countries was the apparently much earlier beginning of the post-Reformation tombstones in Scotland, the chief cause of their earlier origin and richer development in the country being attributable to the powerful impulse of the Reformation in the northern kingdom, while the superior character of the inscriptions, especially in Latin, was due to the parish school system. In conclusion, he commended the investigation of these monuments to local observers as throwing light on the history and social condition of the country during two centuries or more, of which the memorials would undoubtedly be lost if not speedily recorded.

#### SYMMETRICAL BUILDINGS IN PAINTINGS.

It has been said by Gilpin that if we introduce a piece of regular architecture into a picture without any of the disarrangements occasioned by accident or decay, "it immediately becomes a formal object and ceases to please." That is either an erroneous or a very imperfectly expressed idea. Most undoubtedly, if it be shown merely in elevation, a structure which is symmetrical will produce a formal appearance, but there is no occasion for its being so exhibited; on the contrary, by means of judicious foreshortening or perspective, shadows thrown upon it so as to break up the too great unity of its masses, and by means of figures and other elements, it may be made to present an agreeable species of familiarity to the eye, at the same time that it suggests to the mind the idea of the most perfect symmetry. If for instance we view a colonnade in front or parallel to the picture, it will undoubtedly be formal and monotonous, but if it is shown obliquely and from a near station so as to be considerably foreshortened, though we still perceive that it is precisely the same as before, the columns all equidistant and equal in height, the representation is produced by unequal spaces and unequal heights; the horizontal lines vanish obliquely, the upper parts are diminished, and many are partially concealed and indicated only by those which are shown; besides which the whole may be so broken by shadows falling upon the columns, that the contrast of the masses of light and shade is sufficient to remove whatever monotony might else exist. Therefore, although the term picturesque is applied by way of distinction to that class of objects which are well suited for painting, but possess qualities more or less disagreeable in themselves, and so far implies something distinct from if not directly opposed to beauty, it comprehends also another class which, while they are beautiful in themselves, are well adapted to pictorial representation, inasmuch as, in order to produce their images upon canvas, there must be contrasts and irregularities both in respect to form and colour. Surfaces perfectly smooth and of uniform colour in themselves, such as those of highly polished marble or metal, may be expressed by a variety of colours and by sudden lights and shadows, perfect regularity of form, by a distorted image of the object according to the laws of perspective; while the true hue of local colouring is variously modified, according to position and distance of the object, by aerial perspective and by light and shadow and reflected light; and in

proportion as they afford scope for displaying the effects of both linear and aerial perspective, and the contrasts and changes of form and colour arising from them, will objects partake of the picturesque.

#### THE LEIGHTON MEMORIAL, ST. PAUL'S.

ON Wednesday the memorial of the late Lord Leighton was unveiled by Sir E. J. Poynter, P.R.A. It is in the form of a sarcophagus bearing a recumbent figure of the late artist. There are also figures of Painting and Sculpture. The following inscription is on the sarcophagus:—"To the memory of Frederic Lord Leighton of Stretton, painter and sculptor, seventh President of the Royal Academy of Arts, this monument is erected by his many friends and admirers. Born December 3, 1830; died January 25, 1896. He lies buried in the crypt of this cathedral." After prayer by the clergy, the following address was delivered by Sir E. J. Poynter:—

I am permitted by the Dean to say a few words in memory of the great artist and beloved President of our Royal Academy, on the occasion of uncovering for the first time the beautiful monument which the enthusiasm of his friends and admirers has erected to his memory. That the monument has taken so important a form as you will presently see is due greatly to the interest which His Majesty the King took in the project from the very first. Entering most warmly into the movement, His Majesty—at that time Prince of Wales—with a generous appreciation of the great qualities and character of Lord Leighton, took upon himself the presidency of the committee for promoting a memorial and deciding what form it should take; and by a liberal contribution in money with which he headed the subscriptions at the first meeting, held at Marlborough House, set an example which was eagerly followed, with the result that it became possible to dignify our President's memory with a work of art adequate in scale, and in other respects worthy of so great an artist and so distinguished a man. I am commanded by His Majesty to give expression to the interest with which he has watched the progress of the work and now views the fulfilment of the task, which, as President of the committee, he inaugurated out of his high regard for one whose talents he held in such high esteem, and for whom personally he had a warm affection. It is in His Majesty's name that I now unveil this lasting memorial to Lord Leighton's fame.

The President continued:—We are happy to think—for I am sure that everyone present will agree with me—that the monument which you now see before you, and which by permission of the Dean and Chapter occupies this important position, is one which cannot but add a lustre to the memory of the illustrious artist whom it commemorates. It will stand for all time in this glorious cathedral as worthy of its surroundings, and as a proud example of what English art can achieve. Mr. Brock, to whose genius this consummate work is due, was intimately associated with Lord Leighton, and his work has been a work of love. Besides affording a lasting source of pleasure and admiration as a production of the finest art, it presents to the world a record of the man in a portrait which, I may venture to say, has never been surpassed for vivid resemblance, for beauty of expression and for tenderness of feeling. Mr. Brock has spared neither time, trouble nor cost to perfect the work beyond what was provided for by the limits of the fund subscribed, and I think it would be found—if the truth could be known—that in his disinterested desire to honour his departed friend, Mr. Brock has been the largest contributor of all. All who are here present know that it is upon no ordinary man that, for this brief moment which we are able to snatch from the duties and cares and distractions of this tumultuous city, our attention is concentrated.

I remember that even in the very beginning of his career, at the time when I first knew him in Rome, when he was only twenty-three years old, and was beginning that picture of Cimabue by which he sprang at once into fame, we used to call him the "admirable Crichton" from the variety of his accomplishments and the perfection to which he brought everything which he undertook. Young, handsome and fair, full of life and energy, with a buoyancy of spirits that I never saw equalled, he seemed born for a life of enjoyment, and his brilliant artistic gifts shone out as only a part of the general exuberance of his nature. But underneath his joyous lightheartedness lay a passionate love of his art, with a depth of perseverance and patient determination to excel and to attain to the highest mastery in its practice, which was the ballast for his soaring aspirations. And this was the more remarkable because the usual stimulus of necessity was wanting. He had means which would have enabled him to live a life of ease, in which his art might have taken a secondary place, as merely one out of many brilliant accomplishments. The advantage was one which might have paralysed serious endeavour in a nature



less bent on excellence. He had, moreover, the wisdom to wait until years of assiduous study had made him sure of his method, so that it was as no crude beginner in haste to display his talent, but as an accomplished artist, that he took the world by surprise when, a youth of 25, he exhibited that first great work which was as successful as it was ambitious in aim, and which was brought into special prominence by being bought by Her Majesty Queen Victoria. I was in the happy position to witness the beginning and progress of this work, for with that generosity to beginners for which he was conspicuous through his whole life he invited me to his studio, allowed me to spend day after day with him drawing from his models and watching his method of work, an invaluable and never-forgotten guidance and example to me for all my life. This was but the first instance of that inexhaustible kindness which he never failed to show to all young students who went to him for advice and assistance in their studies, and which can be attested by many who have since made a name for themselves.

It would be impossible in the short time which I have at my disposal to convey to those who did not know him any adequate idea of Lord Leighton's many-sided nature or achievements. I only touch on his love for the kindred art of music, because he made it the source of so much pleasure to his friends. His gift of languages was celebrated; he spoke most European languages as freely as his own, and in his own he was an acknowledged master. In his public speeches especially he entranced everyone by the purity and elevation of his diction and the easy flow of his style. Cosmopolitan as he was, however, by his education and early surroundings, and his wonderful linguistic attainments which made him everywhere at home, if he had a passion which rivalled that of his art, it was the love of his own country and his high ideal of the duties of a citizen. It is well known to many how he threw himself into the Volunteer movement at its inception, and was with others a leading cause of its success, and how to the efficiency of the corps which he was mainly instrumental in forming he devoted himself with an ardour as great as if it had been the business of his life. In all these matters his brilliant natural gifts and ambition to excel were no doubt an advantage which he possessed beyond the ordinary; but it is not to be supposed that to those qualities alone was due the exceptional position to which he attained. I do not know that Leighton loved pleasure less or work more than most men; but he had as a guiding principle from the beginning to the end of his illustrious career a fixed determination to do to the utmost what he conceived to be his duty, which, as he conceived it, lay in the honest fulfilment of a thousand obligations beyond what the exercise of his art laid upon him in the first place. No care for self, no thought of either pleasure or gain ever disturbed him from his high ideal; indeed, in the conception of his duties he was chivalrous almost to excess, and would freely give for public objects, and for the glory and advancement of his art and of his beloved Academy, time and work for which he might with propriety have been liberally compensated. He was indeed generous and liberal to an extent that made serious inroads upon his income, and cases of individual distress found him always open-handed to public demands. No one will ever know how largely and freely he gave privately of his means, and crowded as his life was beyond that of most busy men, he always found time to listen to a friend, to help a beginner, or to relieve affliction. I may cite, as merely one example of his public spirit and generosity in these respects, the beautiful monument close to which we now stand. In his desire to do justice to the great work of Alfred Stevens and to the hero whom it commemorates, he guaranteed the cost of its removal from the obscure place where it was first erected to its originally destined position under the arch of this nave, and the sum required falling far short of the subscriptions given, he defrayed it from his own purse.

Gifts and qualities such as these pointed long beforehand to the place which he must ultimately occupy, and when the time came it was by the unanimous vote of his colleagues that he was chosen President of the Royal Academy, in which capacity he was best known in his later years. The brilliancy and energy of his career in that responsible position are within the memory of all. If he was successful in raising the Royal Academy to a higher place in the estimation of the public than it had ever occupied, it was because in his mind the interests of the Academy and the interests of the highest art were identical, and because he illustrated this view in his own person by his own devoted and noble example, and by his exalted aims in the practice of his own art.

To what perfection of accomplishment, of beauty of form and colour, of lofty design and exquisiteness of rendering this practice had attained, no one, I believe, had a full idea until, after his death, his life's work was united in one collection on the walls which he had so continuously adorned. It came, I know, as a surprise to me, who had had the advantage of following his career from the first touch which I saw put on his first picture to the last work which he left in glorious incom-

pleteness—that picture of Clytie, where the flame of the sun seems symbolic of his own departing career. Constant incessant energy such as his, if it brought a splendid reward, the esteem and admiration of his colleagues, his friends the public, brought with it also its sacrifice, for no one can doubt that his life was shortened by the excess of energy, and his determination to abate nothing of the pride of his art in face of the hundred other occupations which the position of President entailed. He died, if one may say so, in the plenitude of his health and vigour, working with more than his normal brilliancy to the last moment when the spasm which brought on the end. Those who witnessed the longed and painful struggles of that end say that his courage and his sweetness and his cheerfulness never deserted. He was as unselfish in his death as always throughout the course of his life. In Lord Leighton's memory I commit his work to the charge of the Dean and Chapter of this cathedral.

## TESSERÆ.

### St. Mark's, Venice, in the Seventeenth Century

**D**URING the Civil War in England John Evelyn went abroad in order to study science and art. He wrote much about architecture, and the following is his account of St. Mark's:—"Being come into the church you see nothing and tread on nothing but what is precious. The floor is inlaid with agates, lazulis, calcedons, jaspers, porphyries, other rich marbles, admirable also for the work; the walls are sumptuously encrusted and presenting to the imagination the shapes of men, birds, houses, flowers and a thousand varieties. The roof is of most excellent mosaic. But what most people admire is the new work of the emblematic tree at the entrance passage out of the church. In the midst of this rich vault are five cupolas, the middle very large, and sustained by three marble columns, eight of which are of precious marble. Under these cupolas is the high altar, on which is a reliquary of several sorts of jewels engraven with figures after the manner of the ancients, and set together with plates of pure gold. The altar is covered with a canopy of ophir, on which is sculpture the story of the Bible, and so on the pillars, which are of Egyptian marble, that support it. Behind these are four other columns of transparent and true Oriental alabaster, brought hither from the ruins of Solomon's temple as they report."

### The Sardinian Nuraghi.

The Nuraghi are attributed by some to Iberian colonists and their leader Norax. They are a kind of tower in the shape of a truncated cone, constructed of large blocks of stone, porphyry or freestone, without cement, and forming two concentric walls, between which are stairs leading to the summit. The inner part has generally two vaulted rooms, one above the other. The entrance at the base is very low, and is reached through both walls to the lower chamber. The stairs lead to the upper chamber. The Nuraghi are of two kinds, the most common, and probably the most ancient, being marked by the chisel, and are constructed of massive blocks of irregular faces, and smaller stones in the interstices. The exterior materials of the others are evidently worked by the hand, and though the stones are not exactly square, they are laid in horizontal layers, and gradually diminish in size towards the summit. The Nuraghi stand generally on the summit of a hill, commanding a view of the plains. Some rest upon a solid, spacious substructure or platform walled round in the same manner, and in which are constructed hidden chambers, communicating with the central one by a covered gallery. Captain Smyth gives the plan and section of one of these, which is in the plain of Giavesu, near Bonorva. It is 40 feet high, including the substructure, and the cone is 40 feet in diameter where it rises above the substructure. One of the loftiest Nuraghi is between Samagheu and Fordungiu, in the district of Busachi, east of Oristano; it is nearly 100 feet high, and is called by the natives "Su Nuraghi." Nuraghi are scattered all over Sardinia to the number of several hundred, and are seen in every state, some perfect, others a heap of rubbish. They are very numerous in the district of Sulcis, or the south-west part of the island, also in the hilly region of Le Marghine, north of Oristano. There are also fine specimens of them in the Campo d'oro, and at Isili and Gennuri in the Campidano. The original purpose of these buildings was probably for watch and defence, though in after ages some of them may have been used as monuments for the dead, fragments of Roman terra-cotta coins of the Empire having been found in them. No literal nor symbolical characters are discovered in these singular structures.

### The Bridge of Augustus at Narni.

The attention of the tourist who visits Narni is first directed to the remains of an ancient Roman bridge which crosses the river Nar on the approach to the town from the south of Terni. This bridge was one of the four which Augustus



ered to be built on the Flaminian road. The first was ns Milvia, over the Tiber, about a mile and a half from me; the second, over the same river, near Otriculum; the d, of which we now speak, at Narni; and the fourth was cted over the Marecchia, near Rimini, which joins the minian and Æmilian roads. The bridge at Narni had four hes, and Procopius, in the first book of his history of the hic war, says they were the highest arches he had ever a. One only now remains to attest its former magnificence, if we may judge the largest from the distance of the piers, must have been of considerable breadth. The stones of ch it is built are of surprising thickness; they are joined ether without cement or cramps, and from their extreme dity might have defied the attacks of time had not the adation of one of the centre piles given way, which ttered the whole fabric. It is the Bridge of Augustus hich the poet Martial speaks in one of his epigrams, in ch he thus addresses the city of Narni:—"Preserve my er part and spare my friend, so, Narni, may thy bridge for e stand." It is now, however, notwithstanding the good es of the poet, dwindled into a mere object of research to curious traveller.

#### Balusters.

Balusters (which Italian artists invented) are obviously iature columns, but not copied from columns. No, they truly imitated, modified to their less structural, more deco- ve station by a sacrifice, of structural to decorative fitness, of statical to mere formal beauty. Statical beauty is most developed in the Doric column, but mere eumorphy ined its perfection in the ancient vases. Take a column a vase reduced to the same height and drawn on the same line, and draw a third outline whose ordinates shall ywhere be a mean between those of the column and the r, there will be obtained a form fit for a baluster. The aster (the most successful novelty ever introduced by the lerns), if not an invention of genius, was at least one of ed taste. It fell, however, before the popular English ion of lightness. Those who think a building is rendered t by the omission or utmost possible reduction of eaves and r projections (*i.e.* by giving it as much as possible the arance of a solid block) think, of course, that the e stride is heavier than a massive solid dado (taken from foot of a building to be placed on the top), and looks ier than a row of square sticks, in which the opposite ities of flimsy substance and the severest gravity of form ource neutralise each other, and produce sheer negation rt by themselves; but in a composition, positive ugliness, ive anti-art, which is indeed what lightness generally as with us.

#### John Smibert.

This painter was born in Edinburgh about 1684, and ed his time with a house painter; but eager to handle a il in a more elevated style he came to London, where, ever, for subsistence he was forced to content himself at r with working for coach painters. It was a little rise to be oyled in copying for dealers, and from thence he obtained itance into the Academy, which was directed by Sir James nhill. His efforts and ardour at last carried him to Italy, e he spent three years in copying portraits of Titian, yke and Rubens, and improved enough to meet with much iveness at his return in Edinburgh and London. When his try and abilities had thus surmounted the asperities of his ne, he was tempted against the persuasion of his friends n bark in the uncertain but philanthropic scheme of the us Dean Berkeley, afterwards Bishop of Cloyne, whose evolent heart was then warmly set on the erection of a nrsal college of science and arts in Bermuda for the in- ition of heathen children in Christian duties and civil vledge. Smibert, a silent and modest man, who abhorred inesse of some of his profession, was enchanted with a plan he thought promised him tranquillity and honest subsist- n in a healthful elysian climate, and in spite of remon- ces engaged with the dean, whose zeal had ranged the favour e court on his side. The king's death dispelled the vision. nvert, however, who had set sail, found it convenient or had esitation enough to proceed, but settled at Boston in New and, where he succeeded to his wish, and married a lady a considerable fortune. He died in 1751. John Smibert ed much influence among American artists.

#### Ancient Ladders.

he general construction and use of ladders was the same ng the ancients as in modern times, and therefore requires o explanation, with the exception of those used in besieging a ored place and in making an assault upon it. The ladders e erected against the walls, and the besiegers ascended e under showers of darts and stones thrown upon them by e besieged. Some of these ladders were formed like our on ones; others consisted of several parts which might

be put together so as to form one large ladder, and were taken to pieces when they were not used. Sometimes also they were made of ropes or leather with large iron hooks at the top, by which they were fastened to the walls to be ascended. The ladders made wholly of leather consisted of tubes sewed up air-tight, and when they were wanted these tubes were filled with air. Heron also mentions a ladder which was constructed in such a manner that it might be erected with a man standing on the top, whose object was to observe what was going on in the besieged town. Others, again, were provided at the top with a small bridge, which might be let down upon the wall. In ships small ladders or steps were likewise used for the purpose of ascending into or descending from them. In the houses of the Romans the name "*scalæ*" was applied to the stairs or staircase leading from the lower to the upper parts of a house. The steps were either of wood or stone, and, as in modern times, fixed on one side in the wall. It appears that the staircases in Roman houses were as dark as those of old houses in modern times, for it is very often mentioned that a person concealed himself "*in scalis*" or "*in scalarum tenebris*," and passages like these need not be interpreted, as some commentators have done, by the supposition that "*in scalis*" is the same as "*sub scalis*." The Roman houses had two kinds of staircases: the one were the common "*scalæ*," which were open on one side; the others were called "*scalæ Græcæ*," which were closed on both sides. The Flaminica was not allowed to ascend higher than three steps on a common scala, but that she might make use of a climax like every other person, as here she was concealed when going up.

#### Attacks on Wren.

Censure is a tax which all distinguished men must pay for their eminence, and Wren escaped not its penalties. One mode of attack was through there being a clause in an Act of Parliament which suspended a moiety of the architect's salary at St. Paul's till the building was finished. Some of the new and younger commissioners, who knew not Wren nor his services, obstructed to the utmost of their power all his measures for completing the fabric. Wren therefore petitioned the Queen to interpose her royal authority so that he might be suffered to finish the cathedral in such manner as Her Majesty should please to direct. The Queen commanded this petition to be delivered by the Duke of Shrewsbury, the Lord Chamberlain, to the commissioners, who replied in a long series of excuses, denials and accusations against under workmen, artificers, &c., which did not inculpate the architect in any way. To this document Wren replied by a pamphlet and an address to the Archbishop of Canterbury and the Bishop of London, the chief commissioners for the building. In the latter he recites the clauses relative to the coal duty and its application, and that which related to the detention of half his salary till the works were completed. By this latter clause he conceived it to imply that the building and everything connected therewith was under his management and direction, and that it was in his power to hasten or retard it; both of which he appealed to them as knowing the contrary, and to what extent he had been limited and confined. However, it had pleased God so to bless his sincere endeavours, that he had brought the building to a conclusion, so far as was in his power; he thought nothing could be said to remain unperfected but the iron fence round the church and painting the cupola, the directing of which had been taken from him. He therefore hoped that he was neither answerable for them, nor that the suspending clause could or ought to affect him any further on that account, and prayed that it be so considered and the balance paid to him. This representation was referred to the Attorney-General, who gave his opinion that he considered Sir Christopher Wren's case to be very hard, inasmuch as the stopping half his salary, being intended to encourage him to use his utmost diligence to finish the cathedral, which for all that appeared he had done, and the not finishing it was not his fault, but that of others. But if the church remained unfinished the commissioners had no alternative, but in justice should determine the manner of doing it, that the charge of an architect might be saved and Sir Christopher receive the balance of his salary. The opinion of the Attorney-General being inconclusive, and the architectural part of the cathedral being completed, Wren petitioned the House of Commons to the same effect, whereupon the House considered his case, and were so well satisfied with its justice as to declare the cathedral to be finished, so far as was required to be done by Sir Christopher Wren as surveyor-general, and ordered that the suspended salary be paid to him on or before December 25, 1711.

#### The Portland Vase.

This vase was said by Montfaucon to be formed of a precious stone; but subsequent examination has shown the material to be dark blue glass, relieved by figures and devices in white enamel. It is about ten inches in height and beautifully curved from the top downwards, the diameter at the top being about three inches and a half, at the neck or smallest



part two inches, at the largest part (mid-height) seven inches and at the bottom five inches, with two handles, one on each side. The blue tint of the glass is rich and beautiful, and is rendered still more so by the contrast of the delicate white enamel of which the figures are formed. These figures are seven in number, three men, three women and a winged cupid; but the story or scene represented has never been satisfactorily explained, although many attempts at explanation have been made. Dr. King endeavoured to show by a somewhat forced construction that the scene had a mythological relation to the birth and acts of the emperor Alexander Severus, and other theories of a similar kind have been advanced. The figures, however, whatever may be their import, are placed in the following order:—On entering the ante-room one of the handles is first seen, having beneath it a wild-looking head with long hair and beard; near the handle (to the right) is a male figure standing under a kind of porch and offering his extended arm to a female seated on the ground, over whose head bends the branch of a tree; a winged boy is hovering over these two figures, and to the right is a man leaning his elbow in an easy attitude on his knee, the foot being raised on a stone and his chin resting on his hand. We then come to the second handle, which has a head under it similar to that on the opposite side; near this handle is a man seated on a stone and looking at a female figure reclining in an easy and elegant attitude, with an inverted torch in her left hand and the right passing over her head; the branch of a tree bends over her, and at her left hand is another male figure, who is looking towards her and holding a staff in his left hand. These figures are about five inches in height and are modelled or moulded with minute accuracy. Being different in colour and in opacity from the glass on which they are laid, they must have been fashioned before being fixed on the vase; yet the union has been so complete that no joint can be seen between them, and the minute details of the figures have not been in the slightest degree injured by the heat which in all probability was necessary for the process of cementation. At the bottom of the vase is an enamelled head and bust of a figure whose hand is elevated towards the mouth, and who has a fine Grecian outline of face. Dr. King was of opinion that this head was part of a larger work, and was cemented on the vase by a process different from that employed on the other parts.

#### Music and Painting.

In the soulless oblivion produced by materialism we lose sight of the deepest beauties of every art. We call music "sensual and vague," and deny its powers of expression simply because it cannot give the form and colour of nature, forgetting that it has the higher faculty of reawakening the feelings produced by the sight of nature, whose mysterious spirit appeals to the soul through the ear even more than through the eye. There is no work in any art which shows such truth to nature, or is such a masterpiece of colouring as Beethoven's "Pastoral Symphony," producing by merely audible means those feelings, strong in youth but weakening with age, which overflow the heart in the presence of nature—when its living works seem to exhale in gratitude to their Creator, and in the restless though faint din around us we recognise sounds of joy, as if the flowers and the grass, in a tuneful breath of adoration, unbosomed their beauty to the morning light. The artist who composed a work which can thus act on the soul is not only a musician but also a poet, and even a painter, merely employing sound as a means to embody his ideas. So in painting, we feel at times as if there was sound as well as form, and that it appeals to the ear as to the eye, having more eloquence in its impassive silence than even music or poetry could impart.

#### GENERAL.

**Mr. Edwin O. Sachs** has taken into partnership Mr. G. Spencer Hoffman, M.A., and the firm will be known as "Edwin O. Sachs & Hoffman."

**The Death** is announced of Albert Bierstadt, the well-known landscape painter. Deceased, who was of German origin, was born in 1830 near Dusseldorf, but was taken by his parents to America a year later.

**The Lord Mayor of London** on Tuesday laid the foundation-stone of the building which is about to be erected in Old Bailey as a memorial of the jubilee of the United Kingdom Band of Hope Union. The building will contain seven floors, part of which will be let as offices. Mr. Rowland Plumbe is the architect.

**An Exhibition** of Austrian fine art and decorative furniture will be held in London during the coming season. The exhibition is being promoted by the Austrian Ministry of Commerce, and will embrace within its scope everything that is new, original or characteristic in Austrian decorative art. The chief feature of the exhibition will be a large number of intérieurs by the leading furniture firms of Vienna. The exhibi-

tion will be held at Prince's Skating Rink, Kensington, May 15 to July 31 inclusive.

**The State Apartments** at Windsor Castle are to be to the public on regular stated days as soon as they are prepared. If possible they will be open on Easter Holiday.

**Count Plunkett** gave a lecture last week on "Donatello" in the Dublin Museum. This was the first lecture on individual sculptor's works delivered in the Museum. He explained how Donatello advanced from realism to the expression of the noblest spirituality. From ancient art he showed his perfect technique, yet while most of his contemporaries under like conditions became mere imitators, Donatello remained audaciously original. Count Plunkett showed the influence he exercised not only over sculptors, but over painters as Botticelli, Mantegna and Raphael.

**The Church** of St. Bartholomew the Great, Smithfield, including the crypt, will be open without charge to visitors on March 8 and March 22, on the occasions of the usual historical and explanatory lectures.

**Mr. Griffith Thomas**, chairman of the Swansea Harbour Trust, laid the foundation-stone on Tuesday of the new headquarters, which are being constructed at the cost of 15,000*l.*

**The Governing Authorities** of Christ's Hospital are making preparations for the abandonment of the historic buildings in Newgate Street, and the removal to the new building at Horsham. The great hall has, so far as its interior decoration is concerned, been dismantled, and nothing remains but bare walls, the old organ having followed the pictures, ornaments and stained glass. The date of the boys' departure from Newgate Street has been fixed for April 19, and the reassembly on June 2 at Horsham, where also the boys' preparatory school at Hertford will henceforth be held, and educated, while the vacated buildings will be occupied by girls. The opening of the new school at Horsham will, it is hoped, be performed by royalty.

**Mr. John Cook**, borough engineer of Lancaster, has been appointed engineer for the city of Cape Town at a commensurate salary of 1,500*l.*

**The Old Church** adjoining Rockingham Castle, Northamptonshire, was damaged by fire on Sunday, owing to overheating of the flues.

**"Great John,"** the new bell at Beverley Minster, weighs 7 tons 3 qrs. 1 lb., was inaugurated on Saturday, a thankoffering by the vicar, Canon Nolloth, for twenty years of work in Beverley Minster and its parishes. The crown are the words, "Magna Campana vocor Johannis Evangelistæ; MDCCCCL.".

**Mr. J. Oldrid Scott** having been called in to examine the Selby Abbey tower, has confirmed the apprehensions that the tower has been entertained as to its safety, and recommended that the upper part should be taken down at once. It was unanimously resolved that Mr. Scott be requested to prepare a plan and obtain estimates of the cost of the proposed work.

**The Central League of School Art** of Toronto has decided to purchase five large pictures representative of different styles of architecture, together with a collection of architectural pictures, which will be circulated among the public schools of the city.

**The Scarborough Corporation** finally passed last night the amended plans for the new infectious diseases hospital, in accordance with the requirements of the Local Government Board, which is to be erected at a cost of 15,000*l.*

**Mr. Julius de Benczur** is painting a portrait of the Emperor of Austria which is to be presented to the Emperor Edward VII. on the occasion of the Coronation. The Emperor will be represented wearing the uniform of the English regiment.

**Mr. Rowland Berkeley** will read on Monday before the Surveyors' Institution a paper on "Electric Railway Street Compensations."

**The Town of Horsham** was on Wednesday illuminated by means of electricity at a cost of about 14,000*l.* The work has been carried out for the Urban Council. The architect is Messrs. Gordon & Gunton, and the consulting engineer is Mr. W. C. C. Hawtayne. Mr. W. J. Proctor has been appointed resident electrical engineer.

**Mr. A. Carnegie** has founded an annual prize of 500*l.* which will be awarded by the jury for the most meritorious oil-painting in the Exhibition of American Artists. The prize is for an American artist, portraits only excepted, the picture to be the property of the artist. The same artist may not receive the prize in two successive years, and not more than twice.

**Sir Philip Burne-Jones** has sailed for New York, which city he has received commissions for portraits.

**Messrs. J. F. Fogerty and W. Clifford Farne** have entered into partnership as architects, civil engineers and surveyors at Bournemouth, and will carry on the business of the late firms of Pinder & Fogerty and Pearce & Parnell.









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WM. BAKEWELL, F.R.I.B.A., Architect.









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MARQUETRY PANELS: S.S. "ORONTES."

Designed and Engraved by STEPHEN WEBB.

Messrs. J. J. STEVENSON and HARRY REDFERN, Architects.





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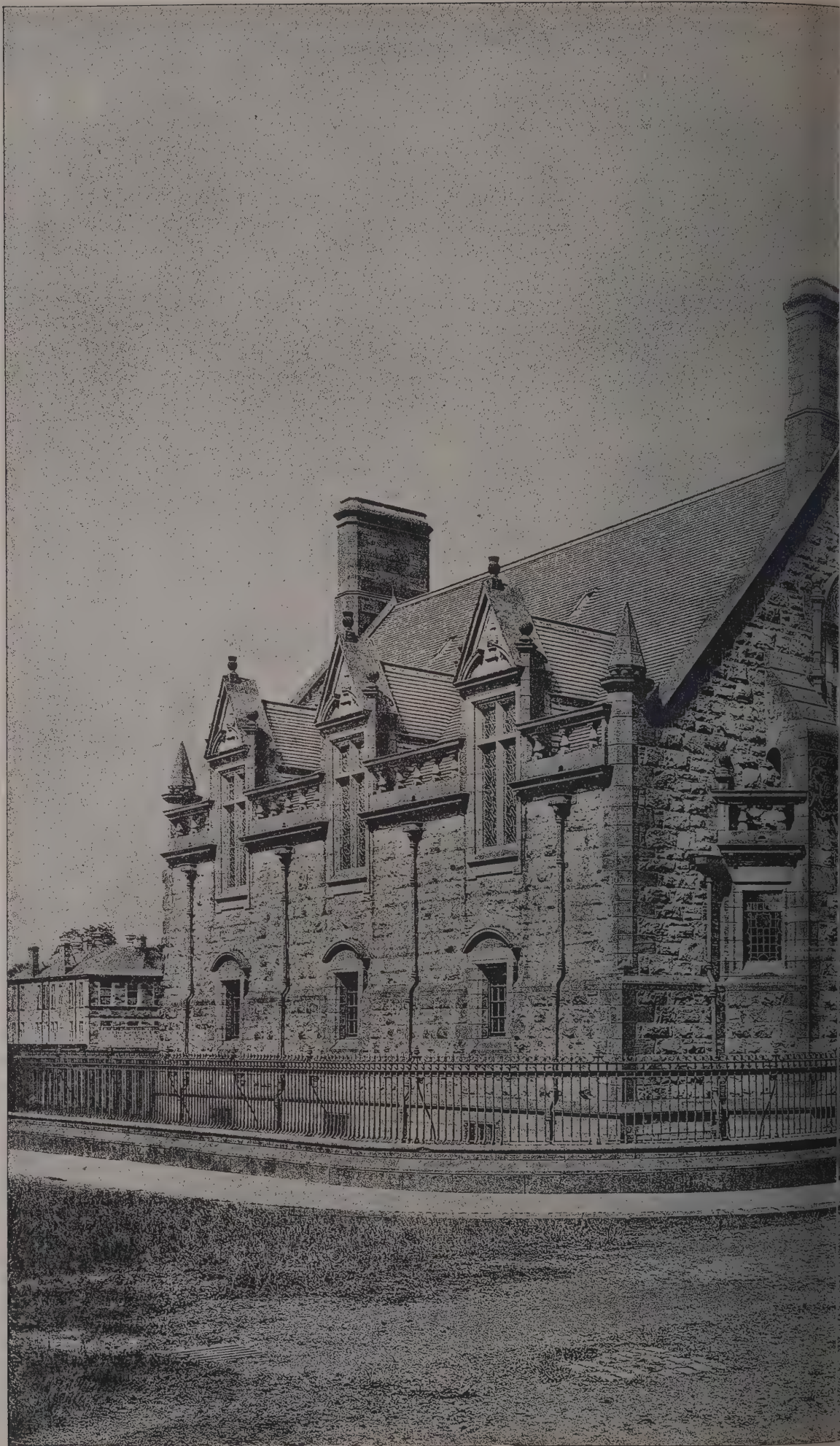






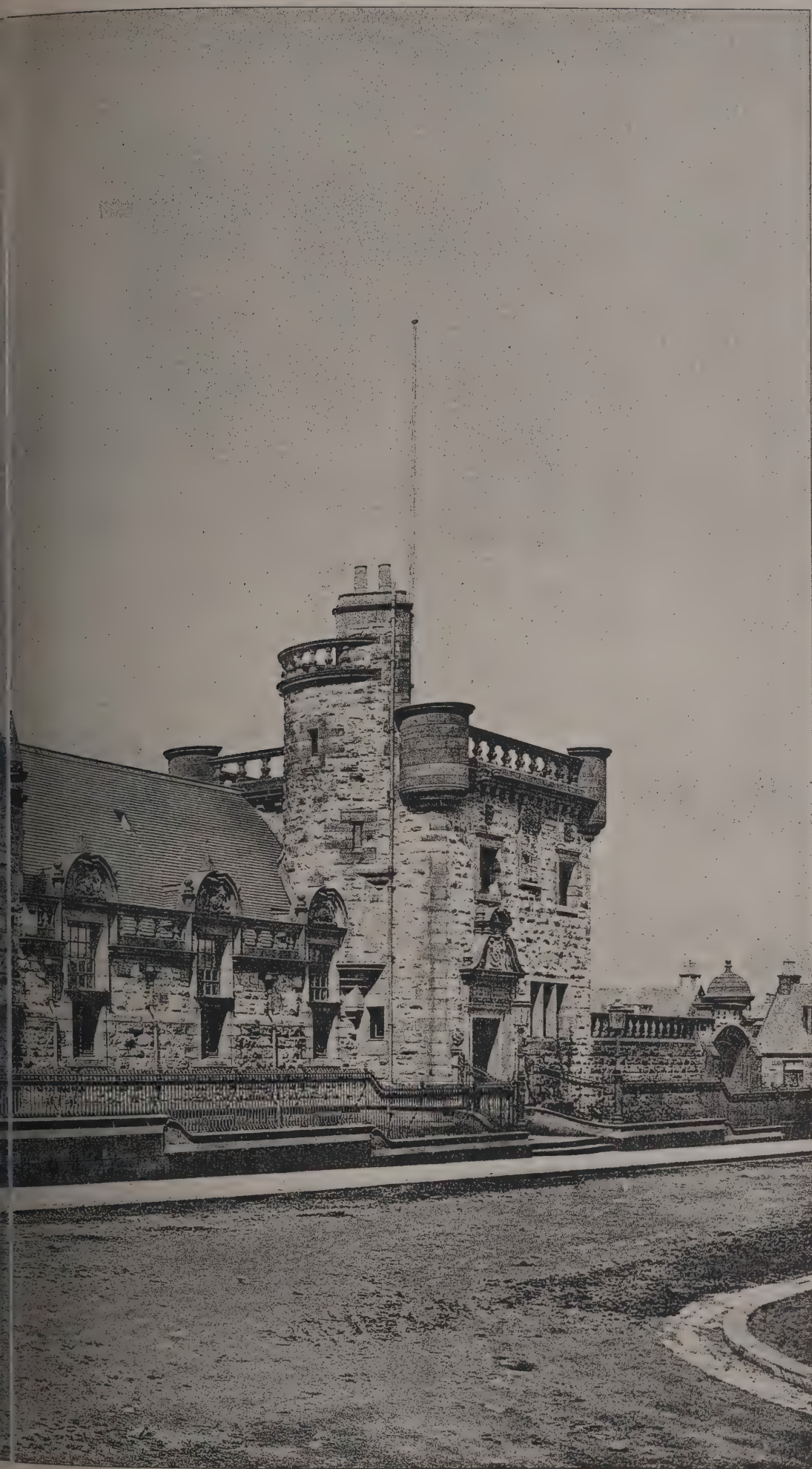






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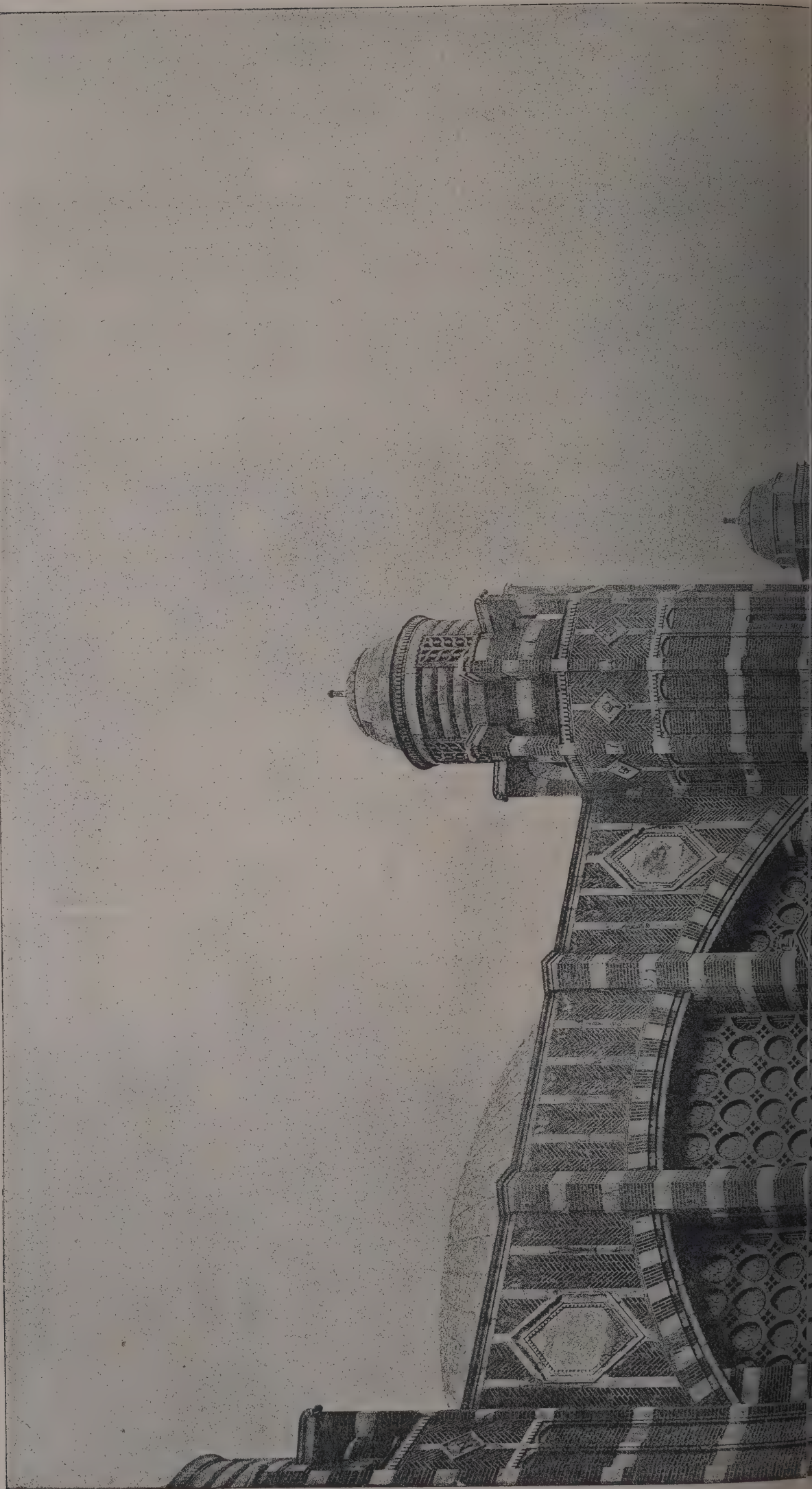




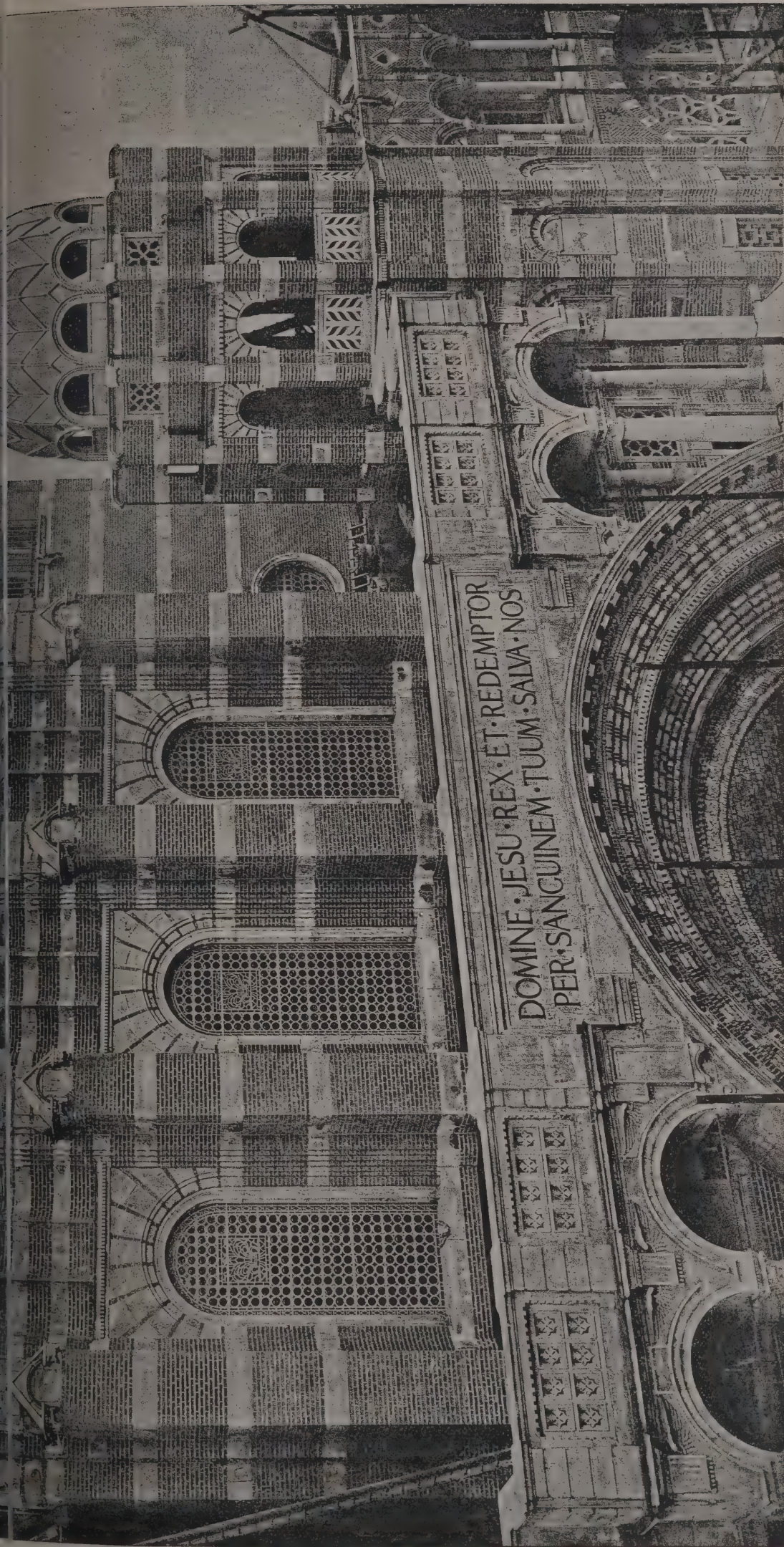




The Architect, Feb 21<sup>st</sup> 1902.







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## WEST FRONT, ROMAN CATHOLIC CATHEDRAL, WESTMINSTER: DETAIL.

J. F. BENTLEY, Architect.







THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**ALDRERSHOT.**—March 1.—Plans are invited for laying-out a pleasure ground about 6 acres of land in the centre of Aldershot. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

**ALDRERSHOT.**—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for first, second and third best plans. Mr. Nelson F. Dennis, A.M.I.C.E., surveyor.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West Melbourne.

**DUNSTABLE.**—March 14.—Plans are invited, with estimate of expense, for a six-bed infectious diseases hospital to be erected near Dunstable. A premium of 5% offered for best selected. Mr. C. Crichton S. Benning, town clerk, Dunstable.

**HARROGATE.**—May 14.—Competitive designs are invited for a new town hall, the cost of which must not exceed 40,000*l.* Premiums of 150*l.*, 100*l.* and 75*l.* are offered for the three selected designs. Mr. F. Bagshaw, borough engineer, Municipal Offices, Harrogate.

**IRELAND.**—Feb. 26.—A premium of £20 is offered for the best and cheapest report, plans, specification and estimates, &c., for providing the town of Kanturk with a wholesome supply of water. Mr. Mt. Timothy Guiney, clerk to the Kanturk Rural District Council, at the Boardroom of the Workhouse.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**NEW MALDEN.**—March 5.—Designs, &c., are invited for public offices, fire-station, cart sheds, stables and mortuary to be erected at New Malden, Surrey. Total cost of buildings not to exceed 5,100*l.* Premiums of 25*l.* and 10*l.* respectively are offered for the best and second best design. Mr. C. T. Lewis, clerk to The Maldens and Coombe Urban District Council, 7 Market Place, New Malden.

## CONTRACTS OPEN.

**ALDIN GRANGE.**—March 5.—For erection of a house for the stationmaster at Aldin Grange, for the North-Eastern Railway Co. Mr. William Bell, architect, the Central Station, Newcastle-on-Tyne.

**ANNITSFORD.**—Feb. 28.—For erection of a magazine for high explosives, and surrounding screen, near Annitsford station, Northumberland. Mr. L. H. Armour, 16 West Street, Gateshead.

**BARNSTAPLE.**—Feb. 25.—For erection of stabling at the Station hotel, Wooda Bay Messrs. Smyth-Richards & Fox, architects, 3 Castle Street, Barnstaple.

**BELPER.**—Feb. 26.—For erection of engine-house, foundation for engine and pumps, stone boundary fence walls, &c., at the Holloway, Crich and Park Head reservoirs. Mr. Joseph Pym, clerk to the Council, Belper.

**BIRKENHEAD.**—Feb. 24.—For construction of conveniences in the market hall. Mr. Charles Brownridge, borough surveyor, Town Hall, Birkenhead.

**BIRKENHEAD.**—Feb. 25.—For extension to the electric tramway car-shed in Laird Street. Mr. Charles Brownridge, borough surveyor, Town Hall, Birkenhead.

**BIRKENHEAD.**—Feb. 25.—For supplying and fixing machinery required in the tramways repair shop at the Laird Street depot. Mr. Alfred Gill, town clerk, Town Hall, Birkenhead.

**BRACEBRIDGE.**—March 3.—For alterations and additions to the present buildings of the Bracebridge Asylum, near Lincoln. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, S.W.

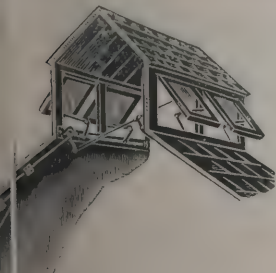


Fig. 1.

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**BRANKSOME.**—Feb. 26.—For erection of a temporary isolation hospital, consisting of two wards for six beds in each, with nurses' room, kitchen and other necessary conveniences, Branksome, Dorset. Mr. S. J. Newman, architect, Council Buildings, Branksome, Parkstone.

**BRIDGWATER.**—Feb. 24.—For construction of collecting trenches and other works upon the Willoughby estate. Messrs. E. D. & Henry Marten, engineers, Cheltenham.

**BRISTOL.**—March 8.—For supply and delivery in Avonmouth Dock of a self-propelling steam fire float. Mr. W. W. Squire, engineer, Cumberland Basin, Bristol.

**BROCKLEY.**—Feb. 24.—For erection of a refreshment house at Hilly Fields. Quantities and other particulars may be had at the General Section, Architect's Department, County Hall, Spring Gardens, S.W.

**CANNOCK.**—Feb. 26.—For providing and laying about 6 miles of 3-inch and 4-inch cast-iron mains, with all necessary fittings, valves, &c. Mr. W. E. Rogers, engineer, Anson Street, Rugeley.

**CANTERBURY.**—Feb. 27.—For construction of an underground convenience at the cattle market. Mr. Arthur C. Turley, city surveyor, Tudor Chambers, Canterbury.

**CLUTTON.**—Feb. 28.—For erection of school buildings for 340 children and a teacher's residence at Clutton, Somerset. Mr. W. F. Bird, architect, Midsomer Norton, Somerset.

**COLCHESTER.**—For erection of two houses in Maldon Road, Colchester. Mr. James Prior, architect, Westgate, Colchester.

**DARLINGTON.**—Feb. 24.—For erection of offices for the Weardale and Shildon Water Company. Mr. William Harding, Crown Street Chambers, Darlington.

**DARLINGTON.**—March 1.—For erection of a new classroom at the Bowes Grammar school. The Rev. C. B. Wardale, the Vicarage, Bowes.

**DARWEN.**—Feb. 25.—For erection of proposed church of St. George-on-the-Lea, Darwen, Lancs. Mr. B. V. Johnson, architect, 20 Victoria Street, Westminster, S.W.

**DERBY.**—For erection of offices, Derwent Street, Derby. Mr. Joseph T. Holford, architect, 34 Cornmarket, Derby.

**DERBY.**—Feb. 25.—For erection of three cottages for the fire brigade in Jury Street. Mr. H. F. Gadsby, town clerk, 15 Tenant Street, Derby.

**DERBY.**—Feb. 26.—For boilers and engineering and sanitary work in connection with new public baths, Reginald

Street. Mr. John Ward, borough surveyor, Babington Lane, Derby.

**DEVONPORT.**—Feb. 25.—For erection of workmen's dwellings in Ordnance Street. Particulars can be obtained on application to the Borough Surveyor, 30 Ker Street, Devonport.

**DUKINFIELD.**—Feb. 24.—For erection of a bowlhouse shelters, &c., in the park. Mr. Saml. Hague, borough surveyor, Dukinfield.

**DURHAM.**—Feb. 26.—For works required in erection and completion of butcher's shop, &c., and dwelling-house at H. Spen. Mr. G. T. Wilson, architect, 121 Durham Road, Blackhill.

**ESHER.**—Feb. 25.—For erection of a new post-office. Particulars may be obtained at H.M. Office of Works, Storey's Gate, S.W.

**FENWICK-CUM-MOSS.**—March 2.—For erection of boundary walls, lych gate, &c., at St. John's Church, Fenwick-cum-Moss, Doncaster. Rev. Fras. H. Allen, vicar, Moss Vicarage, Doncaster.

**GATESHEAD.**—Feb. 24.—For erection of workshops West Street and Brunswick Terrace, Gateshead. Mr. L. Armour, 16 West Street, Gateshead.

**HACKNEY.**—Feb. 27.—For erection of cart-shed, office-messroom at the Clifden Road depot. Mr. Norman Score, borough surveyor, Town Hall, Hackney.

**HALIFAX.**—Feb. 27.—For erection of two blocks of detached houses at Upper Brear, Northowram. Messrs J. Walsh & Graham Nicholas, architects, Museum Chambers, Halifax.

**HALIFAX.**—March 4.—For erection of four good thorough houses on the German House estate, Lightcliffe. Mr. F. Mond Berry, architect, Commercial Street, Halifax.

**HASTINGS.**—Feb. 27.—For erection of boundary wall, fencing, drainage, &c., at the borough cemetery. Mr. P. Palmer, engineer, Town Hall, Hastings.

**HELSTON.**—Feb. 28.—For erection of a police-station appurtenances at Helston, Cornwall. Mr. Oliver Caldwell, architect, Victoria Square, Penzance.

**HEREFORD.**—March 6.—For restoration of St. James Church, Hereford. Messrs. Nicholson & Hartree, architects, Hereford.

**HOLLOWAY, N.**—Feb. 26.—For sinking of a tubular well and the provision of the necessary pumping gear at the

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electricity works, 50 Eden Grove. Mr. Wm. F. Dewey, town clerk, Town Hall, Islington, N.

HUDDERSFIELD.—March 6.—For erection of two semi-detached villas, outbuildings and boundary walls in Tunnacliffe Road, Ashenhurst, Huddersfield. Messrs. John Kirk & Sons, architects, Huddersfield.

HULL.—Feb. 27.—For erection of a steam-roller shed and coal store, Hornsea. Mr. W. E. Warburton, surveyor, Public Rooms, Hornsea.

HULL.—March 12.—For erection of postal sorting office at Hull. Forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

IPSWICH.—March 6.—For construction of an ejector chamber with manhole in Rapier Street. Mr. E. Buckham, borough surveyor, Town Hall, Ipswich.

IRELAND.—Feb. 24.—For erection of new premises in Arthur Street, Belfast. Messrs. Graeme-Watt & Tulloch, architects, 77A Victoria Street, Belfast.

IRELAND.—Feb. 25.—For erection of a house in York Road, Killarney. Mr. T. T. O'Connor, 60 High Street, Killarney.

IRELAND.—Feb. 25.—For erection of a new branch office on the Shankill Road, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

IRELAND.—Feb. 26.—For erection of the technical institute, Belfast. Mr. Samuel Stevenson, architect, 83 Royal Avenue, Belfast.

IRELAND.—Feb. 26.—For erection of a boundary wall, entrance gate, &c., to the Mulhuddart burial-ground, North Dublin. Mr. John O'Neill, clerk, North Brunswick Street, Dublin.

IRELAND.—Feb. 28.—For new cut-stone rose window, new timber floor and tiled passages, and new seating of Ballaghanehan parish church, near Manorhamilton. Rev. Peter Brady, P.P., Rossinver, Garrison.

IRELAND.—Feb. 28.—For erection of new National schools on Windsor Avenue, Lurgan. Mr. H. Hobart, architect, Drogheda.

IRELAND.—March 1.—For erection of a branch library in Ballymacarrett, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

IRELAND.—March 5.—For erection of seventeen labourers' cottages in Lurgan. Mr. R. H. Dorman, architect, Armagh.

ISLE OF WIGHT.—March 5.—For providing and delivery at Chale, Isle of Wight, of 2,530 9-foot lengths of 3-inch, 227 9-foot lengths of 4-inch and 21 9-foot lengths of 5-inch cast-iron socket pipes, with bends, branches, &c.; excavating for, carting and laying about 7,600 yards of 3-inch, 700 yards of 4-inch and 65 yards of 5-inch cast-iron socket pipe, with bends, branches, &c., and the providing and fixing of sluice valves, hydrants, air valves, &c., in connection with the Chale water supply. Mr. H. Eldridge, Stretton, clerk, Rural District Council Offices, Pyle Street, Newport, Isle of Wight.

JARROW.—Feb. 24.—For alterations and additions at the Higher Grade school. Mr. T. H. Spencer, clerk, School Board Offices, Jarrow.

LEEDS.—March 10.—For erection of police-station buildings at the junction of Ashley Road and Stanley Road. Mr. W. J. Jeeves, town clerk, Leeds.

LEEK.—Feb. 26.—For erection of a poultry market, Leek, Staffs. Mr. John Myatt, town surveyor, Leek.

LEIGHTON BUZZARD.—Feb. 28.—For laying and jointing of about five miles of 5-inch, 4-inch and 3-inch cast-iron water-mains, including fixing valves, hydrants, &c.; erection of brick service reservoir and filter-beds, sinking well, the erection of pumping station, &c., at Linslade. Mr. R. J. Platten, clerk to Urban District Council, Linslade, Leighton Buzzard.

LONDON.—For erection of Forest Gate public hall. Mr. John Wm. Acock, architect, 14 Wormwood Street, E.C.

LONDON.—Feb. 26.—For (Contract No. 1) two 50-kw. steam dynamos and boosters, (2) four dry-back marine boilers, (3) storage battery, (4) wiring about 2,000 lights. Mr. E. J. Mott, clerk to the Guardians, 75 Fulham Place Road, S.W.

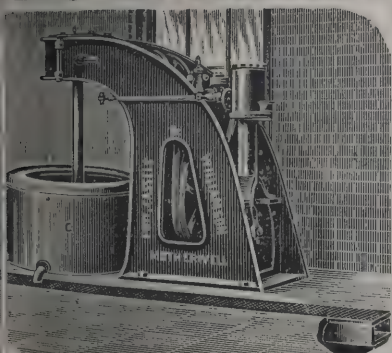
LONDON.—Feb. 26.—For (Contract No. 5) erection of chimney-shaft (120 feet high) at the electric-lighting works, Fulham. Mr. E. J. Mott, clerk to the Guardians, 75 Fulham Palace Road, S.W.

LONDON.—Feb. 26.—For erection of casual wards, clothes store, laundry and other buildings at Gainsborough Road, Hackney Wick. Mr. W. A. Finch, architect, 76 Finsbury Pavement, E.C.

LONDON.—March 4.—For erection of four small blocks of artisans' dwellings on Plumber's Place area, City Road, E.C. Mr. Rowland Plumbe, architect, 13 Fitzroy Square, W.

LONDON.—March 4.—For supply and delivery into carsheds in South London of 100 double-decked double-bog

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LONGTOWN.—March 8.—For erection of two stone bridges, viz one over the burn at Kays House Burn, in the parish of Stapleton, and another over the burn at Bog Burn, in the parish of Kirkandrews-on-Esk. Mr. James Murray, county surveyor, The Courts, Carlisle.

LOUGHBOROUGH.—Fortaking down and rebuilding property in High Street and the Market Place. Mr. A. E. King, architect, Baxter Gate, Loughborough.

LOUGHBOROUGH.—March 1.—For erection of theatre, Ashby Road, Loughborough, Leics. Messrs. Barrowcliff & Allcock, architects, Mill Street, Loughborough.

MANCHESTER.—Feb. 24.—For erection of an electricity sub-station at Denmark Road, Moss Side. Particulars will be supplied by the City Surveyor, Town Hall.

MANCHESTER.—Feb. 26.—For construction of three new bridges over the Rochdale Canal at Grimshaw Lane, Ten Acres Lane and Droylsden Road, Newton Heath. Particulars may be obtained on application at the City Surveyor's Office, Town Hall, Manchester.

MANCHESTER.—March 3.—For erection of custom house at Manchester, for the Commissioners of H.M. Works and Public Buildings. Particulars may be obtained at the Collector's Office, Custom House, Manchester.

MARYPORT.—Feb. 28.—For erection of a cottage hospital for ten beds at Maryport, Cumberland. Mr. C. Eaglesfield, architect, Maryport.

NEWMARKET.—March 17.—For erection of a female infirmary, additions to male infirmary, nurses' home, maternity ward, administration buildings, laundry, porter's lodge, receiving wards, alterations to existing buildings, &c. Messrs. Holland & Sons, architects, High Street, Newmarket.

NOTTINGHAM.—Feb. 25.—For erection of a refuse destructor and power station in the Eastcroft depot, London Road, Nottingham. Sir S. G. Johnson, town clerk, Guildhall, Nottingham.

PLUMSTEAD.—March 6.—For erection of steam-roller shed and cart-shed at the depot, Barnfield Road. Mr. Arthur B. Bryceson, town clerk, Town Hall, Woolwich.

PORTSMOUTH.—Feb. 25.—For alterations and additions to the Kent Street Board school, Portsea. Mr. A. H. Bone, architect, Cambridge Junction, Portsmouth.

PRESTON.—March 14.—For alterations and additions to the Corporation Arms, Lune Street and Wharf Street. Particulars can be obtained of the Borough Surveyor, Town Hall, Preston.

RADCLIFFE.—March 15.—For erection of engine-house, boiler-house, offices, stores and other works in connection with the electricity station in Dale Street, Radcliffe, Lancs. Mr. J. Sharples, clerk, Urban District Council Offices, Radcliffe.

ROCHDALE.—Feb. 25.—For supply, delivery and erection of one complete traction switchboard and accessories. Mr. James Leach, town clerk, Town Hall, Rochdale.

ROTHERHAM.—For erection of a school at Templeborough for 208 children. Mr. James E. Knight, architect, 33 College Street, Rotherham.

SALFORD.—March 6.—For erection of retort-house floor retort fittings, &c., at the Albion Street gasworks. Mr. L. C. Evans, town clerk, Town Hall, Salford.

SANDBACH HEATH.—Feb. 28.—For erection of new Wesleyan chapel and school at Sandbach Heath, near Sandbach. Mr. Alfred Price, architect, Sandbach, Cheshire.

SCOTLAND.—For erection of a villa at Haddington. Messrs. J. R. & E. E. Pearson, architects, 27 Castle Street, Edinburgh.

SCOTLAND.—Feb. 24.—For construction of two additional storage reservoirs, the providing and laying of cast-iron and fireclay pipes, &c., at the Bathgate waterworks. Mr. Wil Al'a, town clerk, Bathgate.

SCOTLAND.—Feb. 28.—For additions and alterations to the Lochwinnoch Bridge, Lochwinnoch. Mr. P. D. Alexander, engineer, Dunmyat, Bridge of Weir.

SCOTLAND.—Feb. 28.—For erection of a bungalow in Ros Avenue, Elgin. Mr. Charles C. Doig, architect, Elgin.

SCOTLAND.—March 7.—For supply and erection in Oban of steam, exhaust, drain and other pipes, pumps, condensing plant, balancing transformers and motor generators, storage batteries, switchboard, arc lamps, incandescent lamps and fittings, cablework, travelling crane, &c. Mr. Alexander S. Black, town clerk, Municipal Buildings, Oban, N.B.

SETTLE.—Feb. 24.—For trench-cutting and laying cast-iron pipe conduit and water-main, fixing valves, hydrants, &c.; provision and construction of a concrete covered service reservoir.

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**SHEFFIELD.**—March 1.—For supply of one Lancashire steam boiler, 30 feet long, 7 feet 6 inches diameter, with valves and fittings complete. Mr. Hanbury Thomas, general manager and secretary, Gasworks, Commercial Street, Sheffield.

**SHEFFIELD.**—March 21.—For erection of sale shops and premises at the corner of Castle Street and Haymarket. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

**SHOREDITCH.**—Feb. 26.—For alterations to the sanitary arrangements at the infirmary, Hoxton Street, N. Mr. F. J. Smith, Parliament Mansions, Victoria Street, S.W.

**SHOREDITCH, E.C.**—March 4.—For erection of four small blocks of artisans' dwellings on Plumber's Place area, City Road, E.C. Mr. H. Mansfield Robinson, town clerk, Town Hall, Shoreditch.

**SOUTHEND-ON-SEA.**—March 5.—For construction of a flight of steps leading from Piccadilly to the Western Esplanade, and a flight of steps leading from Hamlet Court Road to Station Road, Westcliff. Mr. Alfred Fidler, borough engineer, Southend.

**OWERBY BRIDGE.**—Feb. 26.—For erection of a three-storey block of offices, smithy, fitting shop, shed and other works at Bank Foundry, Sowerby Bridge, Yorks. Mr. W. Clement Williams, architect, 29 Southgate, Halifax.

**STADDLETHORPE.**—March 5.—For erection of an inspector's house and three cottages at Gilberdyke crossing, near Staddlethorpe, for the North-Eastern Railway Company. Mr. William Bell, company's architect, York.

**SUNDERLAND.**—Feb. 28.—For supply of workshop tools at the Hylton Road station. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**SWANAGE.**—Feb. 28.—For erection of cottages at Herston, Swanage, Dorset. Mr. J. Feacey, architect, South Walks, Dorchester.

**TAUNTON.**—March 3.—For erection of buildings in connection with the proposed destructor in the Target Field. Mr. George H. Kite, town clerk, Municipal Buildings, Taunton.

**TONBRIDGE.**—Feb. 27.—For erection of a rustic thatched refreshment kiosk and bandstand in the castle grounds, Tonbridge. Mr. W. Laurence Bradley, surveyor, Tonbridge Castle.

**TOOTING GRAVENEY.**—Feb. 26.—For repairing, draining and ventilating certain subways at the Grove hospital. Mr. T. Duncombe Mann, clerk to Metropolitan Asylums Board, Embankment, E.C.

**WALES.**—Feb. 24.—For erection of a public convenience at Canton, Cardiff. Mr. W. Harpur, borough engineer, Cardiff.

**WALES.**—Feb. 24.—For alterations and extensions to St. Peter's Roman Catholic school, Cardiff. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

**WALES.**—Feb. 26.—For erection of a minister's house, Blaenannerch. Mr. Richard Evans, Crynga Mawr.

**WALES.**—Feb. 26.—For erection of stabling for thirty-four horses, Newport, Mon. Messrs. Habershon, Fawcner & Groves, architects, 41 High Street, Newport, Mon.

**WALES.**—Feb. 27.—For erection of additional classrooms, outbuildings, &c, to the Nantyllyon infants' school, Maesteg. Messrs. E. W. Burnett & Son, architects, Tondy, near Bridgend.

**WALES.**—Feb. 27.—For erection of girls' school, classrooms, outbuildings, &c., at Blaenllynvi, Maesteg. Messrs. E. W. Burnett & Son, architects, Tondy, near Bridgend.

**WALES.**—Feb. 28.—For alterations and additions to Mountain Ash police station. Mr. T. Mansel Franklen, clerk, County Council Offices, Westgate Street, Cardiff.

**WALES.**—March 1.—For strengthening and securing the building of the assembly rooms, Llangollen, and for alterations and additions thereto. Mr. E. Foulkes Jones, clerk to Council, Llangollen.

**WALES.**—March 1.—For improvements to cottage adjoining Zoar Baptist chapel at Pandy. Mr. Edwin Foster, architect, Bella Vista, Abergavenny.

**WALES.**—March 3.—For erection of three shops and offices in Glebeland Street, Merthyr Tydfil. Mr. C. M. Davies, architect, 112 High Street, Merthyr.

**WALES.**—March 3.—For erection of an isolation hospital at Llantwit Fardre, near Pontypridd. Mr. C. Sydney Watson, clerk, District Council Offices, Pontypridd.

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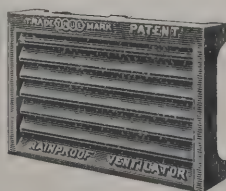
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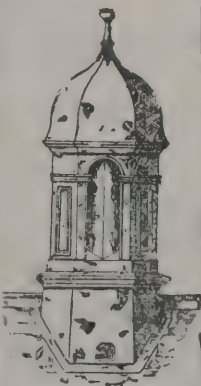
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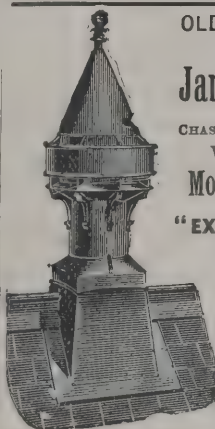
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WALES.—March 7.—For overhead equipment and bonding for the tramways, Pontypridd. Mr. Reginald P. Wilson, consulting engineer, 66 Victoria Street, Westminster.

WALSALL.—March 1.—For erection of a lodge, outbuildings and van-house in Sneyd Lane, Bloxwich. Mr. John R. Cooper, town clerk, Walsall.

WANDSWORTH.—March 5.—For erection of receiving wards, officers' quarters and waiting-hall at the infirmary, St. John's Hill, Wandsworth, S.W. Messrs. Lansdell & Harrison, architects, 65 and 66 Basinghall Street, E.C.

WALTHAMSTOW.—Feb. 25.—For erection of a committee-room at the Walthamstow parochial cemetery, Queen's Road. Mr. G. W. Holmes, engineer, Town Hall, Walthamstow.

WEST HAM.—March 11.—For erection of an electric generating station and offices at Quadrant Street, Canning Town. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

WESTON-SUPER-MARE.—Feb. 24.—For erection of a house in St. Paul's Road. Messrs. S. J. Wilde & Fry, architects, Boulevard Chambers, Weston-super-Mare.

WESTON-SUPER-MARE.—Feb. 28.—For construction of a cabmen's shelter. Mr. Hugh Nettleton, surveyor, Town Hall, Weston-super-Mare.

WHILTON.—March 3.—For rebuilding Whilton (Western) Bridge and part rebuilding and widening of Whilton (Eastern) Bridge, Northamptonshire. Mr. C. S. Morris, county surveyor, County Hall, Northampton.

WINDSOR.—March 1.—For erection of dwarf walls and iron fencing at the Goswell Pleasure Grounds. Mr. E. Cecil Durant, town clerk, 32 Park Street, Windsor.

THE third largest bell in Great Britain has just been hoisted into position in the south tower of Beverley Minster. It weighs over seven tons, and has a diameter of seven feet three inches. A bell of six tons was placed in the Minster in 1900, but had to be taken down, and has been recast in the new bell. The original great bell, which lasted for nearly two centuries, weighed only a little over one ton.

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For erection of two shops and premises on the site of 279 Balham High Road. Mr. HORACE E. ROSSITER, architect, 61 and 62 Chancery Lane, London. Quantities by Mr. FREDERICK G. FLETCHER, 61 and 62 Chancery Lane, W.C.

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For erection of lych gate at Scholemoor cemetery.

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S. Thirkill, East Bowling, joiner.  
J. Smithies, Horton, tiler.

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For supply of unclimbable iron fencing, &c., Bromborough, Cheshire. Mr. J. CLARKE, surveyor, 34 Castle Street, Liverpool.

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CULSON & LOFTS, Cambridge (accepted) . . . . .	6,720	6,630

HALIFAX.

rection of a pair of semi-detached villas in Stafford Road. Messrs. RICHARD HORSFALL & SON, architects, 22a Commercial Street, Halifax.

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J. Naylor & Sons, plumber and glazier.  
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HENDON.

For erection of villa residence in Hendon Avenue on the Grass Park estate, Church End, Finchley, for Mr. J. J. Bridgewater. Mr. WALTER BENNETT, architect, Church End, Finchley, N. Quantities by Mr. WILLIAM HAWKER, 73 Moorgate Street, E.C.

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Power & Son . . . . .	770 6 7
T. & W. Little . . . . .	731 8 2
J. & P. Goad . . . . .	725 0 0
R. Costelloe . . . . .	711 17 6
D. Hayes . . . . .	563 7 7

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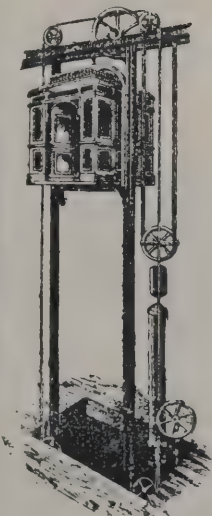


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## IRELAND—continued.

## Sections 3 and 4.—Plumbing.

J. & P. Goad	400	0	0
McGuire & Gatchell	354	19	1
J. Kennedy	340	6	3
B. White	338	16	1
Cleary & Co.	325	5	0
W. Baird	314	16	6
T. & W. Little	294	10	9
P. Blake	289	14	4
J. Hindry	282	18	8
D. Hayes	281	17	9
R. COSTELLO (accepted)	280	2	1
Power & Son	278	14	8

## Sections 5 and 6.—Building.

J. Kennedy	1,093	6	3
B. White	1,015	11	0
P. Blake	979	5	8
Cleary & Co.	958	16	9
T. & W. Little	919	3	4
Clure & Son	906	0	2
H. BATES (accepted)	905	16	7
J. & P. Goad	900	0	0

For construction and erection of a metal tank in the Victoria Market, Londonderry, for watering purposes.

Steavenson & Co.	£170	0	0
F. Craig & Co.	75	15	0
A. Bruce & Sons.	57	10	0

For erection of two pairs of semi-detached villas on the Blackrock Road, Cork. Messrs. W. H. HILL & SON, architects, Cork.

J. A. O'CONNELL, Clarke's Bridge, Cork (accepted)	£2,000	0	0
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## JARROW.

For street works in St. Paul's Road, Russell Street, Wilberforce Street and Raglan Street. Mr. J. PETREE, borough surveyor.

Thornton	£2,120	7	0
T. Callagher	1,961	1	3
GLEN & MOFFETT (accepted)	1,626	1	5

## LONDON.

For alterations and additions to the Victoria House, Bu Road, London. Mr. J. M. H. GLADWELL, arch Boston House, 63 and 64 New Broad Street, E. C.

W. J. Maddison	£524		
J. & H. Cocks, Ltd.	498		
A. E. SYMES (accepted)	498		

For adapting 288 New Cross Road, S.E., for use as a men's sorting office.

S. J. Collins	£2,515	11	7	£15
J. Mowlem & Co.	2,143	0	0	—
Courteney & Fairbairn	1,979	0	0	—
T. & W. Pearce	1,960	0	0	—
J. Christie	1,949	0	0	10
T. G. Minter	1,910	0	0	5
Multon & Wallis	1,899	0	0	18
General Builders, Ltd.	1,821	0	0	25
H. L. Holloway	1,815	0	0	15
Wilson Bros. & Lamplough	1,789	0	0	11
W. Wallace & Co., Ltd.	1,775	0	0	—
Speechley & Smith	1,760	0	0	12
J. Appleby	1,757	0	0	—
H. Leney & Son	1,750	0	0	5
G. Barker	1,750	0	0	6
T. O. Sharphington	1,748	0	0	10
J. Westbrook	1,742	0	0	21
Batley, Sons & Holness	1,720	0	0	3
Turnbull & Son	1,717	0	0	10
T. Almond & Son	1,683	0	0	25
J. O. Richardson	1,579	0	0	5
G. COFFIN & SON (accepted)	1,590	0	0	40

A.—Old materials.

## LONDON SCHOOL BOARD.

For supply of radiators, on a running contract.

The Coalbrookdale Co., Ltd.	Price per S of Heating	7
Wenham & Waters, Ltd.		1
Robert Clarke		1
The Brightside Foundry and Engineering Co., Ltd.		1
Chas. P. Kinnell & Co., Ltd.		1
Unsigned		1
Hayward Bros & Eckstein, Ltd.		1

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Improvements, Lucas Street, Greenwich.			
H. F. Higgs . . . . .	£15,247	0	0
V. Downs . . . . .	14,797	0	0
E. Wallis & Sons . . . . .	14,234	0	0
Holliday & Greenwood, Ltd. . . . .	14,030	0	0
Garrett & Son . . . . .	13,663	0	0
Lawrance & Sons . . . . .	13,570	0	0
M. Patrick . . . . .	13,306	0	0
C. Bowyer . . . . .	13,286	0	0
Cox . . . . .	13,149	0	0
Clark & Randall . . . . .	12,834	0	0
Smith & Sons, Ltd. . . . .	12,597	0	0
Timpson & Co* . . . . .	12,400	0	0

\* Recommended for acceptance.

MAIDENHEAD.

Proposed new road across Littlewick Green.			
Wimpey & Co. . . . .	£220	0	0
Free & Sons . . . . .	170	0	0
W. Jordan . . . . .	150	0	0
Sandford . . . . .	144	9	0
Lee & Son . . . . .	142	0	0
Wheeler, sen. . . . .	115	0	0

MANCHESTER.

Street works in Jackson Street, Hall Street, part of Brook Road, Ernest Street and Andrew Street, Cheadle, near Manchester. Mr. E. SYKES, surveyor.  
OSLIN & STAFFORD, Stockport (accepted) . £2,628 16 4

MANSFIELD.

Works in forming streets over land at Ratcliffe Gate. Messrs. VALLANCE & WESTWICK, surveyors, White Hart Chambers, Mansfield.			
E. Cox & Sons . . . . .	£1,573	13	6
Richmond . . . . .	1,520	0	0
B. Clark . . . . .	1,500	0	0
B. Penny . . . . .	1,453	7	4
F. Tomlinson . . . . .	1,390	0	0
Ashley . . . . .	1,230	0	0
Bennett . . . . .	1,214	1	1
Greenwood . . . . .	1,161	11	0
De Bros. . . . .	1,118	10	0
F. HOUFTON, Mansfield (accepted) . . . . .	1,074	0	0

MARKET HARBOROUGH.

For supply and erection of about 189 tons of cast-iron posts and about 77 tons of wrought-iron rails and gates for the cattle, sheep, calf and pig pens in the new cattle market. Mr. HERBERT G. COALES, engineer.

G. Harvey & Co . . . . .	£4,684	19	0
J. Williamson & Co. . . . .	4,676	9	6
Naylor Bros., Ltd. . . . .	4,389	7	0
Cort, Paul & Cornick . . . . .	4,086	9	3
Gimson & Co. . . . .	4,063	9	8
W. Richards & Sons . . . . .	3,896	3	11
W. A. Baker & Co. . . . .	3,876	5	6
H. E. Hodgson & Co. . . . .	3,850	0	0
G. B. Smith & Co. . . . .	3,700	1	8
T. Howden & Sons, Ltd. . . . .	3,619	15	11
W. Lucy & Co. . . . .	3,522	1	0
W. Miller & Sons . . . . .	3,465	7	10
W. H. Smith . . . . .	3,376	11	11
H. & G. Measures . . . . .	3,356	12	0
E. J. Raybould & Co. . . . .	3,299	16	2
S. Wright . . . . .	3,174	0	0
Hill & Smith . . . . .	3,117	0	0
J. Elwell . . . . .	3,092	15	0
E. C. & J. Keay, Ltd. . . . .	3,089	0	0
G. Potter & Sons . . . . .	3,008	4	8
Francis & Whittington . . . . .	2,951	10	0
Ruabon Foundry Co. . . . .	2,774	18	7
RUSSELL & SON, Leicester (accepted) . . . . .	2,614	4	1

MERTON PARK.

For erection of a small house in Dorset Road. Mr. H. G. QUARTERMAIN, architect, Merton, Surrey.  
BURGESS & SONS, Wycliffe Road, Wimbledon (accepted) . £985 0 0

NEWCASTLE-UPON-TYNE.

For laying-down about 1½ mile of single-line tramway and passing places for the Corporation, the rails, fastenings, points and crossings being supplied by the Corporation.  
J. J. ROBSON, Newcastle-upon-Tyne (accepted) £6,892 0 0

NORTH WALSHAM.

For erection of a wall round the recreation ground.  
W. MACE (accepted) . £41 6 0

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## SCOTLAND.

For erection of waiting-room and workman's house at the Lightburn Joint Hospital, Shettleston. Mr. ALEXANDER CULLEN, architect, Brandon Chambers, Hamilton.

*Accepted tenders.*

W. Orr, 6 Garngaber Place, Partick, mason	£393	3	11
J. Michie, Baillieston, joiner	165	9	11
M. Sproul & Co., 33 Hutcheson Street, Glasgow, plumber	120	13	7
W. Gordon, Shettleston, slater	41	7	8
W. Halley & Co., 36 Jane Street, Glasgow, plasterer	22	6	1

For making a proposed road on the lands of the Commonhead, Ayr Mr. MURDOCH, engineer.

H. HASTIE, Monckton by Ayr (*accepted*) . . . £259 16 8

For erection of a retort-house, coal stores and chimney (total about 2,000 superficial yards) at Broughty Ferry.

J. CARNEGIE, 94 Commercial Street, Dundee (*accepted*) . . . £1,221 0 0

J. Scott, Broughty Ferry (withdrawn) . . . 1,172 0 0

For cutting tracks and laying a supplementary main water-supply pipe from Lochornie reservoir to the burgh, with branch mains to the existing and proposed tanks, with branch mains from the latter. Messrs. BUCHANAN & BENNETT, engineers, 12 Hill Street, Edinburgh.

T. CRAWFORD & SON, Strathaven, N.B. (*accepted*) . . . £2,192 8 7

For painting the new district offices at Hamilton. Mr. ALEXANDER CULLEN, architect, Brandon Chambers, Hamilton.

A. KEMP, Motherwell (*accepted*) . . . £473 13 6

## SHERBORNE.

For erection of a bridge at Purlieu, Dorset.

Bartlett & Sons . . . £420 10 0

Bulten . . . 331 17 6

S. CURTIS, Stalbridge, Dorset (*provisionally accepted*) . . . 295 0 0

## SHOREHAM.

For erection of a steel-framed warehouse at Shoreham works, Sussex.

J. McMANUS, 237 Hammersmith Road, London, W. (*accepted*).

## SNARESBROOK.

For alterations to the Cuckfield hotel. Mr. J. M. H. GLAY WELL, architect, Boston House, 63 and 64 New Broad Street, E.C.

Evans, Jones & Co. . . . £537 0

## SOUTHAMPTON.

For erection of a reference library and art gallery. Mr. G. architect.

DYER & SONS, Southampton (*accepted*, on revised plans) . . . £2,197 0

## STRATFORD-UPON-AVON.

For erection of a cowhouse and pigstyes at Comyn's Farm, Snitterfield, Stratford-upon-Avon.

J. Roberts . . . £400 0

A. H. Callaway . . . 250 0

J. G. Fincher & Co. . . . 244 0

E. T. KENNARD (*accepted*) . . . 222 0

For repairs, painting, &c., waterworks cottage, Snitterfield, Stratford-upon-Avon.

J. G. Fincher & Co. . . . £40 0

E. Smith . . . 23 0

J. Roberts . . . 23 0

E. T. Kennard . . . 18 0

W. BAILEY (*accepted*) . . . 12 0

For repairs, cleansing, painting and renovating King's cottages, Snitterfield, Stratford-upon-Avon.

J. G. Fincher & Co. . . . £100 0

E. Smith . . . 91 0

J. Roberts . . . 87 0

E. T. Kennard . . . 70 18

W. BAILEY (*accepted*) . . . 59 15

## TEIGNMOUTH.

For alterations at Wilts and Dorset Bank. Messrs. BRIDGMAN & BRIDGMAN, architects, Torquay and Paignton. Quantities by Mr. VINCENT CATTERMOLE, Paignton.

Fredk. C. Francis . . . £1,630

HUGH MILLS, Newton Abbot (*accepted*) . . . 1,500

Architects' estimate . . . 1,550

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SLAIDBURN.

girder bridge at Chapel House, Stocks, near Slaidburn.

Accepted tenders.

J. Altham, mason, &c., £85.

Exors. of J. Baldwin, girders, £6 2s. 6d. per ton.

TWICKENHAM.

street works in Cross Deep Road. Mr. FRED. W. PEARCE, surveyor.

C. Soan	£3,025	0	0
ree & Sons	2,495	0	0
lowlem & Co.	2,433	0	0
entham & Co.	2,419	0	0
W. Swaker	2,359	19	0
J. H. Wheeler	2,240	0	0
Kavanagh	2,209	0	0
Ball	2,208	1	4
JIMPEY & Co., Hammersmith (accepted)	2,093	0	0
J. Adamson	1,932	0	0

WALES.

construction of tanks, flushing-chambers, and for providing and laying about 3,349 lineal yards of 4-inch and 211 lineal yards of 3-inch cast-iron main and other works at Gwyrfa. Mr. E. EVANS, engineer, 8 Castle Street, Carnarvon.

Owen	£3,971	14	6
J. Thomas	2,935	0	0
Jones	2,850	0	0
Jones	2,564	3	5
A. Chase	2,466	12	3
A. CROWE, Deansgate, Manchester (accepted)	2,389	16	4

WALES—continued.

For additions to engine-house, boiler seating and flues at Cogan pumping station, Cardiff.

KNOX & WELLS, Bangor Street (accepted) . £327 13 4

For altering and rebuilding the Primitive Methodist chapel, Blaenau Gwent.

D. Powell . . . . . £860 0 0

G Smith . . . . . 760 0 0

D. PHILLIPS, 75 Carlyle Street, Abertillery (accepted) . . . . . 725 0 0

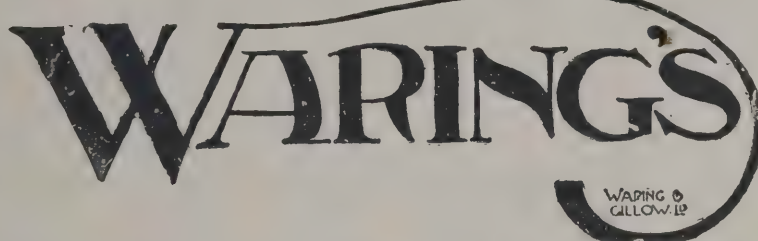
For supply of engines and generators, for the Cardiff Corporation.

Engines.

Ashton, Frost & Co.	£15,470	0	0
Davey, Paxman & Co.	15,308	0	0
Hick, Hargreaves & Co.	15,100	0	0
Cole, Marchent & Morley	14,126	0	0
MUSGRAVE & SONS (accepted)	14,074	0	0
Beaver, Dorling & Co.	12,837	0	0
V. Coates & Co.	12,700	0	0
Combe, Barbour & Combe	11,840	0	0
Yates & Thom	11,412	0	0
D. Stewart & Co.	11,371	0	0
Markham & Co.	11,330	0	0
Robey & Co.	11,260	0	0
Ferranti, Ltd.	9,381	0	0

Generators.

Electric Construction Co.	7,305	0	0
Crompton & Co.	6,890	0	0
British Westinghouse Co.	6,642	0	0
British Thomson-Houston Company	6,494	0	0
Mather & Platt	6,268	0	0
Bruce Peebles & Co.	5,990	0	0
Siemens Bros. & Co., Ltd.	5,760	0	0
DICK, KERR & Co. (accepted)	5,560	0	0
Lahmeyer Electric Co.	5,502	0	0
Johnson, Lundell & Co.	5,294	0	0
British Schuckert Electric Co.	5,027	0	0
International Electric Co.	4,850	0	0
Witting Bros. & Co.	4,781	0	0
Von Kramer	4,680	0	0
F Suter & Co	4,078	0	0



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## WALES—continued.

For sewage works at Bargoed and Gilfach, and at Fochriw.  
Mr. JAS. P. JONES, engineer.

*Bargoed and Gilfach sewerage.*

W. Willis	£10,551	19	8
J. Sutherland	10,316	12	2
D. Jones	9,760	10	9
W. Williams & Sons	9,198	8	10
G. Rutter	8,953	6	1
J. E. EVANS, Cardiff (accepted)	8,583	12	5

*Fochriw sewerage.*

G. Rutter	1,172	13	0
Lawson & Co.	1,148	14	10
J. E. Evans	1,105	16	3
W. Lewes	1,009	0	0
D. Jones	958	7	0
W. Williams & Sons	931	14	8
J. Jones	901	4	11
F. DAVIES & Co., Bargoed (accepted)	861	1	6

## WEST HAM.

For erection of forty-seven double-tenement houses and twelve single-tenement houses for the working classes on the Rotherhithe Estate, High Street, Stratford. Mr. JOHN G. MORLEY, borough engineer, Town Hall, West Ham.

F. & H. F. Higgs	£43,890	0	0
B. E. Nightingale	35,894	0	0
F. G. Minter	33,160	0	0
Gregar & Son	29,900	0	0
H. J. Carter	28,730	0	0
F. Jay	28,362	0	0
Herbert Bros.	26,050	0	0
G. WISE, works manager, West Ham (accepted)	25,306	0	0
A. T. Haines & Co.	25,170	0	0
R. Myall	25,169	0	0

THE electricity department of the Huddersfield Corporation had an income during 1901 from the supply of the current of 19,024*l.*, an increase of 2,634*l.* over the previous year. The aggregate receipts exceeded the expenditure by 2,561*l.*, and a proposal to transfer this to the depreciation and contingencies account aroused considerable discussion at the meeting of the Town Council.

## TRADE NOTES.

ST. ANDREW'S CHURCH, Colyton, has lately been fitted with the well-known "Small Tube" hot-water heating apparatus Messrs. John King, Limited, engineers, Liverpool, employing their economical coil heater with waterway firebars.

THE directors of Messrs. John Oakey & Sons, Ltd., propose a final dividend upon the ordinary shares of 5 per cent. for the half-year ending December 31 last, together with a bonus of 2½ per cent., making 12 per cent. for the year.

MESSRS. WM. POTTS & SONS, clock manufacturers, Lee and Newcastle-on-Tyne, have a large illuminated turret-clock now in progress for the Post Office Savings Bank, Kensington, for H.M. Government, which is to be erected at an early date. They have also a large illuminated turret-clock with two dials for the City of London.

IN connection with the structural alterations and extensions just commencing by Messrs. Waring at Rushton Park, Rotherbridge, Sussex, for Mr. T. G. Ashton, M.P., Messrs. G. Jennings Ltd., have been entrusted by the architects, Messrs. Hesketh Stokes, with the new sanitary work, water-supply and heating arrangements, which are of considerable magnitude.

THE heating of Todwick Church, near Sheffield, has just been completed on the low-pressure hot-water system by Messrs. Alfred Grindrod & Co., heating and ventilating engineers, West Street, Sheffield. The same firm have also recently heated the Old Chapel at Fulwood, near Sheffield, by the latest improved high-pressure hot-water apparatus, and Victoria Buildings, Derby, for Mr. R. S. Elliott, they have installed both a high-pressure hot-water heating apparatus and also a low-pressure steam-heating apparatus.

## ELECTRIC NOTES.

EXPERIMENTS are being made in Salisbury with a view to test the comparative value for lighting purposes of electricity and the Welsbach self-intensifying gas burners.

LIEUTENANT-COLONEL A. C. SMITH held a Local Government Board inquiry at Elland last week into the application for sanction to borrow 16,000*l.* for purposes of electric lighting and the provision of a refuse destructor.

THE accounts for the year's working of the Worcester Corporation Electricity Works show a profit of 1,385*l.* 6*s.* 2

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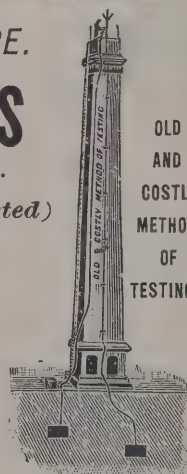
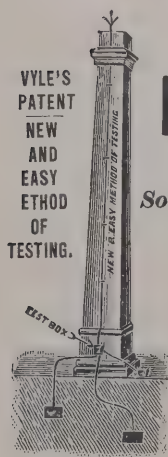
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y far the largest yet realised. During the first four years the  
tation was worked at considerable loss, reaching in the first  
ear 1,977*l.*, and showing a gradual reduction in subsequent  
ears. These losses fell upon the rates of the city, and will be  
apaid from time to time as the profits accrue. In view of the  
profits expected, 5*co*l. was appropriated by the finance com-  
mittee to assist the rates, and the remaining 88*5*l. 6*s.* 2*d.* the  
ectricity committee desire should remain in their hands for  
nergencies.

A LOCAL GOVERNMENT BOARD inquiry has been held at  
unbridge Wells with reference to an application by the Cor-  
poration to borrow a further sum of 15,000*l.* for the purpose of  
extending the Municipal telephone system. Mr. W. C. Cripps,  
ie town clerk, stated that six months ago the Corporation  
plied for a loan of 10,000*l.* to commence the system, and it  
as calculated that that would enable them to provide tele-  
onic communication for 319 subscribers. So rapid had been  
e progress, and so successfully had the Corporation managed  
e undertaking, that there were at the present moment 535  
venue-bearing lines in existence, and 283 persons were  
aiting to be connected, making a total of 816 subscribers.

### VARIETIES.

is reported from Warsaw that negotiations have been  
ened there by some English capitalists for the construction  
a harbour, docks and boulevards on the Vistula, and the  
ilding of a slaughter-house, from which beef would be for-  
rarded to England. A company with a capital of from  
00,000*l.* to 4,000,000*l.* is being formed in order to carry out  
e necessary works. An hotel on a considerable scale is also  
e erected.

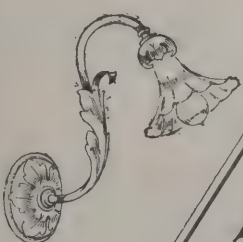
A NEW library, designed to serve the Kilburn district, has  
en opened at Coteleigh Road, Hampstead, without any public  
emony. The library has been erected by the Hampstead  
orough Council to replace a temporary one at Priory Road.  
ily the reading and reference-rooms are at present open, as  
e 6,000 books in the lending department have not yet been  
atalogued. This is the fifth of the libraries and reading-  
oms now under the control of the Hampstead Borough  
ouncil

THE adjourned annual meeting of the Manchester Associa-  
on of Engineers was held at the Grand Hotel, Manchester,

on the 8th inst., the president (Mr. E. J. Constantine) in the  
chair. There was a large attendance. Mr. Nasmith was  
elected a trustee in the place of the late Mr. Dixon. The meet-  
ing adopted several important alterations in the rules. It was  
resolved that the objects of the Association were to be the  
bringing together of those engaged in the direction and super-  
intendence of engineering works for mutual improvement and  
assistance. Mr. Ingham introduced a discussion on "Portable  
Machine Tools," and various members took part in it.

IN the course of the past year considerable progress was  
made in the extension of Ayr as regards the erection of public  
buildings, public works and dwelling-houses, as is shown by  
the number of warrants granted at the Dean of Guild Court.  
The number of warrants granted was 126, including that for  
the reconstruction of the town hall at a cost of 10,500*l.* The  
total estimated amount of money involved was approximately  
over 90,000*l.*, the larger proportion of which has been, or is  
being, expended in the erection of middle class houses and  
workmen's houses of a superior kind, chiefly on new leases, par-  
ticularly in Newton and Wallacetown districts. The building  
has been for the most part speculative, but the houses com-  
pleted have been readily taken up as soon as ready for  
occupation.

THE town hall, Stone, Staffs., having been closed for some  
months for alterations, was reopened on the 6th inst. The  
hall, which originally cost 3,200*l.*, was opened in 1870. The  
only noticeable alteration to the exterior of the front has been  
the addition of a glazed canopy extending over the pavement.  
The vestibule has been widened by the removal of the brick  
walls on either side, and the substitution of massive, bold wood  
panelling, the weight of the upper part of the building being  
supported by newly inserted iron girders. At this end of the  
hall a new balcony has been built to accommodate about ninety  
persons. The main hall itself has been enlarged by removing  
the old stage and putting that space into its length. The  
former most inadequate anterooms have been removed, and a  
new stage, 30 feet by 24 feet, has been provided, off which and  
on the same level are two commodious retiring-rooms, and  
again below these and below a part of the stage are arranged  
a set of three good rooms. The lavatory and sanitary  
arrangements throughout have been entirely revised and  
improved, and the basement rooms at the front have been  
altered and made habitable for the caretaker's use. The  
whole of the new and altered portions of the hall have been

<p><b>COUNTRY</b></p> <p><b>HOUSES</b></p> <p>LIGHTED BY</p> <p><b>ELECTRICITY</b></p> <p>GENERATED BY</p> <p><b>STEAM</b></p> <p><b>GAS</b></p> <p><b>OIL</b></p> <p>OR</p> <p><b>WATER POWER</b></p>	<p>— WORKS: —</p> <p><b>48, Osnaburgh Street,</b></p> <p>REGENT'S PARK,</p> <p><b>LONDON, N.W.</b></p> <p>Telegrams: "STRODES LONDON."</p> <p><b>STRODE &amp; CO.</b></p>   <p><b>WEST END SHOW ROOMS:</b></p> <p><b>188, PICCADILLY.</b></p> <p><b>CITY SHOW ROOMS:</b></p> <p><b>67, ST. PAUL'S CHURCHYARD.</b></p>	<p><b>DESIGNERS</b></p> <p>AND</p> <p><b>MANUFACTURERS</b></p> <p>OF</p> <p><b>Artistic</b></p> <p><b>Fittings</b></p> <p>IN THE</p> <p><b>ELIZABETHAN,</b></p> <p><b>GOTHIC,</b></p> <p><b>ITALIAN,</b></p> <p>AND</p> <p><b>LOUIS XVI.</b></p> <p><b>STYLES.</b></p> <p><b>Special Designs</b></p> <p><b>Free on Application.</b></p> <p><b>LIBERAL TERMS</b></p> <p><b>TO THE TRADE.</b></p>
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redecorated throughout, and the scheme of decoration is very tasteful. The lighting and ventilation of the main hall have been revised and greatly improved. The building contractor was Mr. J. Wilcox; Mr. H. Turner has carried out the contract for the decorations, and the plans were prepared by Mr. R. Arrowsmith.

THE restoration of Brechin Cathedral is now completed. The task at which the tradesmen have so assiduously worked is now accomplished, and their labours have resulted in an addition to the architectural features of the country. The edifice forms a striking picture, perched on its rocky knoll. From the north-east corner the new Queen's aisle is prominent, and the general effect of the building is thus somewhat lost; but from the south and east the graceful proportions of the building are better seen the square and round towers fittingly completing the picture. The work required of the builders was to restore the aisles and part of the chancel, and the work carried out harmonises well with the general scheme of the building. No attempt at any ornate work has been made, the quiet simplicity which characterises the nave being maintained throughout. In the south aisle there are three lancet windows in keeping with those left in the ruins of the chancel, while the north aisle is similarly treated, the only artistic work being under the eaves, where from end to end a number of masks have been sculptured. In restoring the chancel, great pains have been taken, but here also simplicity has been aimed at and maintained. The interior alterations have been very great, but the work has been carried out with striking good taste, as was to be expected with Mr. Honeyman, R.S.A., as architect. The cost of the restoration amounted to 12,000*l.*, of which 1,000*l.* has yet to be subscribed.

THE Blackburn Road Congregational schools, Bolton, were opened on Wednesday by Mrs. W. H. Lever. They occupy a commanding position on Blackburn Road, at the junction of Draycott Street and nearly opposite the church. The building has a frontage to Blackburn Road of 138 feet and a depth of 81 feet, and consists of a large central hall with two wings joined to the main building with spacious corridors. The hall is 64 feet 6 inches long by 40 feet wide and 34 feet high, with gallery on three sides, will provide seating accommodation for about 1,000 people, and is intended to be used for concerts, lectures, &c. The principal entrance to the hall is from Blackburn Road, but access to it can also be obtained from each of the wings, and three staircases communicate with the gallery. The wings are each two storeys high, and contain the

classrooms, twenty-nine in number; and also on the ground floor an infants'-room, 34 feet long by 20 feet wide, with separate entrance from Draycott Street, secretary's-room, kitchen, cloakroom and lavatories, &c., and in the north wing on the first floor, a small assembly-room is provided, 46 feet long by 20 feet wide. The buildings will be warmed throughout by hot water on the low-pressure system, and lighted by electricity. The schools have been designed to harmonise with the church (in the Late Gothic style), and will be built of Accrington red plastic bricks with Denis's Ruabon terra-cotta for the dressings, the roofs being covered with Elterwater green slates. Internally the walls of the rooms and corridors will be wainscotted to a height of 4 feet 6 inches, and finished above with plaster. The central hall and small assembly-room will have open timber roofs of pitch-pine, whilst the joinery work throughout will be executed in Kauri pine, slightly stained and varnished. Mr. R. W. Kenyon carried out the works from the designs and under the supervision of Mr. John Simpson, of Bolton.

### BUILDING AND BUILDERS.

THE Glasgow Water Commissioners have been empowered to borrow half a million sterling towards carrying out a scheme for obtaining a water supply from Loch Arklet.

THE proposed new parish church for Skelmersdale, which is estimated to cost about 8,000*l.*, is to be erected in the vicarage ground adjoining the old burial-place.

WORK will shortly be commenced in connection with the new lighthouse to be erected on the island of Hyes Kier, one of the lesser of the Hebridean group, adjacent to the island of Canna. The contractors for the work are Messrs. D. & Macdougall, Oban.

THE arbitrator in the Maidstone building trade dispute has decided a vital point to carpenters and joiners, namely, that the rate of pay for overtime should commence after an ordinary day's work, instead of after a ten-hours' day, as proposed by the Master Builders' Association.

THE designs submitted by Messrs. George Baines & Palmer Baines have been accepted for the Baptist church at schools, South Bank, Yorkshire. The accommodation provided in the church is for 542 adults. The estimated cost is 4,380*l.* A bold tower forms a feature of the design.

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competitive designs for the Isle of Wight Queen's Memorial to the number of fifty received by the committee are being publicly exhibited at the Town Hall, Newport, Wight, until Monday next, the 24th inst., from 10 A.M.

J. GOODACRE, architect, and Mr. Cartwright, of the parish church, Diseworth, in order to decide what measures should be taken to the walls of the old edifice. Mr. Goodacre states that the walls ought to be cleared of the plaster and repointed. The cost of repairing the walls will be between £400 and £500. The work is to be commenced at once.

E. A. SANDFORD FAWCETT, inspector of the Local Government Board, held an inquiry at Burslem on the 12th inst., with respect to an application of the Corporation for power to borrow £24,000 for sewage disposal purposes. The Council adopted the bacterial system, and the necessary works and an outlay of the sum sought to be borrowed, including the cost of land and extra construction. The scheme having been generally approved, there was no opposition, and the Corporation intimated that he would report in the usual way.

An inquiry into an application by the West Riding County Council to borrow £23,744 for the erection of a hospital for diseases other than small-pox, by the Colne and Wharfedale joint isolation hospital committee, at Meltham was held by Mr. F. St. George Stuart, Local Government Board inspector, at the Union Offices, Huddersfield, on the 12th inst. The townships prepared to be served by the hospital are Golcar, Holme, Holmfirth, Honley, Linthwaite, Meltham, Netherthong, Newmill, Scammonden, South Crosland and Thurstonsland. The rateable value of the whole area is 182,831 $\frac{1}{2}$ l., and the population 54,100. It has been decided to construct a new bridge over the river, near Bournbrook Road, Worcester, on the Bristol side. The old structure was of brick and arched, but only 12 feet wide, and no footpath was provided over either side. For a long time it has been regarded as not only too small for the traffic, but as being unsafe. Now it is to be replaced by a new girder bridge 42 feet wide, with an 8-foot footpath on each side of the road. The improvement will be a most important one in the interest of pedestrian and vehicular traffic. The bridge forms the dividing line between the city and the suburbs of Worcester, the cost will be borne by the two authorities, but the County Council have left the whole of the work to be carried out by the Corporation.

COL. A. C. SMITH, C.E., an inspector of the Local Government Board, held an inquiry recently at Mirfield into the application of the Mirfield District Council for sanction to borrow £2,600 for the purpose of purchasing Fold Head estate, in Easthorpe, Mirfield, for council offices. The property consists of a large block of buildings, all of which the Council propose to use for offices, but they contemplate erecting a council chamber, at an estimated cost of 500 $\frac{1}{2}$ l. The present meetings of the Council are held at the town hall, which belongs to a private company. The clerk to the Council (Mr. E. B. Wilson) and the surveyor (Mr. F. H. Hare) explained the plans of the Council to the inspector, who subsequently visited the estate.

THE annual dinner of the Bath Master Builders' Association was held on the 14th inst. at Messrs. Fort's restaurant, Milsom Street, Bath. The dinner was the first which had been held since 1899, the war in 1900 and the death of Queen Victoria in 1901 being the cause of the lapsing of the fixture. The president, Mr. A. Wills, occupied the chair, and was supported by the mayor (Mr. E. E. Phillips), the ex-mayor (Mr. T. B. Silcock), the town clerk (Mr. B. H. Watts), Alderman R. H. Moore, Councillors Knight and Stone, Major C. E. Davis, Messrs. G. J. Long (president of the South-Western Federation of Building Trades Employers), C. H. Long (ex-president of the Bath Association), E. J. B. Mercer (hon. sec.), E. W. Wooster and John Howard (past presidents), &c., the company numbering seventy-four in all.

ARRANGEMENTS have now been made for restoring the Iona Cathedral to its pristine proportions and appearance, from the designs of Messrs. MacGibbon & Ross, of Edinburgh. Messrs. Mitchell & Sons, of Edinburgh, have, we understand, received the contract for this important work, which, it is hoped, will be entered upon early in spring. The cathedral or St. Mary's Church is believed to have been built in the early part of the thirteenth century. It has a choir with a sacristy on the north side and chapels on the south side, north and south transepts, a central tower 70 feet high and a nave. An inscription, now defaced, on one of the columns of the choir seemed to denote that it was the work of an Irish ecclesiastic, who died in 1203. This venerable pile forms part of the estate of the Duke of Argyll, who, shortly before his death, formally transferred it to the Established Church of Scotland.

THE old building known as the Archers' Hall, which for long has in a way been a conspicuous figure standing back from the thoroughfare in Buccleuch Street, Edinburgh, has

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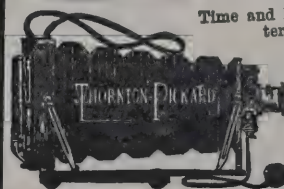


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been reconstructed in substantial and elaborate style, from plans prepared by Dr. R. Rowand Anderson. The original structure formed a square of about 40 feet. All that remains of it now are the outer walls. An addition has been made at the south end, and the piece of ground which stood open in front has been enclosed with ornamental wrought-iron railings and gates. As reconstructed the hall of the Royal Company of Archers consists of three floors. The basement is given up to kitchen and scullery, housekeeper's rooms, &c. The first flat includes a large entrance hall, having a black and white marble floor and being panelled in white, with ample cloakroom and lavatory accommodation running off it. Occupying the entire length of the old building on the west side is the reception-room, 40 feet long by 20 feet wide, a spacious apartment, partly panelled and partly lined with tapestry. One of the features of the remodelled building is the principal staircase. It has two broad flights of stone steps, the walls are panelled in white, the ceiling is lofty and is tastefully decorated in plaster-work, and admirable light is secured by means of a beautiful three-light window. This staircase leads to the dining-hall on the upper floor, which also fills the whole area of the old building, and, like the reception-room, is exceedingly handsome in every way. It has a high and richly-decorated plaster ceiling, and has depending from the centre a specially made electrolier of chaste design, the gift of an Archer. Throughout the building is lighted by electricity, and the internal fittings and furnishings generally are beautiful and most attractive. The alterations, which have been made solely at the expense of the members of the Company, were described and exhibited by Dr. Rowand Anderson on Saturday afternoon to a large party of gentlemen representing the Edinburgh Architectural Association.

#### NEW TOWN HALL, LLANDUDNO.

LLANDUDNO rejoiced on the 10th inst. at the opening of its new town hall, a handsome building which has been erected at a cost of about 20,000*l*. The new building, which is the latest monument to the enterprising spirit which animates the rulers of this popular watering-place, stands in Lloyd Street, and occupies a site which was presented to the town by Lord Mostyn, who laid the memorial-stone more than two years ago. The absence of suitable accommodation for the Council and

its officials, and the holding of courts, has been regarded as a serious drawback in a town which has kept with the times in other respects. Hitherto the meetings have been held in a small, dingy room, situated at one extreme end of the town, while the magistrates and court judges have had to hold their sittings in a mere room for a court-house; but all these difficulties are vanquished by the present building, which, as regards appearance and convenience which it will afford for the transaction of municipal and public business of the town, is undoubtedly credit to Llandudno. It was designed by Messrs. S. Ray, Bath, the plans being selected out of fifty submitted in competition, and the carrying out of the work reflecting the greatest credit upon Mr. Luther Roberts, a local contractor. The design is described as a free treatment of the Renaissance. The walls are built of Portland stone with brick. A feature of the design is the large porch on the ground floor. It is placed at the rear of the building, and enclosed by the two wings. It is lighted by ten semicircular side windows and a large arched window at the end. The walls are panelled, and the roof is covered by a large ornamental timber roof, ceiled with oak. Ample means of exit are provided, so that the hall may be cleared instantly. This hall will be let for court and police court work, and adjoining it are retiring-rooms for magistrates and solicitors. It is also so arranged as to be used for entertainments and such gatherings entirely apart from the municipal portion of the building. The main attraction of the building is the Council-chamber, which occupies the whole of the first floor in the centre block. It is lighted by three large windows, and the interior is elaborately treated with columns and arcading supporting a coved ceiling. The furniture of oak is massive and elegant, and adds to the dignity to the general appearance of the chamber. Immediately adjoining this room are the committee-rooms and clerks' offices. One wing of the building is devoted to a suite of offices for the Council, and they are provided with a separate staircase, and are entirely cut off from the municipal offices. The lighting of the entire building is by electricity, and the Council-chamber, the assembly-hall, the spacious vestibule, and the grand staircase are provided with richly designed brass eleb. These parts of the edifice are also warmed by a system of hot-water radiators, and the whole of the office is fitted with apparatus for gas fires.

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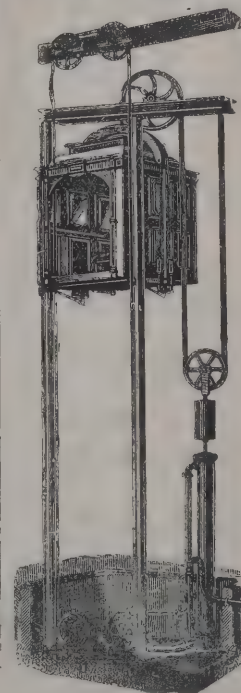
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## ACCIDENTS ON BUILDINGS.

subjoined memorandum on the causes of common accidents that occur on buildings in course of construction or repair, and hints for their prevention, has been issued from the Office. The modifications introduced have been made in accordance with the suggestions of leading experts who have been consulted:—

In the following memorandum an attempt is made to explain and illustrate those accidents, the causes of which may be considered controllable by the builders and workmen.

The dangerous conditions in building operations may be divided into two classes—(a) those arising from imperfect scaffolding, and (b) those arising from the lifting and carrying of material.

### Scaffolding

The two principal methods are known respectively as the north and south country systems. The northern, as the name indicates, is principally used in Scotland and the North of England, although of late years it has also found favour in the south; the other method (see fig. 1) is essentially the south country system.

The first method is invariably used in conjunction with a steam crane. When one crane only is used, it is fixed upon a triangular platform built upon three legs at each angle, and is raised to such a height as to be over the building to be erected. The crane stands over the principal or king leg. Owing to the guys it cannot make a complete revolution; if power is required that can be utilised on all parts of the building, the erection has a square platform with a leg at each angle, two cranes are then fixed, being diametrically opposite to each other.

The three or four legs, as the case may be, are of framed iron, bolted, and are weighted to the ground by masses of brickwork. The whole is so well built that accidents occurring from faults of construction are extremely rare.

The greatest dangers arise when the crane is imperfectly fixed, and when the weight of the crane engine and load is too great for the king leg on which it rests, and when the legs are not sufficiently far from the king.

With regard to the first point, the guys of the crane should always be carried to the centre of the secondary legs and chained down to the masses of brickwork which weight

these legs at their feet. This chain requires frequent examination, especially when a heavy load is being raised, as, owing to the vibration of the scaffold, it becomes loose, and if not tightened the crane would lose its rigidity and accidents would be likely to occur.

6. In the second case, where the weight is great, the king leg should have an additional centre upright running from top to bottom. (See fig. 2, which is a plan of a king leg.)

7. The second form of scaffolding presents many points of interest. In order to render this report more intelligible, notes are given on the sketch (fig. 1) which explain the technical terms used. There are two varieties, again, of this form of scaffolding, and their use depends upon the material of which the building is being constructed, viz. either of brick or stone.

8. Where bricks are in use one row of standards and ledgers only are necessary, the putlogs resting outwardly on the ledgers and inwardly on the wall (where header bricks have been left out for their reception).

9. On stone buildings, and more especially when ashlar fronted and where an opening in the wall would leave a permanent disfigurement, a double set of standards, &c., are necessary to carry the putlogs. (See fig. 3, which is a section of what is known as a mason's scaffold.)

10. A few points with regard to these erections.

11. The different marryings, tyings, &c., should be carefully watched, as scaffolds have been known to come down owing to the cords slipping. This happens more especially when the cords have been used damp, the influence of a hot sun causing them to relax considerably. Wedge driving between cords and posts is the usual method of tightening.

12. The boards on which the men work should be carefully kept in position. Fig. 4 shows the usual position of the boards. Carelessness may and does result in these losing their place, and if by so doing they take the position shown on fig. 5, what is known as a trap is formed. Fig. 6 illustrates the working of a trap. It will be noticed that when on the boards it is not easy to tell where the putlogs are. This creates to a great extent the danger. A certain preventive would be for the putlogs to be used in pairs, the boards then instead of overlapping could be placed end to end (see fig. 7); in overlapping boards get out of place, and a second man of two may catch his toe against the end raised.

13. Two of the commonest forms of accidents occur on these scaffolds, the falling of the workmen, and the dropping of the material from the upper floors of the erection. On the

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outside of the scaffold, also at the ends, a guard rail should be lashed to the standards about 3 feet 6 inches above the scaffold boards. This would obviate the first danger. With regard to the second the danger from falling material is much to be deplored, as though it can occur in many ways, it is, as a rule, the result of great carelessness. A board on edge running along the outside of the scaffold, but within the uprights and nailed to them, and again at the ends, would, to a great extent, prevent this class of accidents. Unfortunately, this board cannot be fixed on the inward side of the scaffold, as it would interfere with the free use of the workmen's tools. Figs. 1 and 3 show the guard rail and board on edge.

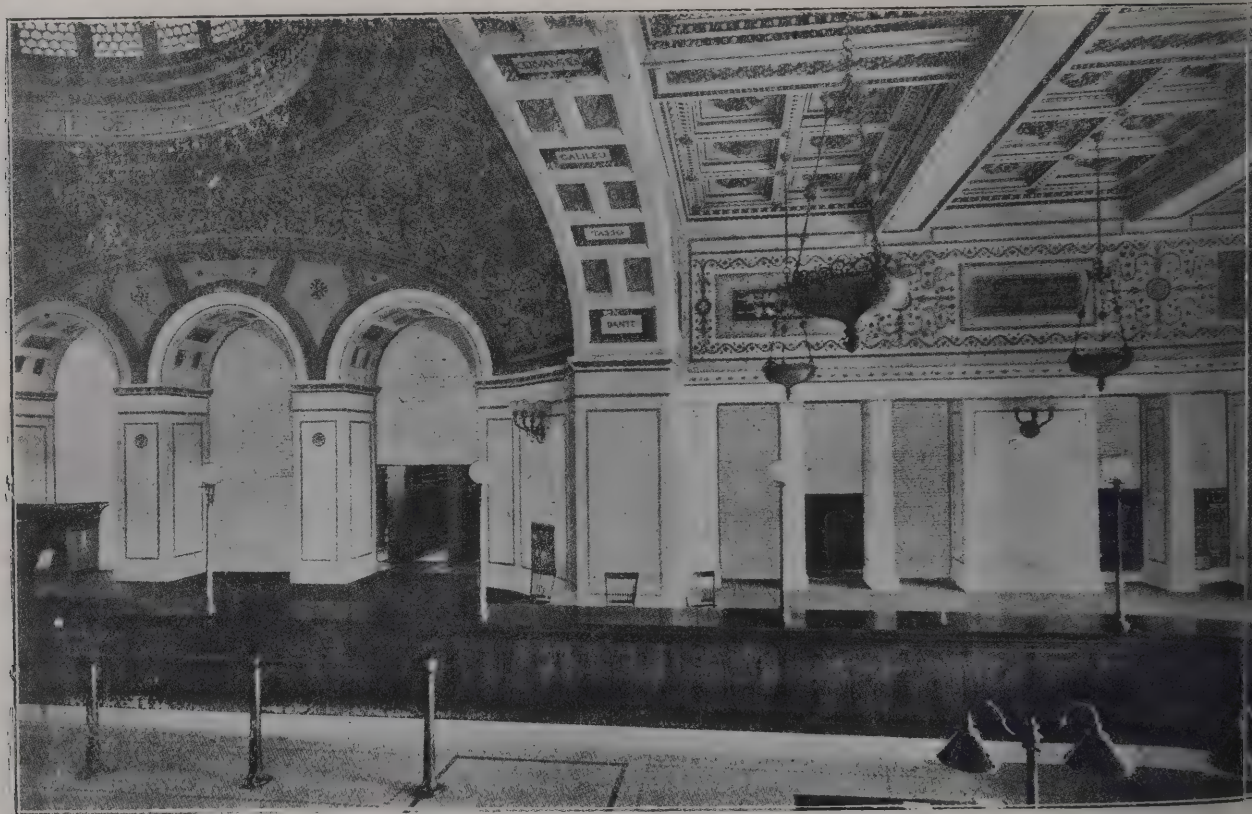
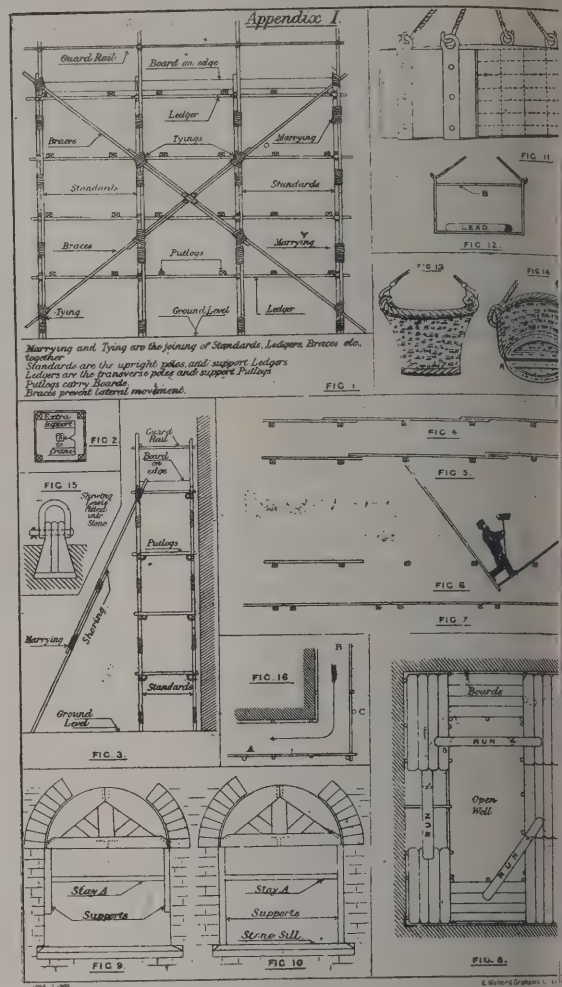
14. A mason's scaffold should be supported in such a manner that no opportunity could occur for it to fall away from the building. Fig. 3 shows the shoring, which is the usual method of preventing this where room permits; but this cannot be applied in a street, and in that case the scaffold should be tied to the inside of the buildings by poles through the openings.

15. There are other conditions of risk involved in insufficient width of runs, and in the use of centring improperly supported. A run is commonly seen only one board wide (9 inches). It is needless to say that this width is dangerous; 18 inches is the least that should be allowed. A run for continued use would be better made of two 3-inch by 11-inch planks if two planks are used. A slip of wood can be nailed across the undersides to keep them together. Fig. 8 is a plan of a working platform surrounding a courtyard or well, and gives three examples of runs which are commonly used, but which are not satisfactory.

16. Improperly supported centring is seen only in cheap work. Figs. 9 and 10 give an example of what is meant. It will be noticed that the supports to the centring of fig. 9 are kept in their position entirely by the lateral pressure exerted by the stay A. It follows that, if this pressure is eased sufficiently, say by shrinkage, it is more than probable that the centring and a large portion of the unfinished arch would fall. Fig. 10 shows the centring properly supported. All supports to centring should rise from a solid foundation.

16A. Painters' boats occasionally fall owing to the use of defective cordage and supports. Care is the only remedy that can be suggested.

16B. Gantries, especially those erected over the public way, having to carry great weights, should be effectively strutted and braced, and timber of sufficient strength used.



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*The Lifting and Carrying of Material.*

7. Very little danger arises during the lifting and carrying of material so far as the power in use is concerned. The accidents generally occur owing to the defective manner by which material is secured to the crane, pulley wheels or whatever arrangement for lifting may be.

*Ironwork.*

3. Ironwork is principally used in the forms of girders or ladders. They are sometimes slung by a chain round the sides and as evenly balanced as may be. There is considerable danger of this chain slipping, however well balanced (more especially if the load when swinging is tilted, say by receiving the material through touching some part of the erection) and thus the material to fall. To prevent this a second chain may be run from each end of the column or girder to a point at a distance up the supporting chain, but the best remedy is to use a "softener," i.e. an old bag or sack put round the ironwork and the chain turned twice round it over the "softener" and knocked as close as possible, then no slipping will take place.

The same applies to timber.

*Timber.*

9. Timber in lengths can be carried in the same manner as the iron girders, but owing to the greater friction set up between wood and iron it is not so likely to slip as the former. The same precautions, however, are necessary.

*Bricks, Slates, &c.*

5. Bricks, slates, &c., in large quantities are slung in cranes, in smaller quantities in baskets, and in small work are carried in hods by labourers.

1. The crates (fig. 11) will carry as many as 350 bricks. It will be noticed that they are not fitted with sides. This is to facilitate loading. The chief danger arises from their use when they are improperly packed. When suspended the pull on the handles causes the ends to take an inward slope. If the crate is tightly packed this pull creates a pressure on the material, and tends to keep it in position, but if loosely packed the absence of sides would be a source of danger, as the material could easily fall out.

2. If a similar crate was used to carry a roll of lead, it would be necessary to place a stay (B, fig. 12) across the top to counteract and relieve the strain at the bottom.

23. When baskets are used, the danger lies in the handles. If they are hooked to chains, which is the usual method (fig. 13), the weight may and does cause them to give way. One remedy is for the chain or rope to be carried round the basket, as shown in fig. 14. The pieces of wood marked R, if fixed as shown, would give the basket a level bottom, and would also tend to prevent the rope slipping. A better course would be so to construct the basket that the material of which the handles are made should be carried down the sides and along the bottom of the baskets and well secured thereto. In any case care should be taken to see that the baskets are strong enough in the first instance, kept in proper repair and not overloaded, and that spring hooks be used on the slings.

*Stone.*

24. There are several methods of lifting stone. It can be lifted in the same manner as ironwork, or may be suspended by means of a "lewis," or again by means of nippers.

25. The first method is perhaps the safest, but is generally used for undressed work only, as the chain is apt to break up any finished edges, &c.

26. The second method—by a lewis. A hole is cut into the stone wider at the bottom than at the top, three pieces of iron, as shown on fig. 15, are fitted into it, the outside or splayed pieces first, and the rectangular centre piece last. A bolt running through the top of each fixes its position, and at the same time secures a ring into which the hook, by which it is to be lifted, is placed. This arrangement will lift a very great weight. They are made in all sizes to suit; the softer the stone the deeper they ought to be in proportion to the weight. The risk of its giving way if the stone is not free from vents, or when the lewis does not fit the hole, or again, if the weight is not evenly distributed, is considerable. Its use with perfect safety can only be left to the judgment of the mason.

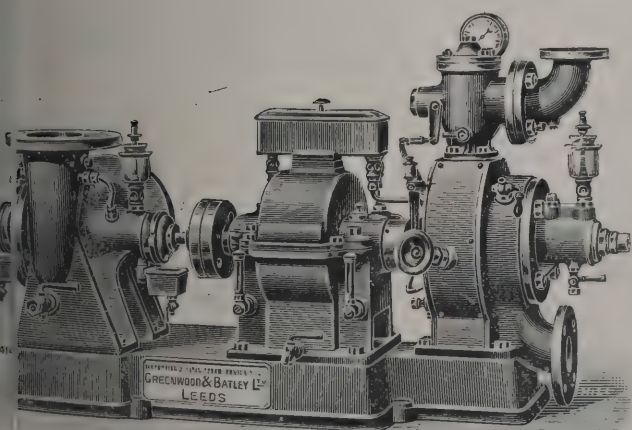
27. The nippers clutch the stone on the outside. Danger may arise if the small holes picked out to receive the nippers are so near the top edges of the stone that the points drag out; or again, the centre of gravity may be above the points, causing the stone to turn over and fall.

28. It is, of course, assumed that the plant in use has been, both in point of quantity and quality (and the first is of equal importance with the second), fully sufficient. It is regrettable that often in actual practice this has been found not to be so. Inferior tackle has been and is responsible for many accidents. Many lives, again, could have been saved if a little forethought

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had been used, and compliance made with those unwritten rules by which workmen should be guided. Fig. 16 will give a clear illustration of what is meant. A labourer in building a scaffold required a ledger at point A. He fetched it from point B. He carried it upon his right shoulder, and in turning the corner in the direction of the arrow the end of the pole struck against standard C. The recoil immediately knocked him off the scaffold. If the pole had been upon his left shoulder the blow would have fallen harmlessly, and his life would not have been lost.

The following suggestions, if carried out, would tend materially to reduce the number of accidents occurring on buildings in course of construction or repair:—

(1) All working platforms above the height of 10 feet taken from the adjacent ground level should, before employment takes place thereon, be provided throughout their entire length on the outside and at the ends—

(a) With a guard rail fixed at a height of 3 feet 6 inches above the scaffold boards. Openings may be left for workmen to land from the ladders and for the landing of material.

(b) With boards fixed so that their bottom edges are resting on or abutting to the scaffold boards. The boards so fixed should rise above the working platform not less than 7 inches. Openings may be left for the landing of the workmen from the ladders.

(3) All "runs" or similar means of communication between different portions of a scaffold or building should be not less than 18 inches wide. If composed of two or more boards they should be fastened together in such a manner as to prevent unequal sagging.

(4) Scaffold boards forming part of a working platform should be supported at each end by a putlog, and should not project more than 6 inches beyond it unless lapped by another board, which should rest partly on or over the same putlog and partly upon putlogs other than those upon which the supported board rests.

In such cases where the scaffold boards rest upon brackets, the foregoing suggestion should read as if the word bracket replaced the word putlog.

N.B.—Experiments have shown that a board with not more than a 6-inch projection over a putlog can be considered safe from trapping or tilting.

(5) All supports to centreing should be carried from a solid foundation.

(6) In places where the scaffolding has been sublet to a

contractor, the employer should satisfy himself, before allowing work to proceed thereon, that the foregoing suggestions have been complied with and that the material used in the construction of the scaffold is sound.

## BRISTOL CLERKS OF WORKS AT DINNER

THE ninth annual dinner of the Bristol Clerks of Works Builders' Foremen Association was held in the Royal College Green, on the 15th inst., Mr. P. Addie presiding, a large attendance, and there were also present Capt. Thompson, I.V.B., Messrs. A. Lee (president of the Chamber of Commerce), W. J. Steele (deputy city engineer), V. Woodland, H. Wills, F. Wills, A. S. Scully, W. S. Skidwell, G. Wilkins, E. Turner, J. N. Pike and J. Rees.

After the loyal toasts had been proposed, Mr. W. A. W. land submitted the "Army, Navy and Auxiliary Forces," said that they were justly fond of their Navy. The Army proved that they possessed the same pluck of endurance as those of olden times, while the Volunteers had shown themselves as good as regulars.

Captain C. Thompson, 1st V.B., responded, remarking their Navy, coupled with that of Japan, was equal to any Powers.

Mr. H. Wills also replied.

Mr. R. Slaughter gave "Trade and Commerce of Bristol."

Mr. Arthur Lee acknowledged, and said that trade and commerce was only another term for means of livelihood, if they increased trade and commerce anywhere they increased—and they could not help it—the means of livelihood for those in the neighbourhood. Increased trade and commerce meant increased means of livelihood, and that not for those who laboured by hands or by brains, but even for the capitalist, because it had been well said that money was manure, which was no good unless well spread. Those in the building trade knew that it was in the centres of population and trade and commerce that the building trade flourished. They would find that in every case a great increase of population had arisen simply because of the facilities for carrying on some particular trade or industry, the number of trades and industries. The existence of a city was due to the natural facilities for the trade.

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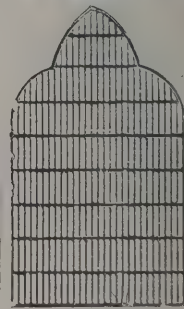
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goods in days gone by. In the old days it was facilities alone which was the reason for those great nations of humankind; but of recent years they had at artificial facilities had the same effect. There was a case not many miles from Bristol. Take the case of Barry. Twenty years ago the land around Barry provided of livelihood for a population of 100 souls. A great town has been built there. There were increased facilities for trade and commerce, and that gave immediately largely increased of livelihood, and to-day, in less than twenty years, there are means of livelihood for over 300,000 people. Under new conditions, and the natural facilities good for the old days must be supplemented by artificial ones. Depend upon it, as in the old days when they followed those places where there were natural so they would find trade would follow and in those places where people were far-sighted to provide artificial facilities. Those artificial facilities not be provided for nothing. Some timid souls would be about running into debt. If the capital put down to be productive he did not mind in the least about into debt. If it meant increased livelihood they must be too timid at the bugbear. Of course they must run risks. They knew nothing could be done without hard and consistent effort. For the future of the great under- which they had put their hands, he had less fear day because he saw the spirit and temper of the citizens of the town. He believed they had a body of citizens who were determined to make their city great, and to begrudge neither effort to bring about that desirable object. Mr. A. S. Scully in a capital speech proposed "Architects, Surveyors and Surveyors." Mr. F. Wills, responding, spoke of the good feeling existing between the masters and their men. Mr. W. S. Skinner also

Mr. W. Kidwell and W. J. Steele submitted "The Master Builders," and said there was no town in the Kingdom where there were such amicable relations between master builders and their men as in Bristol. Mr. G. Wilkins (president of the Bristol Association of Builders) acknowledged. The Chairman proposed "The Bristol Association of Clerks and Builders' Foremen," and said that their society was going in the right direction. The clerk of works stood in the position as an umpire at cricket. They held a position

which was no sinecure, as they had to know everything connected with the engineering and building trades, and he had to be a man of rectitude. Their responsibilities were enormous.

Mr. W. F. Read and Mr. E. Turner replied.

An admirable programme of music was carried out by Mrs. Percy Smith, Messrs P. Smith, G. Maxwell and Stanley Williams; while Mr. H. D'Arby contributed some violin solos in fine style.

#### WALSALL NEW MUNICIPAL BUILDINGS.

In view of the interest aroused by the impending Royal visits to South Staffordshire—that of the Duke of Connaught to Wolverhampton to open the exhibition, and of Prince Christian to Walsall to lay the foundation-stone of the new municipal buildings—the *Birmingham Post* gives the following details of the scheme in which the Walsall municipality is particularly interested. The project for the erection in one block of a new town hall and offices for all the various Corporation departments is an undertaking which perhaps surpasses in magnitude anything Walsall has undertaken, for although the tramway municipalisation scheme, which is also being carried out at the present time, involves a much greater expenditure, there is the important distinction that in the latter instance the outlay may be expected to bring in some return, which will lighten the burden on the ratepayer occasioned by the necessity of repaying the loan or loans which will have to be obtained, with interest, in annual instalments. In the case of the municipal buildings, however, the town has to face a capital outlay of probably 80,000l., with the prospect of the expenses of maintenance being responsible for a further annual and permanent addition to the rates. Having resolved that the provision of public buildings on a scale befitting the importance of the town had become a necessity, the Town Council acted wisely in securing a site which, for accessibility from all parts of the town, could scarcely have been surpassed. Future requirements were also not overlooked, as sufficient land was secured to enable the buildings to be added to when necessary. In an open competition the design which gained acceptance was that submitted by Mr. J. Glenn Gibson, of Gray's Inn, London, who, it may be mentioned, was the architect for, among other public buildings, a new hall for the West Riding of Yorkshire County Council, costing 120,000l., and a technical institute for the Corporation of West Ham, costing

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60,000l. The principal frontage of the public building which Walsall hopes soon to possess will be to Lichfield Street, which is rapidly becoming recognised as one of the principal thoroughfares in the borough, and, as already indicated, the position is such that it is within a stone's throw of the centre of the town. It is understood that stonework will be freely introduced into all Lichfield Street front, which is to be about 170 feet in length and divided into two wings, with a central gable containing the entrance doorway and large enriched columns extending to the height of the building. A tower about 140 feet high will be placed at the right-hand end of this frontage, and it is proposed that this should consist of a square mass of masonry to a height of about 60 feet, above which level it will develop into a rich belfry stage, having seated figures carved in stone, and above this a delicate open-work lantern surmounted by a crown. There will be another front, which will face the Corporation baths between Lichfield Street and Darwall Street, and this will be treated in the same style as the principal front, but with less elaboration of detail. The chief features will be the tower and a fine central pavilion. The whole of this part of the building will be utilised for offices for the Corporation officials. The entrance to the town hall will be from Leicester Street, but it can be used in conjunction with the entrance to the municipal offices. In this front there will be a central doorway with a tower on either side, containing the gallery stairs. The plans provide for the completion of the edifice by an extension to Darwall Street, and it is an open secret that it is hoped that the buildings to be added will be for use as a picture gallery and museum, with an entrance from Darwall Street. It will be seen from the above description that the block will form one large square with a street on either side, and this will no doubt prove a matter of considerable convenience.

As regards the internal arrangements and the accommodation which will be provided, it may be mentioned that the town hall will be about 120 feet long by 58 feet wide and 45 feet high, lighted by large windows at each side, and with a vaulted roof. A good deal of enrichment in colouring with heraldry and figures will be introduced, and a pretty effect is promised. The platform will be semicircular, and will have accommodation for 200 persons, with an orchestra stage. At the back will be placed an organ, a fund for the purchase of which is being publicly raised, and which is intended as a memorial of Queen Victoria's reign. The hall, it is stated, will seat 1,700 persons, and there will be the usual retiring and

other rooms in addition. The municipal buildings will be reached from the principal entrance in Lichfield Street. There will be a spacious vestibule, which will lead to an columned hall in stone, with stairs at each side, giving access to the first floor, where the council chamber will be situated. The council chamber will, apparently, be of a character sufficiently elaborate to satisfy even the most fastidious councillor or alderman. The dimensions will be 50 feet by 35 feet, and there is to be a dome with a ceiling carried on four large marble columns. It is proposed to have stained-glass windows, the subjects for which are not yet decided. There will also be a domed light in the ceiling. The members of the council will be arranged in the centre of the floor, and there will be a gallery for the public. In proximity to the council chamber will be a suite of committee rooms capable of being thrown into one large room 80 feet long by 20 feet wide. These rooms practically take up the whole of the Lichfield Street front.

The general style of the building may be described as English Renaissance, but it will be sufficiently modernised to adequately meet the need for plenty of light and air, and the convenience of arrangement of the various apartments. The character of the decorative sculpture employed will also be in accordance with present-day tastes. It may be mentioned that the excavations for the foundations of the buildings are now in course of construction, and the contract for the whole of the work is to be completed in about two years' time.

A SPECIAL meeting of the general purposes committee of the Middlesbrough Corporation was held at Middlesbrough on the 4th inst., Alderman W. J. Bruce presiding, for the purpose of considering the resignation of the town clerk (Mr. C. Bainbridge), which has become necessary consequent upon long and protracted illness. Mr. Bainbridge was appointed town clerk twenty-five years ago and has done excellent service for the town. The committee recommended that Mr. Bainbridge should be relieved from his responsibilities, and he be so relieved at the end of the financial year, March next. They also recommended that he receive from the corporation a sum equal to six months' salary. These recommendations, on the proposition of Colonel Sadler, seconded by Alderman Hinton, were carried.



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# The Architect.

## THE WEEK.

By the death of DAVID MACGIBBON on Thursday in last week, architecture and architectural literature have suffered a grievous loss. But Scotland has still more reason than any other part of Great Britain to lament the loss of a son who went beyond any of his predecessors to prove to the world the interest of the ecclesiastical and domestic architecture of the North. With the aid of his loyal partner, Mr. THOMAS ROSS, he produced the eight admired volumes which contain all that has survived of the architecture of his country. Scotsmen might well be proud of so enthusiastic a work, which was a testimony to the ability of their forefathers. Mr. MACGIBBON also was the author of a large work on the "Abbeys of Galloway," which was intended for private circulation. DAVID MACGIBBON, who at his death was in his seventy-first year, was a native of Edinburgh, and was educated in the high school and university of that city. As an architect he was successful. He was appointed architect to the Merchant Company, of which his father had been master, and designed their schools and laid out their property. He was also architect to the National Bank of Scotland. Among his Edinburgh buildings are the Caledonian Insurance Company's office and the Theatre Royal. Mr. MACGIBBON obtained the honorary degree of LL.D. from the University of St. Andrews, and he well merited other distinctions.

The jurymen who agreed to assess the relative importance of the façades erected in Paris during 1900 have prepared supplementary remarks to their report. It is pointed out that in almost every instance an architect is compelled by necessity to avoid the loss of the smallest space both in projection and in height. The jury desire, however, to see some slight signs of a resolve to sacrifice financial interests for the sake of the perspective of the streets. While recognising the efforts of the designers and the good results which have followed, they consider that the differences of treatment have generally resolved themselves into one of detail. The jury maintain that it would be preferable to seek variety in the composition of the ensemble, in the proportions of openings, and in the general silhouette. The jury hope that proprietors and architects will bear these principles in mind when undertaking the future buildings which are intended to demonstrate the artistic vitality of Paris and to add to its beauty.

ACCORDING to Section 125 of the Factories and Workshops Act, a district council and their officers have, without prejudice to their other powers, all such rights of entry, inspection, taking legal proceedings and so on as a factory inspector. An inspector in default may take proceedings, and shall be entitled to recover from the district council all such expenses as have been incurred. We may expect to see diverse degrees of zeal exhibited in respect to the proceedings. In some places there may be dilatoriness which should be condemned and punished. In others there may be a difficulty in dealing with all the contraventions simultaneously, and in such cases it may sometimes be more prudent to adopt a system of grappling with one defect at a time. This latter plan has been adopted in Portsmouth. It is not a town which is generally thought to contain factories on a large scale. But the standard of the Act relates to buildings of a much smaller capacity than those in the Midland districts. Any place in which more than forty persons are employed must, for instance, be provided with means of escape in case of fire, in good condition and free from obstruction. The roads and works committee of the Portsmouth Corporation have been investigating how far the means of egress are provided in the town. They have ascertained that no less than forty establishments are without the required provision. All the proprietors will be called upon at once to comply with the Act, and it will be

left to the streets committee to take the needful steps to enforce the new law. It will be found, of course, that many other defects exist in the factories and workshops of Portsmouth which will also have to be corrected. We have referred to an order by the Home Secretary about the cubical area which is necessary in one class of building. Another order has just been issued, which prescribes that the means of ventilation to be provided and maintained in every textile factory, not being a cotton cloth factory, in which atmospheric humidity is artificially produced by steaming or other mechanical appliances, and in which special rules or regulations with respect to humidity are not for the time being in force, shall be such as to supply during working hours not less than 600 cubic feet of fresh air per hour for each person employed.

IN most cities there is a desire to introduce fire-resisting materials as largely as is practicable in buildings. It is to the general interest that such an arrangement should be made compulsory, for in cases of fire, although insurance companies may pay the full amount that is agreed upon, yet there are secondary or supplementary losses for which compensation is not easily found. It is incredible that an attempt is now being made in New York to tolerate the use of flammable materials. An alteration was lately introduced before the Board of Aldermen which provides that the sections of the Building Code relative to the fireproofing of the floor surfaces and interior trimmings of buildings exceeding twelve storeys, or 150 feet in height, shall be repealed. The consequences of facilitating conflagrations in lofty buildings are almost too terrible to contemplate, and such a proposal suggests what trafficking with danger can do. It is generally understood that the main purpose of such a change in the by-laws is intended to be the condoning of offences against the building laws of New York. Where fire-resisting materials should have been employed others of a less expensive character have been substituted. As long as the organisation called "Tammany" was supreme, violations of every law were feasible. But now that "Tammany" is temporarily discredited it is feared that inquisition may be made into many deeds of darkness, and hence the eagerness to promote a new building edict which would be retrospective in its action. It is to be hoped, however, that the desire for security will overcome all those sinister attempts which imperil human life.

THE examination of builders' accounts is often a more onerous task than public authorities imagine. One sent in two months ago in connection with the new workhouse in Steyning is still in the hands of Messrs. CLAYTON & BLACK. According to a letter sent by the architects to one of the guardians, it contained 40 sheets and 379 items, but without any details. Their principal assistants, other clerks, and themselves had already spent eighteen days on the account, and several long evening conferences had taken place. They differed from the contractors in about 200 items, and these had to be gone into. It was not to the advantage of the Board, they said, that they should be hurried or interfered with in their consideration of the account. In such a case the architects could get over a difficulty by a perfunctory examination, but as they have preferred to scrutinise all the items in the interests of the Guardians, it is not fair to urge expedition in order that the Guardians may not be troubled with applications for a settlement.

THE ancient "velum" served many purposes, for the word denoted a curtain, a screen, a veil, a sail, and much else. But to architects it is most interesting as a substitute for a roof. It protected spectators in open arenas from the heat and rain. The arrangements which were adopted in Athens and Rome are not clear. On that account much interest will be attached to the velum or awning which M. THOMAS, the architect of the Grand Palais in the Champs-Élysées, is to use over the court during the Salon and other exhibitions. It will have an area of 22,000 square metres, which is nearly equal to 26,000 square yards. In the centre will be the initials of the Society of French Artists surrounded by a garland of laurel, oak and other leaves.



### THE ROYAL SOCIETY AND THE BRITISH ACADEMY.

WE have already referred to the effort which is in progress for the establishment of a British Academy. The aims of the new institution are not fully defined, but it may be presumed to deal with the intermediate province which lies between the Royal Society on one side and an academy or society of literature on the other. In such a case there would inevitably be an encroachment on both sides. Literature is without any representative body, and cannot therefore offer an official protest, but the Royal Society has long held a secure position, and it was to be expected that it would not approve of any rival near its throne. Accordingly a petition to the KING, signed by a great many of the Fellows and other prominent men who are not yet Fellows, has appeared. The document states that the Royal Society was established by charters granted by King CHARLES II.; that the progress of learning and philosophic studies has since been great, and scientific methods of inquiry have been applied to many new fields of knowledge; that it is desirable that all the intellectual forces of the realm should be organised so as to promote the greatest advancement of scientific studies; and that instead of being embodied in a new academy, studies of history, philosophy and philology can most efficiently be provided for in some relation to the Royal Society. The petitioners, therefore, humbly pray that HIS MAJESTY may be graciously pleased to cause an inquiry to be made with a view of instituting a general and formal organisation of all the studies depending upon scientific method now carried on, similar to that inaugurated for the philosophical studies of the seventeenth century by the charters of His Majesty King CHARLES II.

We must regard the petition as being entirely inspired by a desire to extend knowledge, but fortunately it cannot be considered as official, for the President and Council of the Royal Society have sent a petition to the KING praying that the grant to the British Academy for the promotion of Historical, Philosophical, and Philological studies be granted. It is well, however, to use the occasion to consider the position of the Society of which CHARLES II. was the first patron.

There is no doubt that the Royal Society is the supreme organisation of its class in England, and it possesses also a universal reputation. We may also assume that it represents the most advanced scientific methods. They are applicable not only to the particular subjects which the Royal Society has fostered during two centuries, but to others which have not been recognised by the Society, including history, philosophy and philology. The questions should not, however, be overlooked whether the Society, after so many years' experience and practice, has not acquired a bias towards certain classes of investigation and knowledge, and whether it is not now too late to begin a reformation. In order to answer these questions, it will be necessary to consider the foundation of the Society, and to dwell upon the part taken in it by an illustrious architect, Sir CHRISTOPHER WREN.

In the old days, prior to the appearance of BACON, a great many of the followers of science were alchemists or solitary inquirers. Co-operation involved dangers. BACON, on the contrary, made it plain that if science was to be studied adequately the services of a great many labourers were indispensable. He sought after universality by making man the interpreter of all nature. Hence he proposed the collecting of a most perfect and general library, a spacious botanical and zoological garden, a goodly cabinet in which whatsoever the hand of man by art or engine hath made, and "a still house so furnished with mills, instruments, furnaces and vessels as may be a place fit for the philosopher's stone." On account of his aspirations for a combination of scientific labourers, BACON has been declared to be the true founder of the Royal Society. One effect of his suggestions was the establishment of a little society in London about 1645 to study the new philosophy, which was BACON'S. Some of the members afterwards obtained office in the University of Oxford, and there they formed a similar society. The London society was in some way connected with Gresham College. CHRISTOPHER WREN was associated with the members both in Oxford and London. In his fifteenth year he invented a diplomatic instrument or manifold writer, which enabled,

as he said, any ordinary penman "to write two several copies of any deeds or evidences, from the shortest to the longest length of lines, in the very same compass of time, and with as much ease and beauty, without any dividing or ruling, as without the help of the instrument he could have despatched but one." Unfortunately for WREN, a similar instrument was invented about the same time in France, and was brought over and patented in England. WREN invented other appliances, and "as a miracle of youth and a rare and early prodigy of universal science" he was well received by the men forming the club which was the precursor of the Royal Society. He became professor of astronomy at Gresham College, and it was after one of his lectures that he, with a few fellow-lovers of science, discussed in his room the foundation of a college for physico-mathematical and experimental learning.

CHARLES II. was favourable to the project, for he anticipated novel spectacles that would amuse him. He therefore issued a decree, which was drawn up by WREN, in which HIS MAJESTY said:—"Whereas we are well-informed that a competent number of persons of eminent learning, ingenuity and honour, concurring in their inclinations and studies towards this employment, have for some time accustomed themselves to meet weekly, and orderly to confer about the hidden causes of things, with a design to establish certain, and correct uncertain theories in philosophy; and by their labours in the disquisition of nature to prove themselves real benefactors to mankind; and that they have already made a considerable progress by divers useful and remarkable discoveries, inventions and experiments in the improvement of mathematics, mechanics, astronomy, navigation, physic and chemistry, we have determined to grant our royal favour, patronage and all due encouragement to this illustrious assembly, and so beneficial and laudable an enterprise." In these words we have a revelation of the aims of the founders of the Royal Society, and it will be seen that there is nothing that is suggestive of history, philosophy and philology. SPRAT records that the club in Oxford chiefly attended to trials in chemistry or mechanics; they had no rules or fixed method, and in London there was as little formality.

At the first meetings of the Society WREN displayed his productiveness by reading scientific papers. But system was not observed. WREN'S papers were not entered in the Transactions, and copies of them were sent abroad and published as originals by foreigners. WALLIS, who was one of the leading mathematical spirits, used also to steal WREN'S ideas. SPRAT asserts that WREN was the first to demonstrate the doctrine of motion, for DESCARTES had based his theory only on conjectures. "Give me extension and motion," said the latter, "and I construct the world." Whether he or WREN has the better claim to have first demonstrated the importance of motion as a cosmic force will be probably always a subject of dispute. The metaphysicians will, of course, side with DESCARTES. WREN was also applauded for theories of the seasons, the moon's libration, and much else of an astronomical and mathematical nature. There is no doubt he imparted a character to the Royal Society which it still retains. We can obtain a notion in another way of what WREN thought about the Society. He had already written in Oxford about "certain new designs tending to strength, beauty and convenience in building;" "embroidery for beds;" "new ways for engraving and etching;" "a new pavement, harder, fairer and cheaper than marble." But there is no evidence that he ever discussed those subjects before the Royal Society or remotely treated of the art which afterwards was to gain him renown. The method which WREN initiated was followed and developed. The members resembled him. Fellows of the Royal College of Physicians—for WREN experimented in anatomy—mathematicians and professors of natural philosophy from the first enjoyed special privileges. We may now smile at the desire to know where the wood grew which attracted fishes, or why a spider was afraid of a powder derived from grinding the horn of a unicorn; but the pursuit of knowledge in the seventeenth century was excited by these means, which were assumed to be Baconian. To possess a gallery containing philosophical instruments and a museum of natural curiosities or freaks of nature was the first ambition of the



members. After the Great Fire the Society met in Arundel House, and the owner of the mansion presented them with a library of books and manuscripts which formerly belonged to a king of Hungary. The books treated of various subjects, but it is not indicated that they were accepted as more than a token of goodwill on the part of the donor, and as a decoration of a hall where the erudite assembled. Twelve years after the foundation of the Society ISAAC NEWTON was elected a member. There was a fear at the time that a knowledge of any discoveries which might be made would get abroad, and care was taken to prevent any anticipation of the Transactions. The Society continued until the end of the seventeenth century to meet in Gresham College, then there was a removal to Crane Court in Fleet Street. Much importance continued to be attached to the museum, but when the Society went to Somerset House the collection was sold.

We have a further illustration of the spirit which animated the Society when we find the "Principia," by NEWTON, was first brought out at its expense. Through the generosity of GODFREY COPLEY a medal was presented annually to the author of the best paper on experimental philosophy. The Rumford prize was to be awarded for discoveries in heat or light. In fact, all the honours given by the Society have been bestowed on representatives of science. We cannot by any ingenuity make the patronage of the Society appear as an aid for the promotion of studies connected with history, philosophy and philology.

As we have said, the Society is Baconian in spirit. Lord VERULAM was not infatuated with the past, and its philosophy was little valued by him in comparison with his own. At the same time, like the early members of the Royal Society, he had a weakness for wonders so long as he believed they were to be found existing somewhere in the world. Now the past with all its defects, although out of place in the Society, may have extreme interest for whoever is investigating the history of philosophy or of languages. The maxim, "On earth there is nothing great but man, in man there is nothing great but mind," might be adopted as a motto of a British academy. The words would be without the least significance if applied to the works on which the Royal Society rests its reputation. We might even suppose that archæology, if taken in a broad sense, would not be out of place in the Academy, but under no possible circumstances could it be expected that any paper relating to ancient man or his work would gain a tithe of the attention of the Royal Society which would be bestowed on a communication, especially if it came from a physician, relating to a nerve of some species of the gasteropoda.

With such facts before us we see little to justify the action of the Royal Society in protesting against the grant of a charter to the British Academy. It would, of course, be well if all varieties of science could be brought into such a compass that they would become of mutual avail, but we must realise that students have only human capacities which are most limited in power, whilst the boundaries of science are expanding from year to year. Students have little chance of success unless they make themselves specialists. There are a great many classes of specialists in the ranks of the Royal Society, but they are mainly occupied with what, for the want of a better term, is called physical science. It is not difficult to conclude that the structure of a particular part of the earth has had an influence on its inhabitants, and eventually upon its language and philosophy. But speculations of that kind are rarely tolerated at the Royal Society, and it would take a long time before philologists or psychologists would accept the conclusions of geologists. Science is more likely to be extended when the students have not far to travel in order to find a common ground, and that is more likely to come to pass under an arrangement like that of the French Institut, with its academies of literature, morals, fine arts, inscriptions and sciences, rather than in a single monopolising body, although it may bear the distinguished name of the Royal Society.

An Inquiry was held at Brighton on Tuesday, the Corporation having asked leave to borrow 30,267*l.* for rebuilding the borough sanatorium. The plans were explained by Mr. May, and have been approved by the Local Government Board.

## THE CENTENARY OF VICTOR HUGO.

HAMLET was sceptical about a great man's memory outliving his life half a year unless he erected churches. It might be thought that with a volatile people like the French the Dane's words would be constantly exemplified. The number of celebrities who have passed into oblivion in spite of statues and other memorials is abundantly illustrated in the streets of Paris. Seventeen years have elapsed since VICTOR HUGO died in that city, and at his own desire his remains were carried to the Panthéon in a pauper's hearse. But the manner in which the centenary of his birth was celebrated on Wednesday is sufficient evidence that his memory is likely to have an enduring place in the French mind.

This is the more remarkable because VICTOR HUGO was not always a favourite with his countrymen. Sixty-five years ago HEINE was able to declare that the poet's worth was not recognised at its true value. According to the critic he was more truly appreciated in Germany than in France. The reason given was that although he took part in public affairs, not one of the numerous political parties could claim VICTOR HUGO as a trustworthy adherent. He had flattered the King of PRUSSIA, he had ministered to Napoleonism, he accepted honours from the Orleanist court, he professed to be sympathetic with the poor and yet posed as an aristocrat. He praised Catholicism and appeared to be eager to see a new and more socialistic Church founded. He drew inspiration from English literature, and yet might be supposed to be willing to lead an invasion of our country. In fact, there was so much that was contradictory about him, no one who desired to see a correspondence between acts and words took him for an example to be imitated or admired.

Yet regardless of all those drawbacks there could be no doubt that VICTOR HUGO was long honoured as the greatest of French poets, and, what is more, was a force whose strength was felt in contemporary art as well as in contemporary literature. In spite of the want of unity in his conduct, or it may be through that defect, he made an epoch of which some traces still survive. The truth was, VICTOR HUGO was a sporadic development of the Great Revolution. That upheaval displayed itself in war, in policy and in law. There was also revolutionary art, which was little more than a lifeless imitation of forms that were believed to be antique. But after the death of MIRABEAU there was nothing in the form of literature forthcoming that could be considered as characteristic of the period and representative of men's minds. Policy was inimical to the expression of thought. NAPOLEON at the height of his power had to confess that his mighty armies would not be able to resist the songs of Paris, and he took care that the song-writers should be inspired by fear of Imperialism. Not until VICTOR HUGO appeared was there a successor to MIRABEAU. But the condition of things had changed, and the poet's volcanic power was therefore regarded by his enemies as only an outbreak of intellectual epilepsy. Forty years earlier HUGO might have been the most dangerous of all NAPOLEON'S enemies.

In one of his poems VICTOR HUGO represents himself as a child of the revolutionary army. The first sounds with which he was familiar were drums and trumpets; he had the tricolor for a coverlet and his little head often reposed in a helmet. But it cannot be said that in any of his books he was successful in creating a soldier that we must always remember or that corresponded with a child's notions of a warrior. There are no characters which will live as long or be as universally admired as the Uncle TOBY and Corporal TRIM of another writer whose early days were passed in soldiers' quarters. We get a better idea of the revolutionary troops from the songs of BÉRANGER than from the more ambitious efforts of HUGO. In his old age he attempted a most elaborate account of the Battle of Waterloo, but the individual is of no account in it, and as he knew less of military strategy than a vivandière, he committed the most ridiculous blunders. But in all his works we see the revolutionary ardour, the desire to overthrow without much regard to the consequences.

With so much force within him it was not to be expected that HUGO would walk in the footsteps of the calm classic writers of France. But where was he to seek for models



which corresponded with his turbulence? There was only one country in the world which could offer those which he sought. In the Elizabethan drama were the opposites of the stately big-wigged *dramatis personæ* of CORNEILLE, RACINE and their followers, and from them he was able to draw immediate inspiration. For him SHAKESPEARE became the "Poeta sovrano," as DANTE called HOMER. The three greatest personages in the dramatic world were, in his opinion, HAMLET, MACBETH, OTHELLO, and the three principal sources of poetry were the Bible, HOMER and SHAKESPEARE. But it will generally be admitted that HUGO seems more akin to some of the contemporaries and predecessors of SHAKESPEARE than to the creator of TITANIA, IMOGEN, CORDELIA and ROSALIND.

There was, however, a newer source of inspiration. WALTER SCOTT revealed to HUGO that another age could be made more attractive than the siècle of LOUIS XIV. SCOTT, like SHAKESPEARE, did not believe that every character in a drama or a novel was to be dignified. HUGO had a weakness for the grotesque. He admired THERSITES and VULCAN, POLYPHEMUS and SILENUS, Satyrs and Cyclops. The witches of "Macbeth" he considered to be more true than the Eumenides of the Greeks. He insisted not only that the grotesque was inseparable from the best works in literature and in countries outside France, but it was imprinted especially on that marvellous architecture which in Mediæval times took the place of all arts. The grotesque, he said, placed its stigmata on the front of cathedrals, it framed its hells and purgatories in the arches of the portals, it appeared in flames upon the windows, and it unrolled its monsters and demons in the capitals, friezes and gargoyles. It was displayed in innumerable forms on the timber façades of houses and the marble façades of palaces.

Accordingly, in the early and most remarkable work of HUGO, "Notre-Dame," we have the Paris cathedral assuming the importance of the principal character. The building is more than a background; it combines the principal personages and brings them into relationship with one another. What is more, the novel recalls to us the profuse shedding of blood and the countless tortures which were familiar to the theatre-goers in the Elizabethan age. For many people the novel was a punishment which they were too infatuated to escape. The vivid descriptions made readers feel as if they were spectators of the tortures which were inflicted on QUASIMODO, ESMERALDA and the rest. GOETHE, who was not easily moved, declared that he suffered anguish from reading the pages. He looked on it as an offence to have introduced so much unnecessary suffering in order to exhibit the power of the writer.

That power could not, however, be resisted by the most susceptible of HUGO's countrymen. Immediately a party was formed of Romantics, consisting of the young and ardent writers and artists, and to be a classicist or an admirer of CORNEILLE and RACINE was taken to be a sign of decrepitude. "Notre-Dame" served instead of an oriflamme. The Mediæval buildings which had been neglected were at once prized as treasures which were available for romances, and steps were taken to restore them, or, in other words, to make them more romantic than the builders had left them. Any new churches that were required were, of course, made Gothic in style, and for a time it seemed as if France had at last found her right position by going back to the age of Saint Louis, and forgetting the intervening centuries as if they were nightmares.

In painting there was also a return to the same period by the selection of subjects. Mediæval history supplied innumerable incidents, and the artists sought not only opportunities to display beautiful costume, but to prove their possession of tragic power. THACKERAY, who was a correspondent in Paris when the Romantic movement had lost many of its characteristics, turned statistician in order to count the number of scenes of bloodshed that were visible on the walls of the Salon. The man who is reckoned as the greatest painter of that period was EUGÈNE DELACROIX, and he was more akin to VICTOR HUGO than any of his contemporaries. DELAROCHE in his historical paintings tried to be tragic and refined, and therefore failed.

Anyone who will have any doubts about the influence of VICTOR HUGO on the preservation of Gothic buildings

and their imitation need only glance at a collection of French architectural books which appeared prior to the advent of Romanticism. He will find they were very few in number. The lithographs or engravings were produced in a style which made it evident that the execution was of more importance than the subjects. The descriptions were of the briefest, for nobody cared about the history of the buildings. The works of English travellers prepared the way for admiration of Gothic, but it was not until HUGO and his followers became influential in France that the old buildings were prized as they merited. The Romantic movement, like all other forms of enthusiasm, could not go on for ever, and when its originators turned to other fields for the exercise of their gifts the love of Gothic grew cold. At the present time it has ceased to be the popular style for adoption in new churches, and the variations of late years correspond with the waning of Romanticism.

HUGO was willing to admit his indebtedness to English literature, and his volume on SHAKESPEARE reveals more idolatry than is to be found in any English work on the dramatist. But it could not be said that he became enamoured of modern Englishmen, if taken as a whole, although when he met individuals he appeared to be gracious and grateful. We are so accustomed to adverse criticism from foreigners of all degrees, it is likely to be true that not one English reader has forsaken HUGO's stories, poems and dramas because he was severe in judging English ways. But it would have been more pleasant if a man whose influence with his countrymen was so general could have done us justice. This view of HUGO and his criticism was well expressed by TENNYSON when addressing his brother poet. He wrote:—

Victor in Drama, Victor in Romance,  
Cloud-weaver of phantasmal hopes and fears,  
French of the French, and Lord of human tears;  
Child-lover; Bard whose fame-lit laurels glance  
Darkening the wreaths of all that would advance,  
Beyond our strait, their claim to be thy peers;  
Weird Titan by thy winter weight of years  
As yet unbroken, Stormy voice of France!  
Who dost not love our England—so they say;  
I know not—England, France, all man to be  
Will make one people ere man's race be run;  
And I, desiring that diviner day,  
Yield thee full thanks for thy full courtesy  
To younger England in the boy my son.

However long it may be before Englishmen and Frenchmen are one people, they can still unite in admiration for that old architecture in the creation of which their forefathers bore a part. For aiding in the revival of Gothic, VICTOR HUGO deserves to be always associated with WALTER SCOTT. The French poet, indeed, loved the style not wisely, but too well. It could easily be imagined that he was of opinion it was possible to be inspired by the same spirit which once animated the ancient architects. He cared little for repose, and was always straining after novel effects. He seemed to go to extremes in everything, and, like some of the French builders, sought after difficulties as if for the purpose of compelling surprise and wonder. He imitated Gothic exuberance throughout, forgetting it was only a foil to Gothic severity. He also failed to remember that gloom was an occasional effect, not the prevailing power of the architecture. As a consequence he did not care for simple details, but magnified them beyond their due proportion, and gave them an emphasis which was unnecessary. In fact, much of what is said by opponents of Gothic could be adapted and applied to VICTOR HUGO's writings. But the reader must agree he is dealing with a power that is colossal, although he may often wish it was amenable to discipline, and was less disposed to be wilful in order to display its strength and freedom.

The *Tablet* announces that the "Dupplin Carvings," consisting of 54 cathedral stalls, have been purchased from the Earl of Kinnoull and presented to Cardinal Vaughan for the Westminster Cathedral. The donor has also intimated his intention of bearing the whole expense of fitting the carvings into their place. They originally formed the interior of the chapel of the monastery of St. Urban, near Lucerne.



## NOTES FROM NAPLES.

THE British Consul at Naples writes:—The question of the desirability of the investment of foreign capital in a country may be open to argument, but in the case of South Italy there ought to be no doubt that the influx of foreign capital is an unmixed benefit. The stamp duty on foreign capital shows that in 1881 4,375,000% were taxed, whereas in 1900 the much larger amount of 18,950,000% came under contribution. This capital is largely Belgian, French and German, though a certain amount of it is British, and it is represented by tramways, waterworks, ironworks, gas and electric works, shipbuilding and other enterprises which have been started by foreign capitalists. Some of these enterprises have been extremely successful, and have excited the envy of the natives to such an extent that they are now crying out that the country is being despoiled by the foreigner, who is making money at their expense. No account seems to be taken by these objectors of the fact that these industries all go towards the employment of a teeming population, which, if labour were lacking, might at once become a source of danger to the community.

It will interest intending excavators to know that for purposes of excavation South Italy has been divided into three zones, having their centres at Naples, Taranto and Potenza. This decentralisation will not prove an unmixed boon to the public, though perhaps it will tend to greater care of the relics of the past. That a great deal of excavation might be profitably done in Italy there is little doubt, but it is not work which inexperienced people should take up, or they will certainly find themselves involved in loss and disappointment.

It is strange that with all the interest taken in these provinces, and especially near Naples, in archaeology and exploration no definite chart should ever have been made of the important Roman remains beneath the sea which stretch almost without interruption from Naples to Baia. It has been left to the spirited intervention of the Land and Sea-level Section of the British Association to undertake this, and under their auspices Mr. T. R. Günther, of Magdalen College, Oxford, has been engaged for some months in making a detailed survey of the Roman structures beneath the sea, from which it would appear that the sea-level has risen some 20 feet since those days, and has covered many villas and piers, and probably also a road which seems to have existed along the coast of Posilipo.

It would be manifestly unfair to anticipate the monograph which will no doubt be shortly published by Mr. Günther, and it is enough to say that his survey will be found of great practical value, apart from its scientific interest, because many boats run upon these old foundations annually, and only last year a steam vessel of the Italian Royal Navy struck on the uttermost one. The danger in question is felt mainly by pleasure navigation, and owners of yachts need to be especially careful when running along the coast in steam launches, no fewer than three of these craft having had narrow escapes in recent years. A careful record of the tides was scientifically kept throughout the entire summer, observations being made several times a day. A table of these observations will be published, which will show the rise and fall to be greater than has been usually supposed, and also that the level of the Mediterranean is less influenced by the action of the wind than has been thought by many observers.

The discovery of the bronze statue of a torch-bearer near Pompeii, though made some time ago, has not been noticed in former reports because the Government held back the statue from public exhibition for several months. It is now exhibited in the National Museum and represents a youth holding a bracket for a lamp. The bracket is in a glass case near the statue. The statue is what is known as "boy size," and appears to have been coated with silver, which has in the main perished. A good deal of discussion has arisen as to its period, but in all probability it does not date back further than the first century B.C.

In the disused monastery at Donna Regina, in the heart of Naples, which has now been placed under the control of the municipality on account of the splendid frescoes found on the walls, a number of interesting pictures and works of art have been found which were apparently stowed away there about the time of the taking of Naples by Garibaldi in 1859. All those of historical interest are to be removed to the Museum at San Martino, where the Bourbon relics and many interesting specimens of the arts of Neapolitan provinces, chiefly of the sixteenth and seventeenth centuries, are exhibited.

Amongst the new finds in modern pictures are:—A picture of the Masaniello Riots, by Cammarano, and the Entry of Cardinal Ruffo, by Marinelli. Also a very fine portrait of Garibaldi, with a long autograph and the inscription, "Con amore filiale." There is also a bronze statue of Ferdinand II. in Roman dress, by Pietrarsa, and a plaster cast of Carlo Marconi, who, it will be remembered, was visited by the late Mr. Gladstone when in the political prisons of Naples in 1848.

There are also pictures of local scenes and places, by Giganti and Mancini, of considerable historical value.

The complete modernising of the fine marine palace (Palazzo Donn' Anna) which was begun 300 years ago by Donn' Anna Carafa and never finished, will cause great regret to the lovers of the many romances belonging to the Bay of Naples. The ruin had become the dwelling of several fishermen and other poor people, while three restaurants had established open-air dining-places within its precincts. At one time the tramway horses were stabled there, but in spite of all its many degradations it still stood a magnificent ruin, the delight of artists, with the bright waves washing into its deserted arches, and the spot round which many writers on Naples, and notably Dumas père, had hung many of their most thrilling episodes. It has now become the property of a French gentleman, who is renovating it throughout and will make it into residential flats.

A notable expansion in the direction of new hotels is apparent at Naples. Although nothing further than a reservation of the site seems to have occurred in the case of the Hotel Splendide, which was to have been completed in 1900, an adjoining site has been taken up by Signor Campione, upon which he has erected the Hotel Santa Lucia, the shell of which was completed in August last. There is every probability of its being opened next summer. Its situation opposite the Castello dell' Ovo is very fine.

The Brothers Bertolini, whose hotels in various parts of Italy have earned them a well-deserved reputation, have purchased a large building recently erected by Mr. Lamont Young at the top of the hill overlooking the west end of the city, and have joined it to the Corso Vittorio Emanuele by a lift, thus minimising the inconvenience of its extreme altitude. The lift is reached by a tunnel from the street about 50 yards long into the heart of the mountain, whence the lift rises straight up through a shaft cut in the tufa rock to a height of some 300 feet, occupying about two minutes in the ascent. The lift is a very large one, capable of holding sixteen people at a time, and is driven by electricity.

The Eden Hotel, just built by a French gentleman, is in the Piazza Balsorano at the west end of the town. It is a lofty and commodious structure, and has a pretty garden in front of it. It will be under the same management as the Hotel Bristol on the Corso Vittorio Emanuele.

The Savoy has also recently been opened by Signor Rossanigo on the Caracciolo Embankment. This is a very complete building, facing due south, and having the attraction of a spacious winter garden is sure to be a favourite.

A considerable number of pensions have also sprung up to cater for the wants of economical travellers, and against this vast increase of accommodation only one important hotel, the West End, has been closed. This hotel had its view built out and consequently declined in popularity.

## CHRIST'S HOSPITAL.

THE award of Lord Balfour of Burleigh has been announced in the case of the "Governors of Christ's Hospital and the Governors of St. Bartholomew's Hospital," heard by him as the sole arbitrator in January last at the Surveyors' Institution, Westminster. This was a claim for compensation in respect of 67,680 square feet of land adjacent to St. Bartholomew's Hospital, and forming the back portion of the well-known Newgate Street estate, which covers approximately five acres altogether. His Lordship heard the evidence of Alderman Sir John Whittaker Ellis, Mr. W. H. Elwell, Mr. E. H. Bousfield and Mr. A. R. Stenning for the claimants, and of Mr. Samuel Walker, Mr. C. A. Lang, Mr. Robert Vigers and Mr. Edward Tewson for the promoters. His award is that the Governors of Christ's Hospital are to be paid the sum of 238,781%.

## SUBURBAN LIVERPOOL.

BETWEEN Hoyslake and West Kirby, which together form one of the newest suburbs of Liverpool, says a correspondent of the *Liverpool Post*, there is a long road bordered by suburban houses which forms a remarkable object-lesson. All the way along, from the older end to the newer, there is a steady improvement in design. Some of the newer houses in this neighbourhood have been designed by our fellow-townsmen, Mr. Edmund Rathbone, who has from the point of view, not of an aesthete, but of a practical, businesslike architect, made this matter of home-planning a special study. He has achieved marked success. Houses, externally without exaggeration or pretence, which form pictures of bright cheerfulness and homelike charm, equally presentable from any aspect, back or front, the walls beginning to be tapestried with flowering creepers, the windows cosily curtained, the warm-tiled roofs harmonising with the grey English sky, are approached



through trim and elegant formal gardens, which extend all round the dwelling, terminating, perhaps, with a tennis court at the rear. Each house has its individuality, honestly and well built as the permanent residence of a family moderately well-to-do. One of the most recently designed of these houses affords an excellent illustration of that interior architectural treatment already spoken of. The house, being detached, has no back and front in the ordinary sense, since each side of it is a presentable front of itself, but the entrance, approached by a tree-bordered drive, is on the side of the house furthest from the road, both as being most sheltered and as not interrupting the views of the Dee and the Welsh hills. The access leads through inner doors to a cosy hall, which has a fireplace, and opposite to it a fixed seat. In this hall is placed the staircase—the house being one of two storeys only—lighted by three windows. The hall and staircase are panelled right away to the roof, with wood stained and varnished a beautiful dark tone, something between green and blue. The pillars supporting the staircase are used as pedestals for electric chandeliers, bearing shaded lamps designed to shed a warm and grateful glow. The architectural effect is achieved not merely by the panelling, but by symmetry. On the ground floor are four doors. Those on either side of the fireplace, which is finished with beaten copper and has above it a coloured panel in relief on the subject of "Spring," lead respectively to the drawing-room and dining-room; the doors at either end of the hall give access, one to a breakfast-room, with a pleasant south-eastern aspect, and the other to the offices. The doors are panelled and stained to correspond with the wall panelling. The dining-room and drawing-room are each treated individually, the wall-panelling leading to a cornice which supports the ceiling, slightly arched at the edges so as to give an effect of convexity and avoid harsh lines. In the centre of the ceiling in each apartment is a group of electric lights under a reflector of burnished copper, which imparts a warm quality to the illumination. The panelling of the dining-room has been treated in a tone of myrtle, which shows the graining of the wood, and that of the drawing-room in a delicate shade of mauve. Each room has a wide bow window, not of the square or half-hexagon, but of the arc shape. In that in the drawing-room there is, for the whole width, a cosy window-seat. Between the rooms are doors which fold back on hinges, and fit into recessed spaces, so that when opened the apartment appears to be one. The dining-room has a fitted sideboard in an arched recess, and there is provision for service and communication with the kitchen without bringing in food and crockery through the door. Each room has a slow combustion well fireplace, with beaten copper furnishings, to obviate the necessity of relighting fires. One feature of a modern artistic house is the absence of unnecessary furniture, which involves unnecessary labour. As a rule people overcrowd their rooms and destroy that effect of cheerful repose which is the object of all domestic arrangement. Both these apartments, though of moderate size, are light, beautiful and important-looking. The varnished panelling is not only remarkably warm and cheerful, but cleanly and economical, there being no necessity for painting and repapering. On the contrary, the panelling improves with age. The same treatment of wood-panelling is carried throughout the sleeping rooms, each being treated in an appropriate tone of some light scheme of colour. These sleeping-rooms, seven in number, all open off one well-lighted landing, panelled in the same manner as the staircase and hall. That great desideratum, complete separation of the domestic offices from the rest of the house, is here successfully attained. There is a fully-equipped working kitchen, with the usual scullery adjuncts, and opening off it a cosy servants' sitting-room. Altogether both plan and treatment are a marked advance toward the ideal of unostentatious refinement, combined with substantial comfort, which reflects the best English taste; fitted, as far as art and skill can make it, to be the place of refreshing beauty, quietness and rest, which vindicates the name and fulfils the praise of home.

#### LEIGHTON AND MILLAIS.

A CORRESPONDENT of the *Times* writes:—  
Lord Leighton was honoured by the unveiling of a magnificent memorial, placed in a most distinguished position on the floor of St. Paul's, where it rivals that to Wellington, and dwarfs that to Gordon in the adjoining bay of the nave.

The grave of Millais, the greatest artist of the Victorian era, is recognised only by an inconspicuous slab on the floor of the ill-lighted crypt, to which admission can only be obtained on payment of a fee. He has not even been accorded the distinction such as has been given to minor artists of his time—for instance, Frank Holl or Randolph Caldecott—in the form of a memorial on the walls by a sculptor of note.

What is the reason for this? What has the Royal Academy, of which he was president, the artists who learnt so much from his example, the multitude of his friends, the sitters who were

immortalised by him, and the world-wide public which derived more pleasure from the enjoyment of his pictures than from those of any of his contemporaries, to say to this?

Perhaps some worthy memorial to his genius may be in course of construction, but if so it is strange that its being so should have been unknown to so many who attended the ceremony, and who, like myself, had the privilege of being a friend of both.

To this letter Sir E. J. Poynter replies, and suggests that the "friend" should send a subscription to the Millais memorial.

#### LECTURES ON SCULPTURE.

IN his opening lecture on sculpture to Academy students on the 17th inst., Mr. A. Gilbert, R.A., said that last session he dwelt on achievement. He had figured it by a flowering tree, believing that this would hold their attention, as he had promised at a future time to begin at the root, for in a short course it was difficult to give practical teaching. He wished to put before them what they should attempt to do. Their individual feeling would tell them what they ought to do. And by laying stress on endeavour he could make the best use of technical points, eschewing didactic ones, for guidance was the only weapon with which a professor could attack his hearers. He referred, says the *Standard*, to the loss of two great artists, either of whom would be fitting punctuation of his text—"Endeavour." One an old man who, perhaps, could recollect Trafalgar, steadfast to his own ideal, a perfect artist according to his own lights—Sidney Cooper. The other his work finished yet still achieving, a man loving and beloved, in whose work they would find all that was meant in the title word of the lecture—Onslow Ford. The title word did not signify mere plodding, but was that curious faculty in human nature which "waits upon"—i.e. the hand maiden of—success. Achievement was what, after all, one might never live to see. Rembrandt was asked when a picture was finished, and he answered, "An artist's work is finished when he has done with it." Cooper was contemporary with Turner and others, before whose works the students would go on their knees, but sculpture of the period was pseudo-Classical evidence of great learning was deemed all important, and the nearest imitation of Græco-Roman art was thought the best. By Gibson's example a kind of school was created with a creed that the Classic should be accepted without question, and was sad that this style would be known as Victorian sculpture. Gibson broke out, it is true, by bringing forward polychrome sculpture, which he brought from abroad, for he was not the inventor of it, and in regard to this the students must remember that art is free, and they might do what they pleased. Sculpture was in a parlous state when Onslow Ford set out, and, not knowing what road to follow, he went to Antwerp, then thought the best school, but Mr. Gilbert earnestly asked his hearers to accept his word that the Academy schools are more up to date than anything abroad, and he warned them not to go and study in a country quite foreign to their own natures. Antwerp professors had but one idea, namely, that nothing was to be regarded that was not actually seen, and everything was built on blind tradition, any who broke from it being looked on as black sheep. Ford rebelled against such teaching, and went to Munich, where he found quite a different element, for although there was study of reality, there was also that ting of hidden poetry inherent in true Teutons, but lacking in the mixed race of Belgium. Wagnmüller's sculpture, surprising examples of surprising things, were something more than realistic, for they had *esprit*, observation and character. Ford, seeing them, was influenced thereby, and his career could be traced by them. Ford had said his last say, but that say would be echoed by posterity if not by the present generation. Contrasting the two lately deceased Academicians, Mr. Gilbert said the sculptor's nature was lamb-like, and he made giants; the painter painted lambs, but was a giant. By future lectures dealing with creation, and showing the difference between chance composition and will composition, he should prove that the words he had uttered were not empty ones, and he wrote on the blackboard a line of Homer which would act as the basis for those lectures. A free translation of the line was, "Always strive after the best," but the characters of the original would show the Greeks were artists not only in sculpture but in writing. Sculpture, he reminded them, was a very exacting art, its disappointments were great; the ladder of success was narrow, though there was plenty of room at the top, but when this is reached they might come to the bottom again, and again have to begin the scramble. Nevertheless, though the British school was young, it was going ahead and was full of vivacity.

In his second lecture Mr. Gilbert said to accomplish was the outcome of industry, perseverance and self-control. Study was the A B C of their art, by which they learnt to attempt to accomplish, but he took it they would not be there at all unless



n intellectual birthright gave them a calling towards the sculptor's art. By delving they would in time accomplish. To aid his precepts he made a diagram of a tree whose roots were romance and poetry; the greatest girth of its stem represented intellectual accomplishment, which merged into idealism. Above this was a label that stood for schools, on either side of which were boughs weighted with realism and mannerism; branching above this were individuality and self-control united by a seed vessel called style, and this bore the opening bud of achievement which, when more fully expanded, became creation. Realism and mannerism would give mere mountebank results, and true sculpture was essentially an expression of individuality. Above all must the students be true to themselves and to nature, but regard her intellectually, remembering that she had poetry. An ugly model should be accepted as an exercise only, and in studying one with some uglinesses they should note all, but dismiss from their minds everything but the beautiful points. Mannerism or fashion was a great stumbling-block, for it was natural to be struck with what at exhibitions won public applause, and to copy it without remembering that they had neither the art nor the heart of the original artist. He had done so himself in his youth. When mannerism once seized a man it was very difficult to shake off. Mr. Gilbert had noted the expert manipulation, the limbleness of finger in the schools, but as he was speaking as a guider rather than as a teacher, he felt bound to say he did not see similar attention given to subject and design. Blake, he said, was in essence more of a sculptor than any man had ever been, except Flaxman, for the great mind was always bringing forth something. Choice of subject was very wide, and could be a primary object, or the work would be like a poor actor speaking indifferent lines of an inconsiderable author. Technique was more imperative than to a painter, as he could always change his colours, but a sculptor's colours were confined to light and shade, his only other aids being line and form. Mere imitation of ornament by undercutting, such as vases, flowers, &c., of modern Italian work had none of the solid, majestic quality true sculpture demanded. Goldsmithery as different; its license was unlimited, its mission was to please; it was a toy. The first thing to consider in designing sculpture was whether it was for indoors or outdoors, monumental or ideal, as this would determine its treatment. There were two kinds of design, accidental and willed, and he would insist that they should give most of their love to the willed, as he saw work in the schools that smacked of flukes such as evolved on the blackboard after flinging a sponge of colour against it and using the accidental mark as basis of a design. On the next occasion he would say much about creation, for to create was not the same as to make something. And in this connection he alluded to the remarkable creative powers of Claude Lorraine. Nothing was chanced, nothing fluked, everything was filtered out of his observation, and he never pandered to fashion and commerce—he was not a mannerist. Flaxman certainly was a mannerist, but not commercial; he had not the advantage of studying the Elgin marbles, and the Roman-Græco things by which he was trained, though admirable in their way, were not the highest expression of sculpture. Study of the antique was good training, because it was approached as being the beautiful ideal of great artists, and unconsciously, intuitively, the student absorbed effect-of-will-design, beauty of line and proportion. The really true was nearly always ugly, and as the students grew older they would find truth was most disagreeable. If truth was ugly they must lie for all they were worth, and thus give truth the lie. They must leave nothing behind them of which it could be said the artist was a great sculptor with ugly ideas.

### NEWPORT VICTORIA MEMORIAL.

A MEETING of the Queen Victoria memorial committee of the Isle of Wight was held at Newport on Saturday afternoon under the presidency of the mayor (Alderman F. T. Hew, J.P.), to consider designs for the erection of a memorial at St. James's Square, Newport, at a cost not to exceed 1,000£. A premium of 25£ was offered for the accepted design. About 15 drawings were sent in, and the committee's recommendation that "Vectis I." be adopted was agreed to. The Mayor stated that the Royal Governor, Princess Henry of Battenberg, who had inspected the designs, entirely agreed with the selection. The author of the plans was Mr. Percy Stone, F.S.A., of London, who wrote:—"In submitting a design for an I.W. Memorial to Her late Majesty the Queen, I would suggest that such a memorial should be graceful rather than substantial, that as a monument to the memory of a great Queen and as an appropriate form for the site it is to occupy. Any bulky superstructure would block the general view of the market place and fail to group with the surrounding buildings. My idea has been to design what may be appropriately called a Victoria Cross. The figures at the base of the column represent the great virtues of Dignity, Fortitude and Sympathy upholding

the crown and guarded by the lions of England." It was stated that the height of the monument would be 36 feet. The carrying out the work was left to a sub-committee.

### CAERWENT EXPLORATION.

THE excavation committee have produced a report of the work carried on at Caerwent in 1901. The work of the year has consisted mainly in the excavation of the west wing of House II. and of the whole of a large house, and in opening out the North Gate and in excavating the field to the south of it. A curious passage or culvert of massive stone slabs leading down to the gate has been uncovered. The field adjoining the gate contains several buildings, the excavation of which is nearly completed. The two houses (II. and VII.), of which complete plans and detailed reports have been presented to the Society of Antiquaries, were of unusual interest. They were both large houses of the courtyard type, but they differed from the type commonly found at Silchester in having suites of rooms arranged round all four sides of the central court, whereas at Silchester the courtyard type of house usually has rooms on three sides only. In House II. a large hypocaust was found in which the pilæ, each formed of a single stone, actually rested on a tessellated pavement (still intact) of the earlier house. A portion of the hypocaust has been removed and re-erected in the temporary museum. The other most important features in this house were a channelled hypocaust and a series of small baths, in one of which the leaden drain-pipe was still to be seen as it passed through the wall. In House VII. the chief features of interest in the house itself were a small, partially-detached building, which may have been a shrine, and two rooms which contained a fine tessellated pavement, in which were busts of the seasons and figures of animals and of cupids. Underlying this pavement, which was of late and inferior workmanship, was another (of the earlier house), constructed with far more care as to detail and finish. In both these rooms the walls were standing to a height of nearly 3 feet above the floor-level, and the plaster on the walls, was nearly intact. It was therefore fortunately possible to recover to a considerable extent the colour and design of the wall decoration. Among the various objects found, perhaps the most interesting was a small plaque of thin bronze, containing in high relief a female head. It is hoped to resume work early in this summer, but the funds raised last year have all been expended, and it will be necessary to raise a large sum—at least 300£.—to enable the committee to complete the excavation of the nine acres already in their occupation. Subscriptions for this year should be sent to the hon. treasurer, Mr. A. E. Hudd, F.S.A., 94 Pembroke Road, Clifton, Bristol.

### EDINBURGH ARCHITECTURAL SOCIETY.

At a meeting of the above Society, held on the 19th inst. in the rooms of the Association at 117 George Street, Mr. H. F. Kerr, president, in the chair, a lecture was delivered by Mr. W. G. Burn-Murdoch on Scottish history from early times to the Union of Scotland and England. The principal historical figures during that period were touched upon, and notice taken of the changes in the arms and costumes used in the times of the various monarchs who reigned over Scotland, as well as many of the outstanding events which had occurred. The limelight views took the form of the historical design proposed for the new municipal buildings in Edinburgh. Previous to the lecture it was, on the motion of the Chairman, remitted to the committee of management to consider and report as to the desirableness of affiliation with the Royal Institute of British Architects. Mr. James Bruce, W.S., gave notice of the following motion:—"That the Association should approach the Carnegie Trust with a view to establishing a chair of architecture in the University of Edinburgh."

### RENAISSANCE ARCHITECTURE OF SCOTLAND.

A MEETING of the Glasgow Technical College Architectural Craftsmen's Society was held on Friday evening, 21st inst., when Mr. Thos. S. Fraser, architect, read a paper entitled "The Renaissance Architecture of Scotland." Beginning with the various causes which led to the Renaissance movement in Italy at the end of the fifteenth century, the lecturer traced its progress through the different countries of Europe. By numerous lantern views he showed its gradually increasing influence on the castellated architecture of Scotland and its final ascendancy over that style in the eighteenth century. He then referred to the literary and artistic eclecticism at the beginning of the nineteenth century, and concluded with more favourable opinions of the tendencies of modern architecture and its advancement along with present-day requirements and inventions. A hearty vote of thanks was accorded the lecturer.



### NOTES AND COMMENTS.

THE Wolverhampton Exhibition which is to open on May 1 will be of peculiar interest for all who are connected with practical engineering in any form. The scale on which the exhibition is planned is creditable to the enterprising town. But the people realised that it was incumbent on them to uphold their reputation in the Midland district. The grounds and buildings will have an area of over 30 acres. The main buildings will occupy 127,215 square feet, and in addition there will be other buildings which will cover about 30,000 square feet. These figures are exclusive of the area required for side shows. There will be seven groups, all having some relation to the Midlands. They will comprise raw materials, agricultural machinery, mining, industrial design and manufactures, motive powers, electricity, labour-saving appliances, lighting, heating and sanitary appliances, locomotion and transport by land and sea, science and scientific instruments, education and music, sport and sporting appliances. The names of the firms who have already sought for space are all prominent representatives of the manufacturing world. There will also be attractions for sightseers, but the principal interest of the Exhibition will arise from the value of its industrial exhibits.

THE question of restoration is a many-sided one in Scotland. There are several rights of heritors and other classes of parishioners which have to be taken into account. As the law in the North as well as in England is no respecter of archæology, the suits which arise are not always easily settled. One late example is the cathedral of Brechin, which was lately restored under the direction of Mr. HONEYMAN, R.S.A., at a cost of about 12,000/. The building was used as a parish church, and the seatholders profess to be aggrieved by the alterations. They say that the restoration was not required because the building was out of repair, but on archæological, æsthetic or sentimental grounds. A committee of subscribers had taken up the work, and had guaranteed that the church should be restored to at least as fit a condition for the conduct of public worship as it was then in, except as regards sitting accommodation; that thereafter the roofs and whole interior fittings of the church were completely removed, and with the exception of the nave arcading and gables, which formed part of the fabric of the ancient cathedral, the entire masonry of the church was dilapidated and removed, and the church was re-erected on an entirely different plan; that the church as thus reconstructed is now ready for occupation, and that it contains a considerably less number of sittings than were allocated or possessed in the former building. The last allocation of seats took place in 1807, and so long a term gives the holders or their representatives a right to the accommodation then obtained. The Sheriff of Forfar who heard the case has come to the conclusion that the church in September 1899, when the restoration was agreed on, was then in a state of good repair, and cannot now be considered as a new structure, and that the rights of the parties to the same proportion of the area of the church continue unchanged. His Lordship therefore has expressed disapproval of the scheme of division which became necessary in consequence of the restoration, and has ordered that a scheme or table should be prepared of the sittings, allowing 18 lineal inches for each sitting, and, after setting aside seats for the ministers and officiating elders and for the poor, setting forth the number of sittings to which the heritors or others are entitled, the apportionment of said sittings being regulated by the division and apportionment thereof in the former parish church. No one cares to see an invasion of rights even in a church, but under the circumstances the congregation, and especially the representatives of the people belonging to the church in 1807, might have accommodated themselves to the new arrangements in which the convenience of the congregation was studied as well as archæology, æsthetics and sentiment.

A GREAT many excellent people believe they have a mission which can only be accomplished at the expense of their neighbours. The Housing of the Working Classes Act has given to them an unequalled opportunity for the display of their fervour. They want wholesale clearances

in towns, and so long as they are satisfied it matters little to them where the money for the purchase of property, the preparation of sites, and the erection of mansions with modern conveniences is to be found. The borrowing power of municipalities are presumed to be inexhaustible, and can be paid back by levies of small fractions of a penny. Mr. A. J. BALFOUR was therefore right when he said: "There is some danger at the present moment that the housing question will fall into the hands of emotive rhetoricians, whose well-meant advice can by no possible benefit those whom they desire to serve. There is nothing in the world so easy as to string together harrowing descriptions of overcrowded rooms, and insanitary surroundings, and there is nothing in the world so useless. Indeed, the public conscience required to be stirred on the great subject appeals like these might be useful and even necessary; but the world has moved far beyond the state of indifference, and what we now require is not sentiment but science, the unbiassed investigation into the economic and social facts from which evils of overcrowding spring into the remedies which have been already tried, and into any new ones which seem likely to be effective." An instance of the kind is at the present time under the consideration of the City Council of Birmingham. A dozen people who, like the three tailors of Tooley Street, claim to represent all Birmingham, have denounced an area in St. Laurence's and demand an improvement scheme. The housing committee of the Council have visited the area so condemned, and they report that it comprises one church, one chapel, one Board school, one voluntary school, eleven works, 589 dwelling houses and eight public-houses. The streets on the area vary from 30 to 60 feet wide; the Birmingham Canal which is about 35 feet wide, passes through the area for a distance of 172 yards. The Board school playground is 1,328 square yards in extent, and the open spaces in the courts amount to nearly 2½ acres. A calculation put forward by the committee shows that out of the 14½ acres there are about 8 acres not built upon. To realise the aspirations of the philanthropists would need an outlay of nearly a quarter of a million sterling, and would involve the destruction of many houses that are thoroughly fit for human habitation. In this case, if instead of wholesale demolition imperfect houses were removed, a great sanitary improvement would be attained. But so long as people who are supposed to have the monopoly of sympathy for the poor cannot apply the principle of the clean slate in a city or town, it will be believed that public authorities have failed to do their duty.

### ILLUSTRATIONS.

ALL SAINTS CHURCH, WEST BROMWICH: MARBLE MOSAIC PAVEMENT.

DURING the last few years the chancel of All Saints West Bromwich, has received important additions. In December 1898 an organ was introduced. Afterwards a carved oak case was added. It contains much elaborate work, including figures of angels with trumpets, besides delicate tracery. The carving and other work was executed by Mr. ADSENT HANSTONE. The oak chancel screen measures 26 feet 3 inches by 15 feet, and, like the building, is Late Perpendicular in style. Figures of angels are introduced on detached pedestals. The screen is the gift of Mr. CHARLES LEES, and is the work of Mr. BRIDGEMAN, of Lichfield. The iron gates, which are an important feature, were wrought by Messrs. HART, SCOTCHPEARD & Co., LTD., of London and Birmingham. The groups of figures in the stall ends are intended to illustrate the saintly life as set forth in some of the occasional offices of the Book of Common Prayer. The subjects are suggestive of Home Catechising, Worship, Public Catechising, the Ministry, the Kingly Office, Ministering to the Sick, Churching of Women, the Lord's Supper, Matrimony, Confirmation, Baptism, Prayer, Ministration of Angels. The designs were prepared by Mr. ENOCH WOOD, of WOOD KENRICK, architects, West Bromwich and Birmingham.

NEW PREMISES, LEICESTER, FOR MESSRS. FAIRBROS.

FOOT'S CRAY PLACE, FOOT'S CRAY, KENT.

THE QUINTA, ALDERLEY EDGE, CHESHIRE.



# THE HISTORY OF THE ROSARY.\*

THOUGH at the present day some justification will seem necessary for inviting the attention of the members of Society of Arts to such a topic as the History of the Rosary, I think, in the Middle Ages, have been taken as a matter of course that there was no organisation to which subject so naturally belonged as that which dealt with application of the arts to matters utilitarian. As we learn from the elaborate work on the art and craft associations of the compiled by one, Stephen Boyleau, as early as the year 1370, the *patenôtriers*, the makers of paternosters or rosaries, constituted a most thriving industry, which, even at that date, was divided into four different guilds or companies, distinguished seemingly according to the material in which they worked. The first were artists in bone and horn, the second in coral and mother-o'-pearl, the third confined themselves to amber and jet, while the fourth were a more miscellaneous association engaged largely in metalwork and the manufacture of buttons, buckles and rings.

In England the rosary makers do not seem to have been so specialised; and yet in the London municipal records of the same period we not unfrequently find citizens described as "patenosterers," and there can be no doubt that their trade principally consisted in the turning, polishing, perforating and stringing of beads for devotional purposes. We have record, for instance, of an inquest held in 1278, in the reign of Edward I., in the ward corresponding to that now called Argon Street Within, at which three of the witnesses were "patenosterers." They were evidently neighbours, and it seems probable that they all resided in Paternoster Lane, as it has been called, which, you will notice, lay just under the shadow of the great cathedral, and in the devotional centre of London. The craftsmen themselves lived in Paternoster Lane, but I am inclined to think that their wares were largely sold by the persons called "stationers," so styled from the fact that they were allowed to occupy certain "stations," or "stalls," as a modern itinerant vendor would say, around St. Dunstons Cross and the cross in the Chepe. The stationers did not content themselves with selling objects of piety; they dealt in all things that were needed by the "clerks" or ecclesiastics, and also naturally congregated around the great cathedral, where, in want of the pens, parchment, ink, copies and *etc.* manuscripts, which formed part of the stationer's trade. The stationers have clung to their old position, and still predominate in the Row, along with the dealers of pious statuary, holy-water stoups, and other objects. There was also another Paternoster Lane in the thirteenth century. It lay beside the Thames in the Vintry, and close to the church thence called the Paternoster Church, or St. Michael's the Royal. This was the quarter inhabited by Gascon vintners, who shipped their wines from the town of Bordeaux, near Bordeaux. It was natural that they should have objects of devotion in forms familiar to them, and we may assume that French paternosterers settled there to supply the demand. We find the same industry flourishing in all great cities. In Rome there is still a street near St. Peter's called the Via dei Coronari—a *corona* is only a variety of paternoster or rosary—and we have abundant references in documents of the fourteenth century to the "patenosterrari," who established their booths in the region of the Vatican. Of these the *patenosterrari* sold many other miscellaneous wares, but devotional, besides rosaries, but the very existence of the industry in so many different countries shows that the production of these *fila* or *numeralia de Pater Noster*, strings of beads to count the repetitions of the "Our Father" upon, was of commercial importance. Furthermore, as we shall see, the artistic skill spent in the manufacture of some of these objects of piety, and in furthering the spread of the devotion, was of a very high order. But before we can deal with the artistic aspects of the subject we have to travel a long way back to times and places far remote, for it would be a great mistake to suppose that the use of beads for reciting prayers was peculiar to the Catholic Church, or was of comparatively modern date.

More than one of the French cathedrals, as, for instance, Amiens and at Limoges, we may find representations of the Virgin Mary, in which she is shown reciting her beads as the angel salutes her. To the present day the people who only use beads to help them in reciting their Aves, that is to say, "Hail Marys," the rosary in the hand seems a grotesque example of the Mediæval legend of historical verisimilitude, but the detail is not so without excuse as might appear at first sight. After the use of rosaries was a practice common to many races long before the coming of Our Lord, and although there is no evidence of its occurrence among the Jewish people, it seems to be, at least, a trace of its appearance in the East, with which, of course, since the Captivity, the Jews

came in contact. A paper by the Rev. Herbert Thurston, S.J., read before the Art Section of the Society of Arts.

maintained considerable intercourse. Sir Austin Layard, in his "Monuments of Nineveh," has figured a bas-relief which, according to the description appended to the plate, represents "two winged females standing before the sacred tree in an attitude of worship; they raise the extended right hand, and carry a garland or rosary in their left." My friend, Father Strassmaier, who speaks with authority on such matters, tells me that he is not entirely satisfied as to the meaning of the circlet seen in the picture, and that he is not acquainted with any confirmatory evidence which would establish the use of prayer-beads among the Assyrians; but the details of the bas-relief are highly suggestive of an attempt to represent some act of devotion, and the interpretation of the chaplet as a rosary is at least probable. Without attempting to settle the matter, it may be noted that the carving probably belongs to the eighth or ninth century before Christ.

Passing to the Far East, we come across a number of representations of different deities, many of whom, like Brahma, Siva, the Japanese Amida and the Chinese Kwan Yin, are commonly represented with rosaries in their hands.

It is possible that some of these can claim a more venerable antiquity than 900 B.C.; but it is, I understand, by no means easy to determine with any certainty the dates of Brahmanist and Buddhist antiques, and there is also difficulty in distinguishing the necklaces or strings of jewels often looped around the arms, wrists and shoulders of these statues, and the rosaries proper intended for instruments of devotion. There seems to be no mention of the rosary in the Vedas, and, indeed, the traces of its first appearance, whether in Brahmanist or Buddhist literature, are said to be vague and unsatisfactory. It was stated by Mr. Taylor, when lecturing here on Oriental rosaries in 1873, that the rosary was obviously in use among the Hindoos long before the introduction of the Buddhist religion, and we admit that, on the whole, the theory is plausible.

And now, coming to the rosary as used in the Catholic Church, I must begin by expressing my disagreement with the view adopted by Mr. E. B. Tylor and many others, that the devotional exercise was simply imitated from the Mohammedans and introduced into Western Europe through the Crusades. That the suggestion could not possibly have come to Western Europe through the Crusaders, who had, no doubt, many opportunities of watching their Moslem foes piously using their *subha*, would be too much to say. But it is certainly most important to note that the first undoubted mention of the use of beads for counting prayers in the West, to wit, in the instance of the Lady Godiva of Coventry, the wife of Earl Leofric, is anterior by several years to the preaching of the Crusades. The lady bequeathed to the monastery founded by her "a circlet of gems which she had threaded on a string, in order that by fingering them one by one as she successively recited her prayers she might not fall short of the exact number." Lady Godiva died before 1070, and this clear and specific statement rests upon what is practically speaking contemporary authority.

But besides this definite evidence of fact, it seems to me that the duty of repeating the same prayer a large number of times, often amounting to more than 100, must inevitably have led spontaneously to the adoption of some contrivance for keeping an accurate record. Not to speak of certain early monks of the desert, it is recorded of St. Godric, an English saint who died in 1172, that he used pebbles to count his prayers, though we have not the same clear evidence in his case that he strung them on a string as we have for Lady Godiva. In all the early religious orders, which, like the Carthusians and Cistercians, admitted lay-brothers, the duty of reciting the psalms and lessons of the Divine Office in choir was replaced for the illiterate by that of saying the Lord's Prayer a definite number of times. The number 150, which is that of the Psalms, was regarded in some sense as specially consecrated by tradition. Just as the Psalms were divided into fifties—so much so that the recitation of two fifties or three fifties in Latin or Irish or Anglo Saxon was a common form of penance—so it was natural that fifty "Our Fathers," or twice or thrice fifty, should be enjoined as a penance or exacted as a suffrage for the dead from those who could not read. The constitution of the Knights of St. John, founded in the twelfth century, required as we learn from a bull of Pope Lucius III. in 1185, that the knights who were not clerks should say 150 "Our Fathers" each day. Their paternoster, which, in this case, was literally employed for the saying of the Lord's Prayer only, remained always a part of their equipment. It may be seen in the hands of their Grand Master on the title-page of Caoursin's "History of Rhodes," and it is lavishly used as an ornament upon the tombs of the Knights in St. John's, Valetta.

This duty of reciting the "Our Father" a considerable number of times, and nothing else, in place of the daily office, was practically universal for all monks and religious who had not sufficient education to learn the Latin psalms. Even in the case of the Dominican and Franciscan friars, who were



founded at the beginning of the thirteenth century, we hear nothing in their primitive rule about the "Ave Maria," or Hail Mary. The Dominican lay brothers repeated the "Our Father" alone, as their daily prayer of obligation, until the year 1266. It is easy to understand, then, how the strings of beads used for counting came to be called "paternosters." The name still survives in English in the vocabulary of fishermen to denote a number of hooks set at regular intervals along a line, and it seems also to be known in architecture and heraldry. In the sense of prayer-beads it existed in every European language during the Middle Ages; neither does the primitive signification connecting it with the Lord's Prayer seem to have been entirely lost sight of. I hope to show you a lantern slide of a curious woodcut in the "Speygel der Dogede," a book printed at Lübeck in 1485, in which Our Lord is represented teaching His disciples the "Our Father," and holding in His hands a pair of rosary beads.\* These paternosters were, no doubt, of very various length, consisting sometimes of ten, sometimes of fifty, sometimes of 150 beads, but for the longer varieties it must obviously have been found a convenience to divide the beads by markers, as is the case in the Oriental rosaries, notably those used by the Mohammedans. This might be done either by introducing a new bead or knot, or token of some kind, at the end of each ten, or by making each tenth bead larger.

One of the earliest representations of a rosary which I am able to cite is taken from the incised tombstone of a knight-templar, dated 1273. There can be little doubt that the paternoster he carries was used to count the "Our Fathers," which he was required to say by rule. We find it accurately divided into nines, each tenth bead being a big bead. Other early paternosters are divided by big beads inserted after every five—again, as I believe, for convenience of counting, and the fact that these larger beads were called in French *seigneux* (markers) seems to indicate the purpose for which they were introduced.

And now we pass from the paternoster, properly so-called and used only for saying the Lord's Prayer, to the Rosary of our Lady, the only rosary, practically speaking, now used by Catholics, and the one which, by a widely received tradition, is connected with the founder of the Dominican order. Of the controversy regarding the origin of this devotion, this would not be the place to speak. I am only attempting here to treat the archaeological and artistic side of the subject; but it will be well perhaps to explain that in this form of prayer, which has also from a very early period been called our Lady's Psalter, the Hail Mary is repeated 150 times—the number of the psalms—though for convenience sake this number is divided into three sets of fifty.

So far as my researches enable me to judge, all these arrangements of fifteen definite mysteries are comparatively late, and do not occur at an earlier date than the last quarter of the fifteenth century. The earlier and more widely accepted practice was to assign an incident of Our Lord's life to each of the fifty Hail Marys, and to add some little clause commemorating the incident to the words of the Hail Mary itself. This practice, I venture to think, must have had a considerable influence upon the art of the wood-engraver at the time of the Renaissance. With the introduction of printing a very large number of rosary books were produced, meant for the most part as aids to the devout to help them in their meditations. In the more sumptuous of these a different woodcut is provided for each of the fifty, or, as the case may be, for each of the 150 Hail Marys. The range of subjects extended from the conception of Mary to her death and coronation, and included, of course, the whole of the life of Christ. In this way a number of gospel scenes came to be treated which are of very rare occurrence in art at an earlier epoch, and the variety thus introduced must have done something towards the deformalising and deconventionalising of the treatment of gospel subjects. One of the most elaborate of such rosary-books is probably that of Herman Nitzschewitz, which was undertaken at the command of the Emperor Frederick III., was printed at the Cistercian monastery of Zenna, in the diocese of Magdeburg, and dedicated after Frederick's death to the young Maximilian. The woodcuts, of which there are a large number, are often grotesque and extravagant, but they are decidedly interesting to the student of religious art and symbolism. Each Hail Mary is illustrated by a scene from the gospel, in which is inset a very minute cut, duly described in the letterpress, and referring to some Old Testament "type." Those who are acquainted with the Mediæval mystery

plays, or with the survival of this ancient in still to be witnessed at Ober Ammergau, will remember prominence everywhere given to these Old Testament types. No one who habitually recited his rosary after the suggested by Nitzschewitz could fail in a short time to acquire a wide acquaintance with all the most striking episodes of the Old and New Testaments.

It would take a great deal too long to give details of the many pictorial rosary-books produced in the Netherlands between 1478 and 1535. I will only refer to one of the earliest, which appeared with the same series of fifty woodcuts, only in Latin and Flemish, but also in English, called "The Mystik Sweet Rosary of the Faithful," and was published at Antwerp in 1533 by Keyser, or, as his name appeared in a gallicised form, Martin Lempour. The woodcuts, though small, are of a high order of merit. But the most famous of rosary-books, one which appeared in a very large number of editions, which, as I gather from a recent catalogue of Quaritch, commands high prices, was probably that of the Don Alberto de Castello which was printed at Venice in 1521. The others I have mentioned, it supplies a picture for each of the fifty Hail Marys, but being later in date, it reconciles this with the earlier books do not, with the division of the whole rosary into the modern fifteen mysteries. I am at a loss to account for the value set upon the book, the engravings are not very remarkable, but it went through a number of editions, and when the blocks became too worn for further use, a completely new set were engraved on new lines.

There were many more such books, but we must hurry, and I have barely time to mention the large one destined to commemorate the rosary by Erhart Schöner, or other artists, or the picture painted by Albert Dürer representing our Lady of the Rosary with the Pope and Emperor St. Dominic, a picture destined originally for a confraternity of German merchants residing in Venice, but which is preserved at Prague. A word, however, must be said of the famous Rosary Tablet at Nuremberg, carved by Veit Stoss, which a plaster cast is to be found at the South Kensington Museum. With the kind permission of the director, I have taken for me an admirable photograph of this. I hope to show on the screen. Unfortunately neither the original at Nuremberg nor the South Kensington reproduction represent the complete work. The cross within a circle, fifty roses, which forms the centre, was originally surrounded by a series of small bas-reliefs corresponding to the fifty mysteries which the faithful were to meditate successively as they repeated the fifty Hail Marys. The cross begins with the creation of Adam and Eve, and it ends with the Last Judgment. Unfortunately six of the bas-reliefs have been removed, and are now at Berlin. Let me add here, however, even older and more widely spread subject of meditation, saying the five decades of Hail Marys belonging to the five Sacred Wounds. I say more widely spread because the pictorial representations of these in connection with the rosary are extremely common, whether in large sculptures and altar-pieces or small engravings. The most frequent type represents a garland of flowers divided into tens by five larger roses, upon which are embossed the right and left hand, the right and left foot, and finally the pierced heart of Christ representing the five wounds. German examples are plentiful, and for instance I may refer to a quarrel of stained glass at the Castle, which is supposed formerly to have belonged to the Abbey. Numerous little woodcuts, containing the five wounds, are met with in rosary books, and sometimes we find a rose in the centre, with a wounded heart upon it and the hands and feet in the corners.

I have been amused lately to find that a very fine block of this kind, which has somehow been used as a piece in one of the works of Francis Bacon, has been taken as a proof that the printing of his books was in the hands of the Rosicrucian brethren, familiar with his cipher. These ciphers, says Mrs. Pott, the foundress of the Bacon Society, the printers, banded together in a society, go on using to this day. It may interest some present hearers to learn that on the cover of the *Journal of the Society of Arts*, June 28, 1895, we may read (in a sumably) the following words, "Francis Bacon, Viscount of Albans, Lord Verulam, Shakespeare, instituted the Society of Arts in London for the good of English Commerce." At least Mrs. Pott informed the Bacon Society in a paper before that body and published in their journal shortly afterwards.

But to return from this digression, the garlands of roses which are a conspicuous feature of nearly all these pictorial tablets of the fifteenth century imply of course a rosary, the now generally accepted name of the devotion, the *rosenkranz*, as to which name I have as yet said nothing. To determine at what date it was introduced seems

\* The phrase "a pair of beads," meaning a rosary, is one of the few terms which, being lost to the language at large, have survived among English Catholics. It is used by Chaucer, and in old English wills it occurs again and again. Formerly a set of anything, whether the number were two or more, was commonly called a pair. We still retain the expression two pair of stairs, meaning two flights of stairs. The biographer of St. Hugh of Lincoln speaks of his receiving *duodecim paria literarum*, meaning twelve separate missives.



No clear example of it as a name seems to occur in the fifteenth century. The beads themselves bore many names, "paternoster" being the commonest, but they were called rosaries. Rosarium is no doubt rosarium (*sertum*), of roses, the corresponding words "chapelet," "corona," "ranz," "capellina," all convey the idea of garland. At which it was common to an extent which we have now difficulty in realising, for both men and women in ordinary wear garlands of flowers, and to place such garlands as of respect upon the heads of persons and statues. It is easy to illustrate this from Chaucer, and the metrical writers, whether English or French, but the strongest comes from quite prosaic sources.

*chappelliers* or makers of head-gear of Paris, as we find Boyleau,\* included not only workers in felt and wool but also *chappelliers de fleurs*, whose business it was to make garlands for actual wear. Amongst their statutes, we are drawn up as formally as those of any other trade, it being forbidden, under a heavy penalty, to wear garlands on Sundays, except that while the rose was in season they might occupy themselves on that day in making rose wreaths, though they were not free to make any other. So we find St. Louis, King of France at the same time passing an ordinance that rose garlands were not to be worn on Fridays. The idea of rose garlands was, therefore, familiar, and although I am aware that rosarium was not only used in the sense of what we should call an array or collection of choice extracts, I am strongly tempted to believe that its application to the particular devotion of the Virgin Mary was mainly due to the wide prevalence of the particular story of a garland which we can trace very much earlier than the word itself in almost every part of the world. The name, it seems to me, must have come from the story, and the story was not, as we should at first be tempted to think, evolved out of the name already pre-

legend in question, which occurs with slight variations in some of those quaint collections of "Miracles of our Lady" which were so popular in the Middle Ages, is briefly this:—A man was accustomed to make a wreath of roses or other flowers every day, and to place it upon the head of our Lady's image. He became a monk, and in the cloister his occupations were not permitted him to observe this pious practice. Being distressed, he asked counsel of an aged priest, who advised him to say fifty Aves every evening (in some versions 150, in others 25), which would be accepted by our Lady in lieu of the garland. This the young man faithfully did, until one day, being upon a journey, he had to pass through a lonely wood where robbers were lying in wait. They were employed in watching him, feeling sure of their prey, and, unsuspecting of their presence, remembered that his robes were not yet said, and forthwith stopped to say them. To their surprise, the robbers saw a most glorious lady appear before him, and take one after another from the lips of the monk fifty beautiful roses, which she wove into a garland and placed upon her head. The robbers, so the story tells, conscience stricken at the vision, were all converted to a better life, and themselves soon after entered the monastery.

This story meets us in every part of Europe at a very early date. Perhaps the earliest clear instance is in a collection of German popular poetry assigned to about the year 1236. At the end of the same century we find it told by King Alfonso the Wise, King of Castile, in his "Cantigas de Santa Maria." It occurs also in several thirteenth-century Latin versions of the miracles. Then in the fourteenth century we find it in Mielot's French prose narrations, and it was also dramatically included amongst the interesting French miracle plays of the fifteenth century. In the fifteenth century we meet it again, with slight variations of detail, told both in France and in Spain as the history of the true origin of the rosary, the most curious of all, we find that it has by that time spread into far off Abyssinia, almost as remote a spot, one might think, as it was then possible for any Christian legend to reach. Amongst the spoils brought back by Lord Napier's expedition from Magdala in 1867 were some extremely valuable Ethiopian manuscripts, now in the possession of Lady Meux. Some of these are illustrated with miniatures and coloured gorgeously, but with a somewhat barbaric taste. These codices supply abundant evidence regarding the art of Ethiopia in the early stages of its development. But the contents of the manuscripts are also interesting. They preserve collections of the miracles of our Lady, so well known in the East for many centuries before, and amongst these we meet the story of the rose garland, unchanged in substance, though told of a cleric of Rome named Zacharias, the leading authority of whose history are elaborately illustrated in the miniatures. Whether the use of the rosary itself was familiar in Abyssinia in the fifteenth century I am unable to say, but the

Meux manuscripts prove that it was regarded as a conspicuous adjunct of religious life there a century or two later.

Taking the term rosary, as is usually done, in its wider acceptance so as to include all forms of praying beads—need I say that the word "bead" itself originally meant a prayer?—it is remarkable what very great variety we observe in Mediaeval rosaries. The rosaries themselves have not been preserved to us. I know of no specimen certainly older than the year 1500, and at an exhibition at Limoges some few years back in which an attempt was made to bring together some ancient examples, nothing could be procured which was of earlier date than the sixteenth century. None the less we know them from pictures, and especially from the careful and elaborate representations on tombs, as well as from the details given in inventories and wills. Before 1450 sepulchral effigies with rosaries are distinctly scarce. There are many hundreds of drawings of early Mediaeval tombs in the Gaignières collection at the Bodleian, a collection of drawings made in France long before the havoc wrought by the Revolution. I have found amongst them only one fourteenth-century tomb with a rosary. But in the few extant early examples, whether in this country or abroad, there is the greatest possible variety. Two fourteenth-century examples of effigies—one at Bangor and the other at Worcester—show rosaries divided into sevens or sixes. A figure of a mourner at Warwick (c. 1430) exhibits a rosary in nines. Some early French and German examples are carefully and intentionally divided into fives or sevens, and elsewhere we count seventy-five beads or eighty beads, or forty or thirty-three often without divisions of any kind. One type of arrangement, consisting of six decades, with a pendant of three extra beads, appears in the fifteenth century, and became very common in the sixteenth and seventeenth, especially in France and at Rome. It was distinctively called the corona and was probably intended to honour the sixty-three years assigned by legend as the years of our Lady's mortal life. I attribute to this form the prevalence of the pendant of three small and one large bead seen in nearly all modern specimens. One of the earliest examples I know of a pair of beads exactly agreeing with the modern type is the Duke of Norfolk's magnificent golden rosary which belonged to Mary Queen of Scots, and which at the present moment is being exhibited at the New Gallery. In the Bangor effigy, which shows eighty-four small beads divided into sevens by larger beads, three large brooches and what seem to be two rings are also attached to the rosary. One is reminded of Chaucer's Prioress:—

Of smal coral aboute hir arme she bar,  
A peire of bedes, gauded all with grene,  
And theron heng a broche of gold ful shene,  
On which ther was first write a crowned A,  
And after: *Amor vincit omnia*.

It is dangerous to begin to quote inventories, the series would be endless. But I note that in the inventory of plate and jewels of Charles V., King of France, in 1380, there are entered nineteen rosaries (patenostres). These, as regards material, were made of rose-tinted amber, jet, coral with pearls for markers (seignaulx), gold beads, rings of gold, blue and white enamel, jet beads with eleven gold croizettes, black amber and pearls, coral alternating with beads of silver-gilt, and two instances of gold beads of Damascus work which were filled with musk. Various objects are also mentioned as suspended from the beads themselves, e.g. cameos, brooches, a stud (bouton) or pendant of pearls, five frezettes (ruffs?), a little lozenge set with pearls, and on the same rosary a croizette of coral and a crucifix of gold. As regards the number of the beads, which is not always mentioned, there are one or two instances in which the normal type, as we should now consider it, of 50 smaller beads, with 5 larger beads or 5 seignaulx, is specified; but in other cases we find rosaries of 200 gold beads, one of 50 beads with 11 seignaulx, one of 62 beads in all, one of 75 beads and other smaller ones of twelve or less. So, again, in the inventory of the Princes of Orléans-Valois in 1408 we have one rosary of amethysts and jasper, with a bouton or stud of pearls, another of jet, with nine little bells (dandins) of gold, and a jewel with nine pearls as a pendant, and another again of jet, with nine gold seignaulx and a gold figure of St. Christopher attached.

There can, of course, be no doubt that such rosaries were quite as much used for personal adornment as for purposes of devotion, with the result that these objects of piety were not overlooked in the sumptuary laws which strove to check the unbecoming extravagance of the burgher class, especially in Germany. The Police Ordinances of Nuremberg, for instance, in the thirteenth and fourteenth century, forbid the using of "patenosters" of above a certain value, and give curious and minute instructions as to the manner in which they should be worn. Similarly the Municipal Council of Regensburg, in 1485, amongst other attempted restrictions on habits of luxury, decreed that no one should possess more than three

\* Boyleau, *Livre des Métiers*, p. 198.



or four rosaries, and that these should not be of the value of more than 10 gulden. As three fat oxen could then be purchased for 12 gulden, this seems a pretty generous allowance.

One would like to know a little more about the workmanship expended upon these articles of luxury, but the objects themselves have disappeared, and the guild statutes collected by Boyleau tell us very little on this head. The beads do not seem to have been wired, but simply perforated and strung upon a cord. This, no doubt, accounts in large measure for their complete disappearance. The jewels have simply been released from their cord, and used for necklaces, bracelets and other purposes. An incident in Rabelais lets us know that it was an easy thing for a malicious person to cut the string of a lady's rosary and to pocket the beads which came tumbling down. The only objects belonging to these Mediaeval rosaries which have been at all extensively preserved, and which we can now recognise as having served for this purpose, are the marvellous spherical boxwood carvings, which at the end of the fifteenth and the beginning of the sixteenth century were used as pendants to hang from the more sumptuous kind of bead chaplet. These pendants or nuts vary in diameter from one to three or four inches, and the carvings also, though such scenes as the Crucifixion or the Nativity often recur, show much diversity, and are by no means always connected with the "mysteries" of the rosary. Several fine specimens belonged to the Spitzer collection, and M. Arthur Pabst, in a detailed notice of this section, speaks as follows:—"A special place in the history of sculpture ought to be reserved for these tiny objects, which are called in French *grains de chapellet*, and which are known in Germany as 'prayer nuts' and 'pater-nosters.' They belong to that section of devotional art which was so earnestly cultivated by artists at the close of the Middle Ages. These rosary beads, carved in boxwood and spherical in shape, are often enclosed in an open work-case, or sometimes with two such cases, one outside the other. The bead opens with a hinge and displays two hemispheres, in the hollow of which are carved two scenes, generally composed of a large number of figures."

Often we find a flat movable disc separating the two halves, itself covered on both sides with delicate carving. Executed as they are with extraordinary skill, these groups, which are often cut in high relief and completely detached from the background, are no doubt *tours de force*, and are not free from a certain exaggeration; but for all that there is much in the attitude and pose of the figures which betrays the hand of the true artist. These carvings are probably of Flemish origin, but they may have been wrought under the influence of masters of North Germany in the fifteenth century. It is quite likely that they all come from a very small number of workshops, and the fashion certainly did not last for more than 100 years. To judge by the architectural details in the carvings and from other indications, all that are now in existence were probably produced in Flanders between 1475 and 1530. Flemish portraits (there is one, for instance, in the museum at Brussels) of this period sometimes show a decade of beads, at the end of which may be recognised one of these large spherical boxwood nuts. The most magnificent specimen now in existence is probably that in the possession of the Duke of Devonshire, which is said to have belonged to Cardinal Wolsey, and to have been given by him to Henry VIII. In the terminal bead, 4 inches in diameter, twenty-four different scenes are elaborately carved. Three or four fine specimens are in the Waddesdon collection lately presented to the British Museum, and by the kindness of Mr. Read I have been able to obtain photographs of two, which will be shown on the screen.

There are many other aspects of the subject which invite further discussion, but my paper is already too long, and I will take my leave here.

### BIRMINGHAM WATERWORKS.

A REPORT has been prepared for the water committee by Mr. Mansergh, the engineer, which shows that, whereas the Parliamentary estimate for the first instalment of the Elan water was 3,755,350*l.*, the present estimate is 5,884,918*l.*, showing an excess of 2,129,568*l.*, but of this amount 750,000*l.* is stated to represent the cost of works not included in the original estimates for the first instalment.

Mr. Mansergh first separates from the cost of the works that of land, easements, &c. He says:—"The 1891 estimate for the land of the watershed, the easements for aqueduct and local works, and the land for Frankley reservoirs and filters and the whole of the railways, was 485,257*l.*, made up as follows:—Watershed, 300,000*l.*; easements, aqueduct, 97,680*l.*; Frankley reservoirs, &c., 18,000*l.*; local works, 5,000*l.*; add 15 per cent. contingencies, 63,102*l.*; railways, net, 1,475*l.*; total, 485,257*l.* The present estimate of the final total cost under these headings is 542,768*l.*, which is something under 12 per cent.

more than the Parliamentary estimate. This figure only has been arrived at by the town clerk and secretary, carefully considered the details of each uncompleted item in the light of the experience of previous purchases, and each item to the best of their ability; but they wish to be understood that the figure is given with all reserve, and may be exceeded when the ultimate cost is known."

Mr. Mansergh next submits a tabular statement of original and ultimate estimates of the cost of the works for the first instalment. From this we extract the following figures, including the addition of 7½ per cent. for contingencies, and the 15 per cent. provided for contingencies, and part of the cost of the Dol-y-mynach dam transferred to the second instalment of works:—

Description of Work.	Total Original Estimate. £	Ultimate Estimate. £	Excess £
Railways, &c.	48,375	53,378	5,003
Reservoirs and all works other than railways on watershed.	761,550	1,517,975	756,425
Aqueduct—Careg-ddu to Frankley.	1,825,350	2,336,316	510,966
Frankley reservoir and filters.	273,292	440,612	167,320
Mains to Monument Lane and city boundary, cost of reservoirs at Northfield and Warley, and mains from city boundary to service reservoirs.	228,259	372,140	143,881
Totals for works	3,136,826	4,720,421	1,583,595

The first item in the table consists of the railways authorised by the Act of 1892 and the extensions of the main line to the valley required to get the plant and materials to the works. "The line from the junction with the Cambrian to Caban was the earliest of all contracts let, and was completed below the estimate. The extensions have been longer, heavier and more difficult than was anticipated, and parts of them were done after the general rise in the prices of materials and labour had made itself felt; but I need not say more, as with this item we may all be very well satisfied. With regard to item No. 2 Mr. Mansergh says the estimate of 99·3 per cent. "calls of course for some extra, which it is not difficult to give."

### Foundations of the Dams and Haulage of Stone.

1. At all the dams we have had to go either deep into the bottom of the valley or deeper and longer than at first could reasonably be anticipated. It was the unanimous opinion of the very experienced engineers and geologists who gave me the opportunity of examining with me all the sites before they were deposited, that I had provided sufficiently for the foundations. It has turned out differently. At the Caban, for instance, we came upon broken and open-bedded rock on the bottom of the valley in the up-stream half of the dam site, which took deeper than was expected, and on the Radnor side with an extraordinary fissure, which had to be excavated to a depth very much greater. Wherever this extra was needed the "hole" had of course to be filled with watertight masonry or concrete at five or six times the cost of the digging.

2. Another great disappointment was the fact that we did not find any stone good enough to build with near the bottom of any of the dams but the Caban. From the first I thought that we should have to obtain all the stone for the foundations of the dams from near the Caban, as it was only at that spot that the silurian grit beds and conglomerates were visible, and so did all the geologists and engineers. Higher up the valley we should find, after removing the weathered slate, sound blocks of that material good enough for "heating." From a small quarry near Dol-y-mynach I obtained in 1891 samples of sound slate which I tested and found to be a weight carrier almost equal to granite. The lack of this material has rendered it necessary to take every ounce of building stone, both for foundations, concrete material, and sand (crushed out of the stone) from the lowest point in the valley right up to all the dams, increasing very greatly the cost of haulage.

3. It has also involved us in the expense of importing stone from Pontypridd and other places facing stone which we have to procure from our own quarries on account of our reliance on them for getting the rough heating material for the dams.

### Workmen's Wages.

4. Another very important cause of increased cost that applies to this and every other part of the works is the prevalence all over the country, viz. that the wages of all



ve been constantly increasing without a corresponding increase in output.

operating in every branch of work, so that it has not only our own labour costs in the valley, but has the price of all manufactured goods, such as iron-works, cement, &c., and of costly plant like cranes, and air-compressing machines, which we have had to

possible to say how much of the extra cost of these due to this cause, but it is undoubtedly a very big only in what has been done by administration, but t which has been let to contractors.

#### *Extras on the Aqueduct.*

To. 3 Aqueduct.—The "original" estimate for the was 1,825,350*l.*, and the "ultimate" is 2,336,316*l.*, excess of 28 per cent. As I have already informed tee, it soon became manifest, when we got out the drawings of the bridges, that these had been originally nated. Then an obligation was put upon us in to build one important bridge (important because syphon, and had to be made wide enough to carry pipes) in stone and brick instead of steel, which increased the cost. We were also compelled to river Severn with one span of 150 feet, and the Canal with one of not less than 100 feet, and in the e cases the bridge was in such a position that it bent on us to put up a structure that would not be but worthy of the great undertaking of which it of the few exposed features. We have not met with erious difficulties on the aqueduct considering its varied character, but we had to go deep with some foundations at the Ithon Bridge, to line all the oughout and to make a complete alteration in the e crossing of the Severn Valley Railway and on the of the Severn Valley, on account of a very serious had necessitated the shifting of the railway from its sition and which was only discovered when we began pipe trench. These extras on the bridges and the al works added to the excess cost of labour before fully account for the 28 per cent. increase over the estimate.

#### *Works at Frankley and Mains to the City.*

ard to these items, Mr. Mansergh says:—I must in fairness to myself to make some explanation, ould have preferred to do so without referring to colleague, Mr. Gray, but this is impossible. The : this part of the works (which it was originally r. Gray should design and carry out) was made by : most perfect good faith and to the best of his : I never had a free hand in the matter after certain : "estimate figures had been submitted to the : the report by the committee, dated October 13, : is certain from the outset that Mr. Gray's estimate : too low, and I was ultimately allowed by the then : of the committee to add 75,000*l.* to the reservoir : at this was only about half the addition which I then : make. Another material point to be taken into : Mr. Gray's under-estimation of the water require- : the high level districts, which cannot be supplied by : from Frankley. Mr. Gray was not a prophet, : doubt he did his best to forecast the future; but : matter came to be fully investigated in 1896 the : on the high levels was found to be so great and : rapidly that the whole arrangement for supplying : had to be altered, the pumping plant for the North- : Warley districts to be enlarged, and additional : power will also have to be installed at Monument

going under-estimations account for some part of s but there are other reasons which I will shortly t. A railway has been made from Rubery station l to enable us to utilise for concrete the stone of a e to the railway; to facilitate the getting up of all ks, dressed stone, sand and other materials and o shorten the time of construction; and to give a s of access in the future when extensions of the are required. 2nd. Originally the quantity of p to be obtained from the Elan was 67½ million y, and the first instalment was put down at two millions, and all the pipe connections about the reservoir and filters and the distributing mains (to h later) were originally intended to deal with that subsequent observation of the rainfall between 1891 ed me to expect that we could rely upon 72 to 75 day, and on mature consideration it was decided r Frankley drawings were being got out to put in all connections and fittings for half of the 75 millions, as avoid much trouble and effect a material saving of ture. The filters are also set out to do more than

was originally intended. The extra outlay now incurred may therefore be looked upon as an anticipation of works beyond the first instalment and accounts for another part of the excess, the rest being due to the enhanced cost of labour, as already explained.

Item No. 5. Local works, consisting principally of the trunk distributing mains from Frankley into and through the city. "Original" estimate 228,259*l.*; "ultimate" estimate 372,140*l.*—As in the case of the Frankley reservoir, filters and high-level works, I am not responsible for the major part of the original estimate. Mr. Gray's intimate acquaintance with the whole system of distribution entitled him at that time to a dominant opinion on the subject, and I had no occasion to go into the matter until the report on distribution was prepared in 1896, excepting to a very limited extent when reporting jointly with Mr. Davey on the "existing works" in February 1895. The distributing mains as now being laid are designed to deal with half the water, as I have already described in respect to Frankley. I am sure this is the best thing to do, as it will postpone for a long time the necessity of breaking up the roads, reduce the number of pipes in the ground, and ultimately result in a saving of expense and a minimum of inconvenience in the city. When all the cost thus involved is set against the "original" estimate it shows a large excess, but much of this should really be regarded as a prudent and justifiable anticipation of outlay on subsequent instalments. Contracts (15 and 17) for "local works," and in fact most of the others, have necessarily had to be let whilst the prices of iron were abnormally high, and all the labour charges, represented in the prices tendered by the contractors, have been affected for the reasons hereinbefore stated. The special works needed to deal with the many obstructions in the shape of gas and water pipes, sewers, &c., underground, are of course troublesome and necessarily costly, and the contractors have had to provide for the contingencies connected with them by covering prices.

#### NEW LAW COURTS IN SYDNEY.

THE Minister for Works of New South Wales intends, in consequence of representations submitted to him through the Department of Justice, regarding the necessity for the erection of new law court buildings in Sydney, to submit the matter to the Cabinet for consideration during the present year. It appears that the State Minister for Works has received through the Department of Justice a letter addressed by the Chief Justice and the judges of the Supreme Court to the Attorney-General on the subject, pointing out that successive Governments have for many years past recognised the need for taking steps in the direction indicated, but despite the fact that much information has been collected and plans put in hand, nothing definite has yet been done. Attention is directed to the dilapidated state and unsuitability of the existing buildings in the city, which have been serving as law courts for so long, and to the opportunity there is now offering of placing upon what is termed "a really magnificent site" (the area extending from the Mint to near St. Mary's Cathedral) a pile of buildings worthy of the State. This project should also offer a splendid opportunity for one of those competitions in connection with the design of public buildings, respecting which the Institute of Architects of N.S.W. recently visited the Department of Public Works.

#### TESSERÆ.

##### Constable's Cloud Studies.

JOHN CONSTABLE, R.A., spent entire summers in painting skies from nature. In a letter to a friend, dated October 1821, he says:—"I have done a good deal of skying, for I am determined to conquer all difficulties, and that among the rest. That landscape-painter who does not make his sky a very material part of his composition neglects to avail himself of one of his greatest aids. I have often been advised to consider my sky as 'a white sheet thrown behind the objects.' Certainly if the sky is obtrusive, as mine are, it is bad; but if it is evaded, as mine are not, it is worse; it must, and always shall with me, make an effectual part of the composition. It will be difficult to name a class of landscape in which the sky is not the keynote, the standard of scale and the chief organ of sentiment. You may conceive, then, what a white sheet would do for me, impressed as I am with these notions, and they cannot be erroneous. The sky is the source of light in nature, and governs everything; even our common observations on the weather of every day are altogether suggested by it. The difficulty of skies in painting is very great, both as to composition and execution, because, with all their brilliancy, they ought not to come forward, or, indeed, be hardly thought of, any more than extreme distances are; but this does not apply to phenomena or accidental effects of sky, because they always



attract particularly. I may say all this to you, though you do not want to be told that I know very well what I am about, and that my skies have not been neglected, though they have often failed in execution, no doubt from an over-anxiety about them, which will alone destroy that easy appearance which nature always has in all her movements." The studies Constable made of skies were in oil, on large sheets of stiff paper, and on the back of every one are memoranda of the date, the time of day, the direction of the wind and other remarks, for instance, "September 6, 1822, looking S.E.; 12 to 1 o'clock; fresh and bright between showers; much the look of rain all the morning, but very fine and grand all the afternoon and evening."

#### The "Zodiacs" of Denderah.

The portico in front of the temple of Denderah is formed of twenty-four columns arranged in four rows with quadrangular capitals, having a colossal head of Isis, or, as some say, of Athor, on each side, surmounted by another quadrangular member, each face of which contains a temple doorway with two winged globes above and other decorations. The shafts of the columns are perfectly cylindrical and of equal diameter all through, and the whole height, including the base, the quadrangular capital and dé above that is 46.10 English feet. The front is adorned with a beautiful cornice and a frieze covered with figures and hieroglyphics, over the centre of which the winged globe is predominant. The ceiling of the portico is occupied by a number of mythological figures, among which the French savants thought they recognised the signs of the zodiac; but Dr. Richardson observes that the number is incomplete, as the Crab is wanting, and he with other recent travellers and archæologists is of opinion that it is no zodiac but a collection of mythological emblems without any reference to astronomy. On the east side of the temple there are some apartments both on the ground floor and upper storey. On the ceiling of one of the latter under the roof of the temple there was another assemblage of mythological figures resembling those on the ceiling of the portico, though fewer in number and differently arranged. This was called a planisphere or zodiac, because in the middle of it figures similar to the signs usually adopted to represent the twelve constellations were observed. The ceiling is encompassed with three broad circular lines, and it is only the central space that is occupied with this mythological table, which appears as if supported by twelve figures, four females, one above each angle of the room and the other eight distributed in pairs between, and having hawks' heads. In the middle of this assemblage of emblems are certain figures which have been taken for the signs of the zodiac, ranged in a sort of circular order, but without any regularity of distance. The lion, the bull and the vase-carrier are exactly above three of the female figures that extend from three of the corners of the room to support the tablet with their heads; Scorpio, for the sake of regularity, should have been above the head of the fourth female figure, but it is not, neither is Libra. Capricornus, Sagittarius, Scorpio and Libra are all crowded without any regularity into one division, and instead of the Crab we have a broad-backed spider. Richardson observes that he compared the figures of the temple of Denderah with the engravings in the French work on Egypt, and found the latter a very incorrect representation. His opinion with respect to this pretended zodiac is the same as that concerning the one in the portico, namely, that it is not meant for a zodiac, but is a congregation of gods and goddesses and religious processions.

#### The Purpose of Sculpture.

Sculpture may be simply defined as the art of conveying ideas by means of form; its object is generally considered to be imitation; but properly speaking, its aim or purpose may be defined as suggestive rather than imitative. So far from imitation being its ulterior aim or purpose, it is only one of the means it uses to work out its intentions. Sculpture attempts in no way to deceive the eye; it, in fact, rejects many things which, were that its object, would tend much to accomplish it. Colour, for instance, that would render it a much nearer approach to nature than it is has, by the general consent of ages, been excluded from it. It is true that in the best days of the art colour was used, and there are even now persons who venture to advocate the re-adoption of it; still, it is but fair, finding it as we do thrown aside for so long a time, to infer that its rejection has arisen from a general feeling of the inutility or impropriety of it; from a more mature consideration of the real capabilities and purposes of sculpture, and consequent understanding that colour does not in any degree contribute towards them. No one, in looking at the celebrated antique statues, is for a moment deceived into the idea that he is really gazing at a living being; he neither expects it to move nor speak; on the contrary, his mind is directed to a higher train of thought. The "Apollo Belvedere" is like nothing that we have ever seen or met with in nature; it is only so far like that it in no way offends us as a physical impossibility. Such extracts or selections from the human form are taken in it only

as serve to give a perfect semblance to youthful god as help to embody the subdued self-dependent energy whom all things are alike easy; who has only to accomplish. The sculptor has omitted in it all that to the one expression he has wished to convey the absence of a too servile or literal imitation of nature the form, lifts it into the supernatural, keeps the respectful distance and separates him from it as far from God. Take, for example, again the magnificent "Niobe." Does the eye delight in any curious approximation to life? does the beholder's senses deceived, and seek to know how this is accomplished? Every part is true to nature, but it is only so true that the thoughts free from any impression to the contrary it is in all its parts, for without beauty it would attract us towards it nor gain for itself our permanent consideration; but the lesson which the artist intended to convey in it is of a high and instructive object for which he has wrought has been to create a deep sympathising sorrow for the awful trial which that strongest of all human feelings, maternal affection, have succeeded in this—and who will deny it?—humanity, at, and attained, one of the highest purposes of sculpture that commands for the art the public respect, and it to be classed among the instructors of mankind.

#### Backgrounds in Paintings.

The importance of some secondary points of scenery, background, drapery, ornament, is frequently that, independent of the want of more essentially possessed in a very eminent degree, they have singly insignificance to esteem names that had few other considerations; and neglected, in spite of superior position in the choice or conception of a subject, in style, and perhaps of colour of expression, and composition, often have left little but apathy to the eye of works produced by men of superior grasp and excellence. Fewer would admire Poussin were it not for his scenery, though Mengs has asserted that in his subject is more frequently the appendix than the background. What right could the greater painter del Sarto's historic compositions claim to our deprived of the parallelism, the repose and space figures are arranged; or the ample draperies that and hide with solemn simplicity their vulgarity and limbs? It often requires no inconsiderable mental power and technic discrimination to the sublimity of Michel Angelo and the pathos of Fra the total neglect or the incongruities of scenery ground which frequently involve or clog their composition add by fancy the place on which their figures occupy the horizon that ought to elevate or surround the masses of light and shade indolently neglected or higher principles. How deeply the importance of situation, with their proper degree of finish, were before and after his emancipation from the shackles Bellini, every work of his during the course of his tenary practice proves. To select two from all, that of the *Dominican Peter*, that summary of his powers, and the *Presentation of the Virgin*, on historic essays owe, if not all, their greatest effect. Loftiness and solitude of site assist the sublimely descending vision to consecrate the actors beyond characters and style of limbs could claim, and render an object of submissive admiration, whilst its simplicity renders the second one of cheerful and indulgent; and reconciles us to a detail of portrait-painting propriety of associating domestic and vulgar in a consecrated subject. It is for these reasons that the of scenery and background has been so much praised Reynolds, who frequently declared that whatever assistance he might admit in the draperies or other figures, he always made it a point to keep the art of the scenery, the disposition and ultimate finish of the ground to himself.

#### Colour in Stained Glass.

The assertion that colour is the primary object of glass will, we are aware, appear a truism; yet it has been always fully felt, as witness the miserable designs of West, at Windsor, and the utter failure of a window at Oxford, after Sir Joshua Reynolds. However, the bare assertion that we wish to make, should draw consideration to the kind of colour most suitable and to give reasons for the peculiarities of that suitable with common sense, and, at the same time, the purposes of the art. No one will venture to propose a system of colour adopted in stained glass a natural too splendid to be so termed; besides, in nature, secondary instead of primary; but why should it be natural? Because, in the first place, stained glass



architecture, which is in itself not an imitative art; in the next place, it treats of things apart from common life; the staining of church windows is not intended alone for the building, but to separate the thoughts of the people from all association with the affairs of this life; to direct them from everything outside the building or to that devotion for which they are assembled. For the supernatural beings, saints and allegorical personages introduced; parables of Scripture, visions of a future life represented; subjects are chosen which tend to lead the mind from that which is and to connect it with that which is to be. Even in halls where aristocratic pride and splendour are fostered by the art, natural forms are replaced by the monsters of heraldry substituted in their stead; apparent then to reason that such things as these should be coloured with the everyday tint of common life, this would but weaken their effect—but rather enhance their earthly splendour more properly belonging to them than to supernatural beings. Stained glass fell into decay in this country with the decline of the Roman Catholic Church, and the pictures handed down to us are all of an early age when the drawing and knowledge of chiaroscuro were in their infancy; the consequence is that though powerful in their effect, they are otherwise deficient as works of art, and when they are used now, when the art is reviving, to justify this premature quaintness, as if in its ancient days it had reached perfection and nothing was left to us but to imitate the copies of what has gone before. Attempts have been made to depreciate modern glass under pretence that the pictures are neither so brilliant nor so durable as in the days of the system now practised of shading on the surface of the glass by colours burnt into the body of the glass is illegitimate and leads to decay. All these arguments are, however, in our view, unavailing. As well might we go back to the pre-Raphaelite school of painting as imitate the defects in the old glass, or to the ignorance of the times. No art must be judged on the contrary, all means within reach must be employed to reach excellence, and that excellence must be sought by sound reasoning, not by following quaint antique precedents. The prevailing weakness in modern stained glass is not in the colour, where most people fancy. As far as regards the properties of colours, we have succeeded almost to perfection; but in drawing and in light and shade we are beginners. Like all symbolical art, stained glass is of the purest style of outline, and, owing to mechanical processes of its own, only a very powerful chiaroscuro will give it its proper effect.

#### Florentine Duomo and the Versailles Palace.

The Republic of the Florentine Republic, which in the thirteenth century ordered the construction of Santa Maria del Fiore, could not be surpassed by any edict of ancient Rome. Whereas the chief aim of a people of great origin is to be great in a way that, from its outward works, every one can recognise both its wise and magnanimous manner of government, we order Arnolfo, chief architect of our city, to design and to execute the complete rebuilding of Santa Maria del Fiore with the greatest possible magnificence that the Republic is capable of conceiving, since it has been decreed that both public and private, by the most able men of the Republic, nothing should be undertaken for the community that does not correspond entirely to the ideas of its most noble citizens united together to decide on such subjects. Contrast this with the pride and fear of Louis XIV.—who, in view of the sepulchre of his race—which led to the construction of the Palace of Versailles, and we have the difference of the difference between the nobility of a people, whose imaginations are exalted by art, and the ambition of a ruler who makes art the mere instrument of his glory. The relative magnanimity of the two is strongly shown in the disregard of expense on each side. The king forced a powerful and wealthy people to the brink of ruin to gratify his selfishness, for the Palace of Versailles has been said to have cost from twelve to forty millions of francs. The Republic of Florence contributed their money to the construction of edifices with a proud alacrity which would astonish modern economists. In 1334 they commenced building the Campanile, passing a decree that it should be the most magnificent, height and excellence of which it could achieve in that kind had been achieved by the Romans in the time of their utmost power and splendour. The first stone was laid accordingly with great pomp on July 18 following, and the work prosecuted with such costliness and utter disregard of expense that the citizens of Verona, looking on, exclaimed that the Republic was taxing her strength too far, that the united efforts of two great monarchs would be insufficient to complete the Campanile, which the signoria resented by confining the architect for months in prison, and afterwards conducting him to the public treasury, to teach him that the Florentines build their whole city of marble, and not one poor steeple

only, were they so inclined. This "one poor steeple" is the most beautiful specimen of tower architecture the world has to show, costing at the rate of about sixty pounds per superficial foot, making an entire expenditure of five millions old currency, which, by taking the present value of wheat and comparing it with the price of the fourteenth century, would augment its cost fivefold.

#### Obelisks and Spires.

An obelisk is a lofty monumental four-sided shaft diminishing upwards with the sides gently inclined, but not so as to terminate in an apex at the top; neither is it merely truncated or cut off at the summit, but the sides are sloped off so as to form a flattish pyramidal figure, by which the whole is suitably finished off and brought to a point, without the upper part being so contracted as to appear insignificant. Herein, as well as in their purpose and application, besides other circumstances, obelisks differ from spires, which are carried up from their base to a point, and which nevertheless are beautiful on that very account. It may be asked why the same form that pleases the eye in the one case would be disagreeable in the other. To answer this question we must consider not only wherein they agree, but wherein they differ. Whether perfectly square or not, obelisks are uniformly quadrilateral, whereas spires are polygonal, and consequently the bases of their sides are much narrower in proportion to their entire diameter, so that the diminution is not so sudden as it would be in a four-sided mass of the same bulk and height. Secondly, a spire is generally terminated by a pinnacle, cross, or some other ornament at its summit, whereby sufficient importance is given to it; and thirdly, a spire neither is nor is intended to look like a solid mass of stone, but requires to have a certain expression of lightness, both in itself and so as to bring it into harmony with the rest of the building. An obelisk, on the contrary, either is or is intended to appear not only a solid mass but a single stone, standing upon a massive pedestal, and that pedestal resting on the ground. Hence it is obvious that so far from being attended with any beauty, the reducing it to a mere point would greatly impair its character, and in a measure destroy all nobleness of appearance towards its summit, because it would be of inconsiderable bulk for a considerable length downwards. Though the mere form of the obelisk has no particular beauty to recommend it, as is proved by the meanness and pettiness of little obelisks employed merely as decorations in *catafalchi*, and also in many buildings of the time of James I., yet when wrought out of "time-defying material," and of colossal dimensions, it produces a most imposing effect. As a monument an obelisk is greatly preferable to a column, inasmuch as it possesses all that recommends the latter without being open to the objection of being a mere imitation of what was designed for a totally different purpose, and never intended to be insulated or considered as complete in itself. The greater diameter of the capital and abacus, which is both a beauty and propriety in a column supporting a superincumbent mass, ceases to be so, or rather becomes quite the contrary, when the column supports nothing. The abacus, forming in fact a square platform on its summit, overhanging the structure itself at its angles, gives the whole a top-heavy appearance, which is still further increased by a railing upon it.

#### Classic Dies.

The orders are sometimes set on pedestals consisting of a square shaft, called the die, with a moulded base set on a deep plinth. The die is surmounted with mouldings forming a capital, but in reality resembling more the cornice of an entablature. Chambers allows, for the proportion of the die of the Tuscan pedestal, 2 modules 24 minutes; for the Doric, 3 modules 6 minutes; the Ionic, 3 modules 18 minutes; and the Corinthian and Composite, 4 modules. The bases and capitals are respectively—Tuscan, base 28 minutes, capital 14 minutes; Doric, base 32, and capital 16 minutes; Ionic, base 36, and capital 18 minutes; and Corinthian, base 40, and capital 20 minutes.



[The Editor does not hold himself responsible for opinions expressed by the writers.]

#### Berkeley and Smibert.

SIR,—The short article in your last number on John Smibert is interesting on account of the (1) subject, for that artist's name is almost forgotten in this country; (2) for the link which he formed between English and American art; and (3) on account of his connection with Berkeley's project. The last, to my mind, is the most important. Berkeley had resolved to



civilise the planters and other Englishmen who lived in Bermuda, and who on account of the remoteness of the island were approaching the condition of the natives around them. Berkeley intended to accomplish his end by setting up a college in which the arts and sciences as well as the principles of religion and morals should be taught. It was the first occasion in which the fine arts were recognised as a civilising agency, and much credit is due to Berkeley for so noble a proposal, and to Smibert for co-operating with him. It is evident that the educational utility of art is not yet fully recognised, for not so many years have elapsed since the Slade professorships were founded, and it cannot yet be said that the fine arts are recognised officially as having a place in the curriculum of an English university. It is not to be wondered at that nearly two centuries ago many statesmen were opposed to Berkeley's experiment.

It is, however, an error to say "the king's death dispelled the vision." George I. died of apoplexy in Osnaburg in 1727, but it was not until a year afterwards that Berkeley sailed from the Thames. He had resolved to spend all his resources on the enterprise, and he had been promised, in addition to several subscriptions, a sum of 20,000*l* from the Government for the endowment of the college in Bermuda. Instead of going to the island directly, he landed first at Newport, Rhode Island. We may assume that John Smibert was with him. After a short time Berkeley went to reside in the interior of the island, where he built a house which he called Whitehall, while his friends went on to Boston, where Smibert gained success as an artist. Berkeley came to the conclusion that the contemplated college would be more successful if placed in Rhode Island instead of in Bermuda, but he found that he was so hampered it was impossible to set about the work in either place. Sir Robert Walpole, who was in power, repeated the promise that the 20,000*l* should undoubtedly be paid, but he advised Berkeley to abandon the project and return to Europe. Conduct so contradictory was not unknown at the time, and was looked upon as statecraft. Berkeley was therefore compelled, after three years' waiting, to return to London, and the downfall of his project should be ascribed to Sir Robert Walpole.

Educationists must always regret that the Bermuda experiment was never carried out. Berkeley was a man of undoubted genius, and it was well said of him that he possessed every virtue under heaven. But although in philosophy he could be considered as an idealist, his "Querist" is enough to show that in dealing with affairs he was remarkable for shrewdness and common sense. A college in which the arts would hold a place, and which would be started in a new country, free from the antiquated prejudices of the European universities, might have accomplished an intellectual revolution.—Yours obediently,

J. C. D.

### GENERAL.

**Mr. Thomas Gordon**, architect, died on Friday last at Eastbourne.

**The Alexandra Palace**, which has been conducted as a municipal place of entertainment for eight months, up to the end of last quarter shows a loss on revenue of 2,006*l*., and this deficit Mr. Henry Burt, to whom the public are indebted for the acquisition of the place, has offered to make good.

**M. Dalou** has completed the models of the memorial of Gambetta which is to be erected in Bordeaux. M. Formige is associated with him as architect.

**Sir John Aird & Sons** have been entrusted with the works of the new ocean dock at Avonmouth, Bristol. The total cost of the dock is estimated at close upon 2,000,000*l*.. The amount of the tender of Sir John Aird's firm will not be published until the contract is signed.

**The Artists** who will form the committee of direction for the exhibition of French art which will shortly be held in London will consist of MM. Paul Tiliier, president; Albert Maignan, vice-president; François Flameng, Gosselin, Guignard, A. Léonard, Marqueste, Mongin, T. Robert-Flcury, Weerts; L. Prétet, commissary; F. Philippon, secretary.

**Mr. Justice Buckley** has caused a series of transverse wires to be fitted beneath the roof of his Chancery Court, with a view to improving its acoustic properties.

**M. Denys Puech**, the sculptor, has completed the medallions of Victor Hugo, Corneille, Racine and Molière, which are to be placed under the peristyle of the Théâtre-Français.

**The Tender** of Messrs. Pethick Brothers, of Plymouth, has been accepted for the contract for widening London Bridge for the sum of 95,484*l*., which would be paid for out of the funds of the Bridge House Estates. It was stated that Devonshire granite would be used. The work will probably be commenced in April. The Act of Parliament allows five years for its completion.

**A Protest** has been signed by several German in Rome declaring that the bust of Goethe, which a gift by the German Emperor, is not a fitting representation of German art, inasmuch as it was rejected by the exhibition in Strasburg.

**Professor T. McKenny Hughes, F.R.S.**, has been elected to the Cambridge Antiquarian Society the investigations of the unearthing of another Roman villa along the river terraces north of Cambridge. He said, a good many human remains, and they were graves of irregular occurrence over the area. There have been those of well-built people of large stature, mesocephalic skulls. The pottery and the remains of animals were found chiefly in pits, such as were so common and around every Roman settlement; as, for example, at Chesterton, but also to some extent scattered over the site. The scarcity of Samian pottery might indicate that the inhabitants, or the late date of the settlement, was distinctly Roman element. It was probably a village of Romanised Britons.

**The Court of Common Council** have declined to grant towards the scheme for the preservation of the Palace of Richmond Hill.

**The Prussian Minister of Public Works** has announced prizes of 5,000, 3,000 and 2,000 marks for the best design for measuring wind pressure. The competition will close on April 1, 1903. A further prize of 1,000 marks will be paid for the instrument which has the best design of a long trial.

**The Subject** for the design in the Rougemont competition of the Ecole des Beaux-Arts was this year a free design for a collection of the designs by the late Charles Garnier.

**Mr. Arthur Evans** has resumed the series of excavations near Candia which have yielded such remarkable results during the past two years. The completion of this important work, which has thrown a lustre on British research, is endangered owing to want of funds. Mr. Hogarth's proposed excavations at Mycenae, already stated, Mr. Hogarth's proposed excavations at Mycenae, abandoned. The promising sites reserved by the British Museum for British exploration will, no doubt, be claimed by French or German archaeologists. Liberal support from their respective Governments, whom will fall the credit of the great discoveries, is every reason to anticipate, will be made in the future.

**Mr. B. M. Ward** will read a paper on "Victorian Windows" before the Liverpool Architectural Association Monday next.

**Mr. A. W. Rich**, a member of the New English Club, will hold in the beginning of March an exhibition of colour drawings at the Egyptian Hall, Piccadilly. The drawings are chiefly of English landscape, and especially subjects in Sussex, Suffolk, Surrey, Gloucestershire and other southern counties. The exhibition opens on Monday and will continue for twelve days.

**A Private View** of pictures and studies of the Lake of Galilee, by Mr. John R. I., will be open to-morrow at 148 New Bond Street.

**Mr. B. H. Thwaite, C.E.**, will read a paper on "The American Patent Law Practice and Engineering" at a meeting of the Society of Engineers to be held at the United Service Institution, Whitehall, on Monday. It will be an opportunity for those interested to discuss the various and important amendments to the new Bill now before the House.

**The Examinations** in Science and Art fixed for the week ending June 28 by the Board of Education will be held during the week ending July 5.

**Mr. Arthur Pye-Smith**, managing director of the known St. Pancras Ironwork Company, Ltd., has been appointed a Justice of the Peace in the county of London.

**The Following Architects** have entered their names as candidates for the associateships of the Royal Academy, to which there will be an election on June 1. T. Duncan Rhind, 10A George Street, Edinburgh; J. Macintyre Henry, 7 South Charlotte Street, Glasgow; R. S. Lorimer, 1 Bruntsfield Crescent, Edinburgh; A. Hunter Crawford, Rutland Square, Edinburgh; James B. Dunn, Frederick Street, Edinburgh; T. 14 Saxe-Coburg Place, Edinburgh; John Keppel Street, Glasgow; John A. Campbell, 44 West George Street, Glasgow; Alexander N. Paterson, 136 Wellington Street, Glasgow. There are also forty-eight painters and sculptors.

**A Book** will soon be published containing a history of about national, municipal and endowed theatres in England. William Archer and E. O. Sachs. It will enable the architect to see what is the experience in continental cities.



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ALL SAINTS', WEST BROMWICH.

Messrs. WOOD & KENDRICK, Architects.





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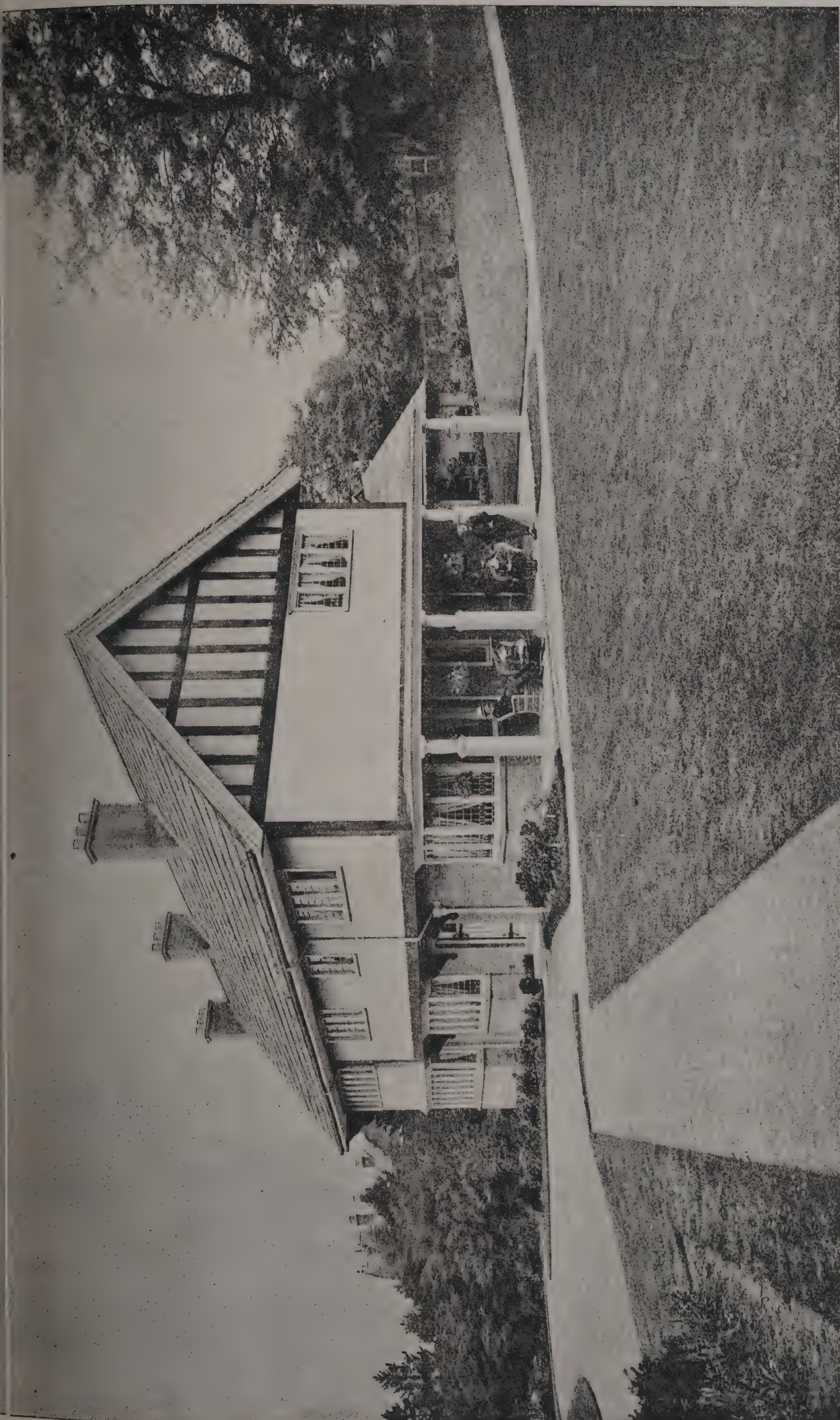
ALL SAINTS', WEST BROMWICH: MARBLE MOSAIC PAVEMENT.

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"THE QUINTA," ALDERLEY EDGE, CHESHIRE.

F. W. MEE, Architect.



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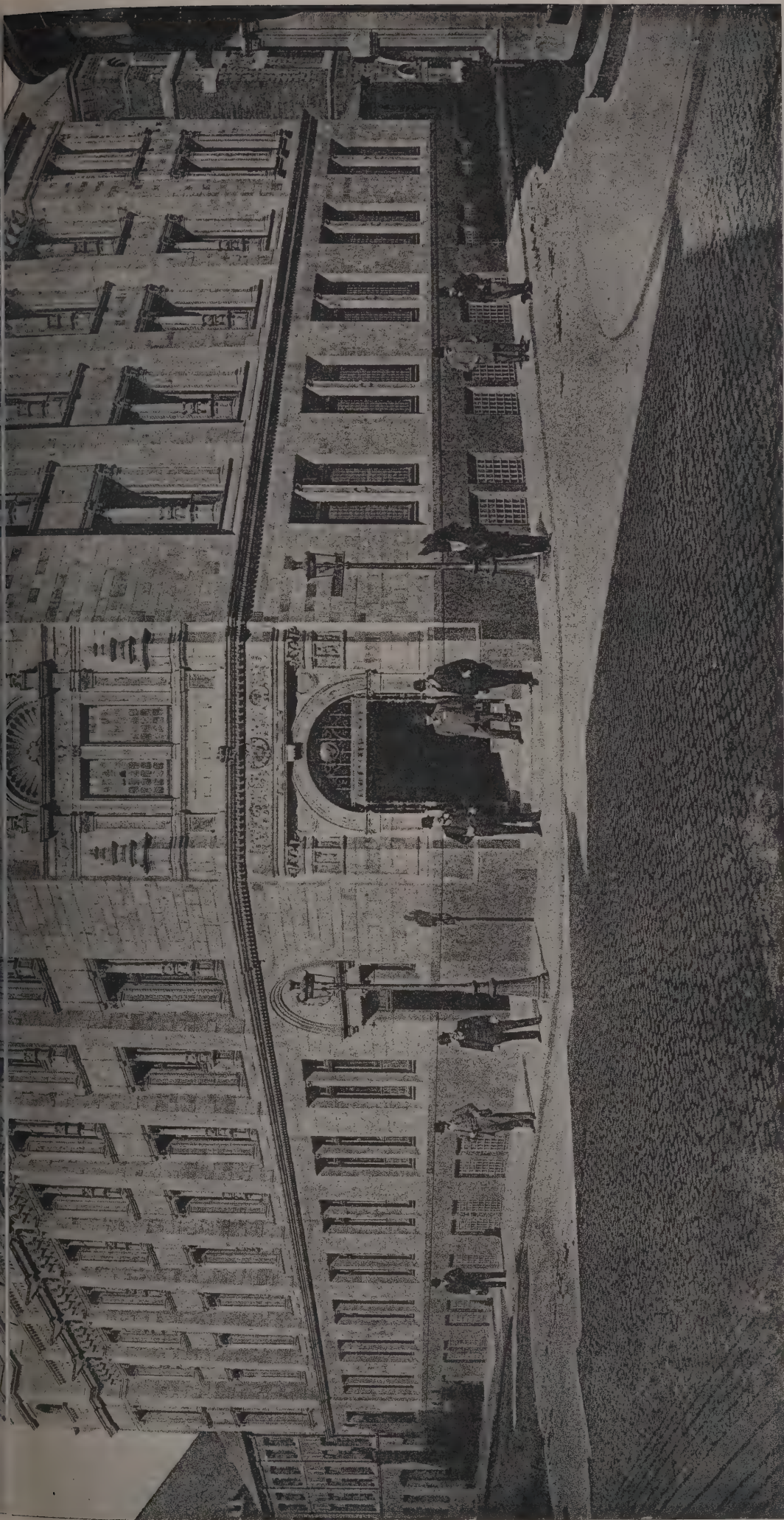
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The Architect, Feb 28<sup>th</sup> 1902.







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NEW PREMISES, LEICESTER, FOR MESSRS. FAIRE BROS.  
EDWD. BURGESS, Architect.



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Die Ansicht, Feb 28<sup>th</sup> 1902.







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**ALL SAINTS', WEST BROMWICH.**

Messrs. WOOD & KENDRICK, Architects.



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# The Architect.

## THE WEEK.

history of the Eastbourne Technical Institute is s. When the sanction of the Town Council was to the scheme it was believed that the work would cost more than 20,000 $\text{\pounds}$ . Plans were prepared by Mr. ROBSON, and then various suggestions were offered. Tenders were introduced at the desire of the committee. Tenders were sought for carrying out the amended and it was decided to recommend the acceptance of G. MINTER'S, the amount being 34,730 $\text{\pounds}$ . or 2,000 $\text{\pounds}$ . some reductions were made. It was also proposed at a fire station, but the committee advised that no for that work should be accepted. The discussion subject took place on Monday last, and it was then there was a stronger opposition than had been anticipated. One Alderman suggested that a different architect be appointed, a local man who was acquainted with requirements of Eastbourne. Another speaker said the work would cost 40,000 $\text{\pounds}$ , and advocated the conversion of the town hall into a technical institute, and the erection of a new town hall. A third councillor contended that the fire-station was the more important building. It was decided to refer the subject back to the committee, or, in other words, to shelve it for an indefinite time. It seems to us that what the Council desire is the erection of a technical institute by the Duke of DEVON. His Grace has given one of the most valuable sites for the building, and it may be thought that his generosity could be extended. It is also evident that the site offered for a town hall, in which local authorities would be at more advantage than in the existing building.

The statue of *Liberty Enlightening the World*, which stands at the entrance to New York Harbour, was the first which brought M. EIFFEL into notice. When several Americans in France resolved to present it with a statue that would be symbolic, M. BARTHOLDI, the sculptor, was invited to prepare the model. After many deliberations it was determined that the figure should consist of a large number of plates of copper, which were to be riveted together so as to form an exterior covering for a structure consisting of lattice girders. The designing of the interior structure was left to M. EIFFEL, and his connection with the Eiffel Tower and his subsequent prosperity. But for some unknown reason the statue was no great welcome for poor Liberty when she crossed the Atlantic. She was treated as if she were a circus elephant, and was made a *casus belli* between various nations. At present, we believe, the War Department is in charge of the gift. Mariners do not care for lights of any kind, and the flaming torch of Liberty is said to be a hindrance. Orders have therefore been given for the statue to be extinguished. The copper wants cleaning, and the air may have injured some of the plates. It will be complimentary to Frenchmen if their offering, which is the biggest statue in the world, should become a ruin.

The Manchester Corporation are setting a good example by erecting several types of cottages at Blackley. They anticipated that benevolent people will be inspired by them to see such convenient houses to imitate the Corporation. As suggesting the desire which now exists in Manchester for the improvement of the humblest class of dwellings, a resolution was passed at a meeting in Manchester on Saturday last recommending that (a) the by-laws of the Corporation be so altered as to render impossible the erection of unbroken rows of dwelling-houses with their opening direct upon the common pavement and with their back-yards; (b) the encouragement in every possible way of the erection of artistic cottages and the development of suburbs with gardens and playgrounds for the recreation of the children. As much reliance is placed on whatever is done by the Manchester authorities, the Corporation statement relating to the experiment of the cottages will be regarded with interest. Working-class people may be willing to pay a higher rent for increased convenience, but the slums are not likely to be closed until

better houses are obtainable at the rents now charged. The effect of a timely gift on housing schemes has been exemplified in Port Glasgow. Two plans were proposed. The larger would cost 22,196 $\text{\pounds}$  for the purchase of the property, and impose a rate of 5 $\frac{1}{4}$  $d$ . The reduced scheme would cost 12,418 $\text{\pounds}$ , and the rate would be 3 $d$ . in the  $\text{\pounds}$ . Mr. W. T. LITHGOW, a shipbuilder, has, however, offered 10,000 $\text{\pounds}$ . if the larger scheme is adopted, and also to relieve the Council of the risks which follow dealing in land by taking over the cleared ground at a valuation. The offer has been accepted, and the inhabitants will not be required to pay more than a 3 $d$ . rate.

THE judgment of Mr. Justice JOYCE in *BAKER v. MOSS* is one which has been long desired. Everybody who is connected with building is aware that in the suburbs of London it is quite common to take away gravel and sand from fields, and then to allow rubbish to be shot into the new receptacle. After a time grass grows over the surface, and the spot becomes "eligible building land." Between 1886 and 1890 a piece of ground near Shepherd's Bush was treated in that way, but so much material was removed, and the stuff carted to it was so varied, that the hollow was never fully filled up. It became a dangerous pond, and the sanitary authority had to interfere. The water was at length removed and grass was grown instead. When it had attained the desired appearance it was advertised for sale by auction as a freehold building site in the midst of a capital letting class of property, and therefore was ripe for immediate development. A builder paid 1,500 $\text{\pounds}$ . for the ground. Then he discovered that in order to bring it up to the standard of the London County Council as a building site it would be necessary to undertake expensive operations, as the gravel and sand had been excavated to a depth varying from 7 to 20 feet. He therefore, instead, brought an action for rescission of contract on the ground of misrepresentation. The defendant contended that the property was correctly described, and if the soil were excavated and proper foundations laid the outlay would not be more than was required for building basement houses on ordinary land. Mr. Justice JOYCE, in giving his decision, said the ground was practically useless for the purpose for which it had been purchased. The plaintiff had relied on the description, which stated that the ground was a capital freehold building site, ripe for immediate development, and was, in consequence, induced to buy the property. His Lordship added that he was not sure that in a case of this sort the burden was not upon the vendor to show that the purchaser was not induced to enter into the contract by the misrepresentation. Judgment was accordingly given for the plaintiff.

GERMAN architects on Friday last were able to celebrate the centenary of the birth of ERNST FRIEDRICH ZWIRNER, who was perhaps best known as the Dombau-meister, or architect, having charge of the cathedral of Cologne. He was a native of Jacobswalde, in Silesia, and a pupil of SCHINKEL. In 1833 he obtained the inspectorship of the works connected with the restoration, or rather completion, of the Cologne Cathedral, which WORDSWORTH, the poet, considered was a task fit for angels. He succeeded so well that in 1842 the restoration of the choir was finished and the King of PRUSSIA in 1848 was able to lay the first stone of the central tower. SCHINKEL, it should be remarked, was in apprehension several years before that any addition of the kind was impracticable, and, in fact, the project had been abandoned. Originally it was contemplated to use masonry alone, but afterwards ZWIRNER advocated the employment of iron and the structure was raised. Several archaeologists were opposed to the introduction of metal in so famous a building, and, indeed, it was suggested that ZWIRNER was incompetent, as he was unfaithful to the traditions of Gothic construction. However, he held on, and as there was the majority of the union or society for restoring the building in favour of his propositions, he was able to remain in office until his death in September 1861. He erected several other buildings in Cologne, including the museum, the synagogue, the church of S. Apollinaris at Ramagen and the castle of Herdringen. His success was not without influence, and the number of buildings which exemplified the Gothic Revival may be considered as effects of ZWIRNER'S restoration of the cathedral.



## JOHN FRANCIS BENTLEY.

*(See Illustration.)*

THE loss of an able artist is always to be deplored, for even when old he may possess creative power that is sufficient to endow the world with something that will be always a public treasure. In the case of JOHN FRANCIS BENTLEY there are circumstances which make his sudden withdrawal from this world peculiarly saddening.

He was long known to his friends and acquaintances as a man who was endowed with undoubted ability. During the Gothic Revival it was anticipated that he was destined to leave a name in connection with the style. Not only in his buildings, but in his metalwork and designs for various minor classes of production, he demonstrated that he was not only a master of detail but had caught the Mediæval spirit. Some people from his manner then supposed he was over-confident; but he realised the extent of his powers, and was assured he was capable of more important commissions than he had received.

JOHN BENTLEY, however, was too proud or too sensitive to seek after any aids to success with the exception of the cultivation of his own talents. He laboured no doubt under the disadvantage of being a Roman Catholic, and he was too independent to attempt to persuade people that his religion was a gain to him as a Gothicism rather than an impediment. While, therefore, his dignity suggested that he should wait until commissions were brought to him, he saw important buildings entrusted to contemporaries who could not claim the possession of greater artistic skill. When he received commissions for churches or monasteries for his co-religionists he was generally hampered by the want of funds. Considering the conditions under which they were erected, his Seminary at Hammersmith, at least in its former state; his church of the Holy Rood at Watford; St. Mary's, Cadogan Street; and Corpus Christi, Brighton, are all skilful adaptations of means to ends under financial difficulties. At length the great prize for which JOHN BENTLEY had been hoping for several years came to him under circumstances which must have appeared as remarkable.

To the ordinary observer who takes a general interest in churches, there is no need at present of a Roman Catholic Cathedral in London. The substitute which is found at Kensington seems to be equal to all requirements of an exalted ritual, and it is sufficiently accessible to worshippers and spectators. But the rulers of the Church believed in the necessity of another building, and some years ago a site was secured on a spot where a prison stood behind the tall houses in Westminster. The proposal excited no enthusiasm among the laity, and the ground lay unused for several years. The history of church architecture shows that great ecclesiastics are willing to carry on a project of church building, and the desolate ground was accepted as a legacy from his predecessor by His Eminence Cardinal VAUGHAN. With admirable courage he resolved to make an attempt to erect a vast and costly building. He was well advised in selecting JOHN BENTLEY as the architect.

The style proposed was an incentive to an architect's enthusiasm. The Roman Church is without an official style in architecture, just as it is without authorised translations of the Scriptures, and it has often found advantage in the deficiency. For a time Gothic was approved as suitable for England, then it was suddenly superseded by Italian Classic or Renaissance, either of which modes was thought to be more in keeping with Ultramontane ideas. But no one had anticipated that inspiration would be drawn for an English cathedral from the New Rome, as it was once called, that is, Byzantium or Constantinople. The style had, however, the advantage of novelty for people in the West, and it was considered to be capable of affording a vast area which, if too extensive to allow of a preacher's voice being heard everywhere, was at least favourable for services in which music was to be an auxiliary.

For a man who was somewhat of a dreamer like JOHN BENTLEY there could be no style which was better adapted to call forth all his energies. His constructive power could be exercised in numerous domes and arches. While the style has a largeness about it, it is made up of an infinity of small parts, and for a man who had had experience with Gothic, and especially with Gothic detail, there was a field in which he could revel. When we find that the ordinary

bricks were from their dimensions considered to be too large for a Byzantine building, and it was necessary to have made at Bracknell corresponding in size with those in Sta Sophia, we can realise the delight which was afforded to the architect by so grand and novel an experience. JOHN BENTLEY also was a master in decoration, and knew that all his ideas would take several generations to carry out, but he was able to gratify himself with the conviction that whatever he contemplated would be respected, and however gorgeous the cathedral might become it would in all its parts be a manifestation of his skill. JOHN BENTLEY therefore set about the work with energy, and we suppose the time he spent in studying Byzantine examples and in preparing designs was the happiest in his life. He had also the satisfaction of seeing that the project in its new form was well supported. When it is remembered how general is the position of the Roman Catholics, it is remarkable that so much labour was forthcoming to enable so costly a building to be erected.

In his enthusiasm, however, JOHN BENTLEY had not measured his physical strength. He had scarcely completed his plans when he was warned by paralysis that he must be cautious in overtaxing his powers. He failed him, but so long as his creative power remained he was able to endure the affliction with equanimity. His pencil spoke for him. He was one of those architects who find pleasure in making drawings, and if it were possible he would have dispensed with vicarious assistance. There was no delay in the constructive arrangements through the diminution of his strength, and he directed the whole execution of so vast a work as if he retained all his vigour. The fact that an announcement could be made to open the building was a testimony to the industry which the works were superintended and the fidelity with which so many people laboured to realise his ideas. The tests of the acoustic properties of the cathedral were most satisfactory, and everything promised a joyous summation which to such a man would be the best for all his anxieties. The Westminster Cathedral, however, to afford one more illustration of MILTON'S principles which are applicable to so many artistic projects—

But the fair guerdon when we hope to find,  
And think to burst out into sudden blaze,  
Comes the blind Fury with the abhorred shears,  
And slits the thin-spun life.

In the peculiar circumstances of the case there was that is tragic. JOHN BENTLEY had, of course, rivals, but he had no enemies. Every architect who knew him was only by repute, was aware that throughout his career he upheld the highest standard of the profession, and never be alleged that to gain an end he had performed an unworthy act. He bore disappointments with fortitude, and if fortune often ignored him he accepted it philosophically. When the opportunity came to him of what was in him he set about his task courageously without the least ostentation. If he had lived long enough to see the cathedral would be a credit to him and would have demonstrated to visitors from all parts of England possesses able architects who were waiting for occasions to show that they are the successors of the unknown men who raised churches and cathedrals which no changes in taste can leave without honour.

As JOHN BENTLEY had only reached his sixtieth year, several years of happy endeavour might be expected as before him. But in our time there is no reckoning the duration of a life in which the brain and its powers are to be much exercised. A week ago he could look forward with confidence to the opening of a building which would be not only a revelation of his genius, but a proof of his existence. But even if he were able to foresee the summary disappointment which awaited him, we believe he would have accepted his fate in a manner befitting a Christian. That he may rest in peace will be the wish of all who knew him, and who must regret the loss of the ablest architects of our time.

The funeral took place on Wednesday. CARDINAL VAUGHAN delivered a brief address in St. Mary's, Clapham, and stated that there were two principles in the life of the departed—art and duty. The cathedral at Westminster would be a monument.





# THE AMAZON IN ART.

WHEN Professor KISS sent his *Amazon attacked by a Tiger* to the Hyde Park Exhibition of 1851, the not only revealed that Prussia possessed a sculptor was able to produce a work which many considered to be the noblest among those of all nations, but it exemplified an important fact that the most ancient subjects were not neglected, and could acquire a new interest at the hands of a modern genius. In the group there was in the first place a suggestion of the difference in character between man and animals, as well as the superiority of reason over brute force. The tiger appeared to express an insatiable desire by its grip of the horse. The horse, although so much larger in bulk, was helpless and writhed in agony under the teeth and claws of its energetic enemy. The Amazon, on the contrary, showed not only courage that was equal to the situation, but intellect in the employment of her strength. She had moved backward on the horse in order to bring more power to the blow, and the moment chosen for the attack was one of suspense, for every spectator felt that unless the Amazon's thrust was at once fatal to the tiger there would be no victor. An enlargement of the statue, with a more harmonious union, is now to be seen outside the Public Gallery in Berlin, and those who can recall the exhibited work consider the copy to be no less impressive. Classic themes, when treated in the spirit of the ancients and with the knowledge of modern art and love for fine lines possessed by Professor KISS, never become old.

The legend of the Amazon might have been invented by a sculptor in order to display a variety of forms such as nature had not provided for models. As in the case of Aphrodite, the Amazon was a harmonious combination of the characteristics of men and women. The legend in which girls competed under conditions similar to those laid down for manly youths would be enough to suggest a being in which vigour and grace were united. It has been asserted that one of the few subjects treated by Greek art which the Spartans condescended to admire was the Amazonian, and it is even believed that the contest, of which we give an illustration, is derived from a sarcophagus found somewhere in Lacedæmonia. It was not surprising, however, for the sculptors to create the form, for the tradition of the existence of Amazons was a very old one in Greece, and especially in Athens.

The covered legs of the women in the relief indicates that the Greek sculptor supposed the combatants were of Asiatic—i.e. of Asiatic—origin. It was related that the Amazons had fought against HERCULES and BACCHUS. Hippolyta in command they were said to have defended Attica, and to have fought with THESEUS. This Amazon has been immortalised in a manner which no Greek could rival. For in a "Midsummer Night's Dream" the festivities for the marriage of the two leaders followed the combat. We also know that OBERON, King of the fairies, suffered the tortures of jealousy when he discovered that his wife, the Queen of the Fairies, was in love with THESEUS.

Shall I not lead him through the glimmering night  
From Perigenia, whom he ravished?  
And make him with fair Egle break his faith,  
With Ariadne and Antiopa?

TITANIA was able to chide her lord about his bouncing Amazon, his buskined mistress and warrior-love, the fair Hippolyta. The serious consequences of their wrangling have been chronicled by the poet. The topsy-turvydom by which genius was able to unite Greek mythology and Northern fairyland with the carpenters, joiners, weavers, bellows-menders, tinkers and tailors of an English village was never so finely displayed as in a "Midsummer Night's Dream," in which the whole world, ancient and modern, was made kin.

The Athenians, however, believed in the legend. There were parts of the city which owed their names to the contest with the Eastern women. At the time when they were most intellectual the people had one of the walls of the Pœcile painted by MICON, the son of PHANOCUS, with the Battle of the Amazons. PAUSANIAS admired it. MICON was selected because he had acquired a reputation for representing horses, and he was judged to be unrivalled in contests between mounted and unmounted warriors, or between Centaurs and the Lapithæ. The painting was evidently on a long wall. We know, too, that the Amazons appeared to be unconquerable, owing to the number of figures who after being struck down seemed ready to revive the combat. The picture was made a subject for the wit of ARISTOPHANES. Probably MICON was only following many precedents, and in turn his painting served to suggest similar scenes to other artists. Battles of Amazons were often used for the decoration of Greek vases. They were also much in favour for the adornment of sarcophagi. There is a famous example in the Capitoline Museum, Rome, which was derived from a burial vault in 1744. On it the contest is suggested by various incidents, such as the rescue of Amazons, and the fierceness with which the battle-axes were wielded by them. On the lid seven Amazons are to be seen who were taken captive, and some of whom it was necessary to fetter, for while their hands were free they would not be subjected.

In the relief which we illustrate and which was brought from Greece to Vienna by a son of CHARLES V., it will be observed that much skill is shown in the composition. There are three groups of combatants. While there is symmetry there is also variety. On one side the Athenian sustains with some difficulty the attack of the Amazon, whilst on the other side the man is the victor, for the Amazon has lost her battle-axe. In the central group the Athenian is endeavouring to rescue a wounded companion and is unable to employ his sword; he has accordingly to ward off the attacks with his shield. Another contrast is afforded by the wounded warrior and the dead Amazons near him. The Athenians are armed with sword, helmet and shield, while the Amazons use shield and battle-axe. The woman who fights on foot evidently wore a coat or cloak with sleeves, of which the old Hussar jacket seemed to be a survival. Although they might be thought to be their enemies, the sculptors are never unjust towards the Amazons. As combatants they are shown to be equal to the Athenians. The hairdressing or corumbus corresponded with that adopted by the Greek virgins, for in Greek and Roman statuary the coiffure



follows definite arrangements, and was not left to the artist's fancy. To indicate their youthfulness, the breast of an Amazon is never fully developed, and is only partially revealed. In fact, there was much correspondence between the forms of the Amazons and of the goddesses. The cincture or belt they wear is also kept low, while in some draped figures it is close to the breast. The duality of the contest represented on the sarcophagus is suggestive of compositions which were used to fill metopes, and there may have been more or less affinity between the figures and those seen on the Parthenon and other temples. A comparison of the illustration with an engraving of RUBENS'S *Battle of the Amazons* will suggest how wide is the difference between sculptural and pictorial treatment, as well as the reserve shown by the Greeks in avoiding all maiming and degrading of the women.

It was, no doubt, considered to be proper to indicate by the costume of the Amazons that they were of a Scythian or other Eastern race. In the more complete clothing of the women there was conformity with ancient traditions. But the sculptors believed after a time it was possible to dispense with the greater part of the drapery. The single figure which we give, if compared with the relief, is evidence of a revolution in artistic thought. It will be observed that the legs are free from the *brace*, or breeks, which were supposed to be worn by Eastern races, and which in representations were employed to distinguish Greeks and Romans from other people. The arms are also bare. It might easily be imagined that the figure depicts one of DIANA'S nymphs who accompanied the goddess in hunting expeditions, but the peculiar light shield or pelta, and the helmet at foot, prove the girl was a warrior. We must also notice the strap for the spur across the instep of the left foot. The Amazons, like ancient masculine riders, did not need stirrups, and consequently the spur was placed on the foot which was not thrown over the horse's back in mounting, and thus injury was avoided.

It is sometimes difficult to say with precision in what kind of action an ancient figure is represented. For example, a statue of MERCURY appears to show with equal probability that he is engaged in taking off or putting on his winged sandal. In this case the Amazon was evidently occupied with her bow, but whether it was before or after use has caused discussion. Opinion, however, favours the conclusion that the warrior girl had ceased from combating; but as the hands have suffered from restoration it is possible that originally they were more suggestive of action.

The statue was formerly in the collection of the Villa Mattei, and was transported by CLEMENT XIV. to the Vatican. On the plinth is inscribed the words, "Translatæ de Schola Medicorum." It may be assumed that the statue was brought to the schola of the physicians from Greece.

According to PAUSANIAS and PLINY, the Temple of at Ephesus possessed at one time a large number of figures of Amazons. They were offerings which commemorated the shelter which was given to the luckless warriors in their battle with BACCHUS. One result was that emulatio was excited by a commission for an addition to the collection. At one time it was considered that the beautiful of the statues was one by POLYCLETUS. An Amazon by PHIDIAS was esteemed as holding a high place, and third was assigned to a figure by CTESIAS. Some critics hold that the "Mourning Amazon" in Rome, is likely to be a copy of the work by the sculptor.

It is remarkable in connection between ancient and modern times has been preserved by means of figures which must have appeared to be the products of imaginative legends. Gorgons, hydras, centaurs and the like have been always interesting, but little is known about the lives of the men, women and children of ancient Greece. The Amazons have been almost familiar, but we say much about the equal powers of Greek warriors. This has not been entirely disadvantageous. Wonder and admiration are admirable agents in keeping traditions. MAX MÜLLER asks why do the puerile and repulsive legends of the tribes rivet our attention and engage our thoughts? The reason he gives is that we want to know what man is worth, to know what man has done. Consequently it has been found that in a great number of myths there is conformity with our own thoughts, and it may happen that the repetition in various ways is fast becoming the characteristic of our time, and entirely unknown to the Greeks when they devised the stories of Amazons. The problem of the Weibliche in an age of

It is hardly worth considering the Amazon more than myths. In African wars female warriors are not unknown, but a difference between the element or a bodyguard and a nation of Amazons. Yet within the period of credible history was so to be written it was recorded that Amazon ALEXANDER THE GREAT. ARRIAN investigated the subject, and although

considered there was something incredible about the story, he was confident there was a race of Amazons. The writers of their region was supposed to be on the banks of the Caspian Sea. PLUTARCH relates that they fought with POMPEY.

In later times the traveller ALVAREZ, who visited America in 1520, speaks of a race of Amazons south of Darien. They were warlike, and fought with bows and arrows, and on bullocks. They were governed only by a queen. PETIT has written a long book to prove that the Amazons, in which all or most that is reported about them will be found collected.





## SCHOOL ARCHITECTURE.\*

Official reports in this country are rarely amusing.

One of the exceptions will be found in those of the Education Department. The inspectors of schools give acts occasionally from the literary exercises of the pupils. They suggest efforts to deal with subjects of which writers are ignorant. It would be well if the school in which the children studied was sometimes selected as a model to be treated. It is always useful to have the views of occupants of buildings, and the children's opinions at lead to improvements in planning. At present in all countries pupils are treated as if they were raw material to be subjected to a variety of processes. Their convenience is rarely considered.

In England the oldest schools were the so-called grammar schools. As in many places there was a connection between them and almshouses or other charities, there was no desire, unless in exceptional cases, to erect costly buildings. The income was often barely sufficient to pay instruction, and the schools were consequently allowed to fall into a poverty-stricken condition. But no matter how humble might be the buildings, there was no doubt sent out students who afterwards served the State in various ways. The success so often attained created a faith that the teacher was everything and the school itself of little importance. That, however, was a very ancient position, for the history of universities abounds in instances of great scholars holding forth in improvised lectures and of students coming long distances and braving many perils in order to receive the instruction.

About sixty years ago a couple of Chartists named J. J. and COLLINS, who were at the time imprisoned for their opinions in Warwick Gaol, were the first to propose the establishment of schools resembling the Board schools which now exist. They recommended the erection of day halls, at a cost of only 3,000*l.* each, in various parts of the kingdom. The halls were to be used during the day for infant, preparatory and day schools, in which the children should be educated on the most approved system, receiving physical, mental, moral and political instruction; and in the evening for public lectures on physical, moral and political science, for readings, discussions, musical entertainments, dancing and such other healthful and rational recreations as might serve to instruct and cheer the industrious classes after their hours of toil. The halls were to have two commodious playgrounds, and where possible a pleasure-garden attached to each; apartments for the teachers, rooms for hot and cold baths, for a little gymnasium, a laboratory and general workshop, where the children were to be taught experiments in science, as well as the first principles of the most useful trades. The small plan of building reveals the apprehension in which the scheme was put forth. The halls or schools were to be supplemented by circulating libraries, each to cost a few pounds. It was only a dream of two political economists, but it shows the difficulty at the beginning of the late QUEEN'S reign of setting up schools unless they were attached to churches or chapels. Thousands of Board schools day and evening instruction is available to an extent beyond the vision of Chartists.

When the Education Act came into operation there were a great many buildings in England which could be taken as models for imitation. This fact should be remembered in criticising the shortcomings of the early Board schools. Endowed schools consisted of large rooms, and the private schools were often small rooms in private houses. The two Chartists we have referred to do not imagine a public school in any other form than a school. According to the conservative instincts of Britons, the boards still keep up the tradition, although a considerable change is made to modern requirements by introducing movable partitions. We may say that one of the differences between English and other schools which strikes the eye when he first looks at the plans in Mr. WHEELWRIGHT'S book on "School Architecture" is that in English and foreign schools there is a more general sub-

division of area than is adopted in this country. The contrast is perhaps most remarkable, on account of the name, in the English High School, Cambridge, Mass. It possesses "forty-eight schoolrooms, twenty being on the first and second floors respectively, and eight on the third floor; twelve receive their light from the courts, the remaining thirty-six occupy the street fronts. The typical schoolroom of this building is intended for thirty-five pupils, but will accommodate forty or more, according to the mode of seating and the size of the pupils." In addition there are assembly halls, library-rooms and lecture-halls, drawing-rooms, &c.

Although much is said about English schools in Mr. WHEELWRIGHT'S volume, it is not likely that many of their peculiarities will be imitated in America. For instance, in the United States separate enclosures, or "wardrobes," for the children's clothing are provided for each classroom, but in England they are very rare. The Americans believe that large, general cloakrooms are not orderly, and there is loss of time in the use of one in common. Sanitary reasons are also against them. Instead of 140 cubic feet of air for each child, as in London, in the American primary schools there are 164 feet, and in the grammar schools over 200 cubic feet. Warmed playrooms form part of American schools, but are not adopted in England. It is, however, remarked by the author that "the plans of English schools, except in the location of the hall on the first floor, and in the arrangement of wardrobes, are tending to be similar to the types which have been developed in the United States."

The procedure for the designing of English schools has become so unlike ordinary practice, owing to the desire of the Boards to have their own way, it is rarely an unofficial architect can expect a commission. It is consequently not worth the trouble to consider what improvements have been attained in America or elsewhere. Yet the subject is interesting. In the United States evidently the influence of the old English type of one-storey school is not without effect, for Mr. WHEELWRIGHT has to point out that "the disadvantage of long flights of stairs for children to climb is one of imagination." It would be well to have that belief confirmed by children. In New York the exertion is of less account, for the use of elevators has extended to schools. The roofs of the buildings are also sometimes arranged as playgrounds, and a climb is rewarded. But with all the desire for education and the well-being of children, schools are sometimes used which would not be tolerated for a reformatory in England. The following is an instance:—

In one large Ohio city, where the authorities pride themselves upon the low cost of the schools, there is a building four storeys in height, with stud interior partitions, furred walls and no fire stops. No metal or brick ducts are provided for ventilation; the foul air is supposed to find its way through the hollow spaces in floors and walls to the space between the roof and the ceilings of the upper rooms, and from thence through ventilators to the outer air. A more imperfect system of ventilation and a more ingenious fire-trap could not well be devised. The rough surface of sawed lumber and the backs of plastered surfaces gave ready lodgment for dust, and the uncertainty of the direction of the air under such conditions gave no warrant that this dust was not breathed in by the occupants of the building.

Although labour and materials may be costly in America, the difference in outlay between a school which from its appearance will have a disagreeable effect on the minds of children and one of an opposite class is not excessive. Generally the increased cost may be taken at 5 per cent. In the most elaborate school designed by Mr. WHEELWRIGHT, the Brighton High School, Boston, which would not be out of place in Old Chelsea or Chiswick, the architectural features—and there are pilasters, arches, a deep cornice, &c.—increased the utilitarian expense by only 8 per cent.

The elementary schools of the United States are generally of two grades, viz. the primary, having sometimes a Kindergarten, and (2) grammar schools similar to our Board schools or the German Gemeindeschule. The primary classrooms are usually 24 feet by 32 feet, and the grammar classrooms 28 feet by 32 feet. Each is designed to accommodate fifty-six pupils. Latterly provision has been

*School Architecture.* A general treatise for the use of architects and engineers. By Edmund March Wheelwright, architect. With many illustrations. Boston: Rogers & Mansion.



made for manual training, cooking and sewing. One of the school inspectors recommends that all grammar schools should have rooms for those purposes. A great many examples of American schools are given. Externally there is less regard for the picturesque than in England, although Mr. SNYDER's New York school would not be out of place in any English town. Fire is an evil which has to be guarded against, and especially in New York, and that may be one of the causes of the plain exteriors. Skeleton construction is adopted in some schools for the sake of economy, and it does not lend itself to style:—

All New York schools are now of fireproof construction. The building law requires a thickness of bearing walls proportionate to window surface, so that it proves to be more economical to use steel skeleton frame than masonry construction in schools when of four storeys or more in height. Walls 16 inches thick are permissible when the steel construction is used, but 36 inches of thickness is required when the construction is of masonry only. The thinner wall is not only less expensive, but is an element to be considered in the securing of floor surface and in the lighting of the classrooms.

Sometimes the basement is utilised as a playground, but in New York there is a prejudice against the arrangement, and the first or ground floor is employed instead. The normal height of classrooms in New York is 14 feet 3½ inches. The classrooms are usually 32 feet in length, 24 feet wide and 12 feet or 13 feet in height for primary schools. Although the atmosphere is, as a rule, very clear in the United States, as may be judged by photographs, an American classroom that is 28 feet wide and 13 feet high is not adequately lighted if the windows are only on one side. The following comparison between American and European schools is drawn by Mr. WHEELWRIGHT:—

Relatively to other countries, in liberal areas and in the decorative treatment of playgrounds the American schools are deficient. In the United States, on the other hand, greater floor and cubical area for each pupil is given in the elementary classrooms than is found in those of any other country. Excepting, possibly, in the Swiss and in some of the later schools of Great Britain, an ampler supply of warmed fresh air and larger ducts for ventilation are provided in American schools than elsewhere. In the best of the American schools there is better provision for the disposal of outdoor clothing than is generally found, except in some Swiss examples and in the later schools of the principal cities in Scandinavian countries. There are better plumbing appliances in the American schools than are probably to be found in any country. The American schools have the further advantage of the most generous provision of individual desks for the pupils; they have blackboard surface for the use of the pupils—a very uncommon feature elsewhere. In one respect the schools of the United States suffer most noticeably in comparison with those of European countries where popular education has been developed: sufficient light is not provided for the classrooms, except in those on the corners of the building, and in these the light is not usually disposed in the best manner. This defect arises from the adoption in the grammar grades of the class of fifty-six pupils seated at single desks. It originates in what the writer believes to be mistaken economy in school administration. In Switzerland public education is not absolutely free, but the tuition charge is small; but in what may be called the grammar grades, a class seldom has more than forty pupils, and the width of classrooms is rarely in excess of 24 feet, while in the United States classes of fifty-six pupils and rooms 28 feet in width are usually required by school committees.

Secondary schools are comparatively modern. One at Boston, designed by Mr. G. A. CLOUGH in 1877, may be considered as the first of the class. In the Groton School, designed by Messrs. PEABODY & STEARNS, the central part, consisting of a hall measuring 80 feet 4 inches by 42 feet 4 inches, with two porches, is a single storey. It is not, however, a public school. The manual training schools would appear to be more in keeping with American tendencies; but, as in England, there are not many which have been especially erected. One late example is the Mechanic Arts High School in Boston, completed in 1900, of which Mr. WHEELWRIGHT is the architect. Judging by the illustrations this is an excellent type, and it is largely stocked with machines and tools. Woodworking, pattern-making, turning and smithwork are provided for. The photographs of the classes suggest that more attention is given during lessons and demonstrations than is common in English schools. But in England students know that

their chances of success are impeded by trades-union rules which no ability is able to overcome.

Mr. WHEELWRIGHT has had a wide experience designing schools, but he adds to it by deriving information from the works of other architects. He shows progress which has been made in France, Germany, Austria, Switzerland, Denmark, Sweden, Norway, as well as in England. The book is therefore a very valuable contribution to professional literature. The information was no doubt originally collected for the author's use, but it can be taken advantage of by others, and it will aid helping architects to deal with an important class of structures for which the demand must increase. If the modern epic does not relate to "Arms and the Man," but to "Tools and the Man," there must be places provided where the use of tools is taught at an early age. The Americans somehow know more than the English about the aid which tools can give, and hence they are gaining supremacy. They believe that "if you do not use tools, they use you," and in their schools, as in their workshops, they endeavour to attain the desired mastery which afterwards brings so much power.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS

A MEETING of the Institute of Architects was held on Monday evening last, Mr. W. Emerson, president, in the chair.

### The Royal Gold Medal.

The PRESIDENT said he had to announce the sad occurrence which had taken place in the history of the Institute. The Council some weeks ago nominated Mr. J. Bentley as the gold medallist of the year. On Saturday Mr. Bentley was seized with a paralytic stroke, and died the next day. Had it not been for that, he had not the slightest doubt that that day Mr. Bentley would have been elected gold medallist of this year. Under the circumstances, of course, the Council were placed in a peculiar position. The gold medal was the grant of the King, and they could not exactly say what the King's views would be in reference to awarding the medal to a gentleman who had passed away only the day before the election. Therefore the Council decided to let the matter stand over for a while, and to refer to His Majesty to know what his pleasure might be. Should His Majesty be willing to allow the medal to go to the family of Mr. Bentley in honour of the great work which he had done, his name would come up for election at the next meeting. Mr. Bentley at the time of his death was engaged on the Brooklyn Roman Catholic Cathedral, New York, a building in the Gothic style. He was also engaged on a new Roman Catholic Cathedral at Westminster, which was one of the members present had had an opportunity of visiting. He also built or was largely responsible for the decoration of the church of St. Mary's, Cadogan Street, Chelsea, and the church of the Holy Rood, Watford; St. Mark's, 1 Audley Street; the Roman Catholic Seminary at Hammersmith; the church of St. Francis, Notting Dale; and the church of Corpus Christi, Brighton. He restored churches in the City of London, notably the church of St. Botolph, Bishopsgate. They all knew his work perfectly well, and there was no architect of greater refinement or one who would be felt and deplored by all members of the architectural profession. He thought that although Mr. Bentley was a member of the Institute, yet as one of their great professed would be quite fitting for the Institute to send a letter of condolence to his family, and of acknowledgment of his great work as an architect. He moved a resolution to that effect, which was unanimously agreed to.

The decease of the following Associates was also announced:—Mr. W. Chastel de Boinville, elected 1882; Mr. Cuthbert, elected 1882, and Mr. T. Gordon, elected 1882.

Mr. C. H. Gage was elected as Associate.

### Photographic Records.

Sir BENJAMIN STONE, M.P., gave a brief account of work in connection with the National Photographic Society. He suggested that the preservation of records of buildings, laws and customs was desirable. The popular photography did not necessarily insure this, because there were many wasteful photographers who kept no register of the plates they possessed. He was glad to say a number of selections were being made in various parts of the country, and these would be kept in the country towns.

### Smoke Abatement.

Sir WILLIAM RICHMOND, R.A., then addressed the meeting. He said he would like first to offer his thanks to the Institute.



very generous subscription they had given towards the motion of the work of the Cretan Exploration Society. As honorary treasurer of that Society it was proper for him to turn thanks. He hoped the generous contribution which the Institute had made towards the excavation of one of the most historically interesting discoveries in our time would be an incitement to other bodies, and that they would subscribe in the same way. Dealing with smoke abatement he said that the question was one of the greatest importance in the interests of health as well as of the beauty of our cities. The architects by the very reason of their far-reaching influence as constructors were the men before all others who could help to make cleaner cities. They must all be aware of the irreparable damage done to works of art and architecture by smoke. They had all heard of the damage done to the national garden at Kew by the smoke belched forth from factories in the vicinity. The Institute could give moral support to the city's cause. What had to be provided was a smokeless city, and then all architects should feel themselves bound to insist upon their clients adopting the best possible method of its attainment. In blocks of buildings for the use of the poorer portion of the community hot air might surely be laid on from one heat-generating station, and the houses should be encouraged to cook by gas fires. Although as architects had no more power than anyone else to dictate to the poor how they should live, they had the power to suggest to the county councils, parish councils and others who promoted large workmen's dwellings that heat could be distributed throughout buildings just as gas or water could be. He was quite sure that everyone present as much in earnest as he was, and as the members of the Smoke Abatement Society were, in the desire to protect works of art from destruction, to promote the cause of health and life, and consequently of happiness, and to do individually as well as collectively what lay in their power to make the city they all lived in so well more beautiful and more desirable as a place of habitation for the poor as well as for the rich.

Mr. W. B. RICHMOND then moved the following resolution:—That in view of a resolution of the Smoke Abatement Society recommending the co-operation of the Institute, members are invited in the Society, or that such other assistance be given by the Institute as the Council may deem desirable."

Mr. JOHN SLATER seconded the resolution. He said that the nuisance as evident to Londoners was not caused by many chimneys so much as by the ordinary house grates.

Professor CHURCH, in support of the resolution, described the chemical properties of fog, smoke and the London atmosphere.

Mr. VÉUX, Mr. W. D. CARÖE, Dr. WYLD and Mr. J. B. BETT supported the motion.

The PRESIDENT, in returning thanks to Sir Benjamin Harrison and Sir William Richmond, said the Institute were glad to assist the efforts of the Smoke Abatement Society. The matter would be brought to the notice of the members. The resolution was carried unanimously.

There was on exhibition about 100 photographs of architectural work in the British Isles, forming part of the collections of the National Photographic Record Society prior to their depositing in the British Museum.

## EDINBURGH ARCHITECTURAL ASSOCIATION.

At a meeting of the Edinburgh Architectural Association, held on the 26th ult. in the rooms, 117 George Street—Mr. Stuart Syme presiding—Mr. Robert F. Sherar (of Mr. L. Henderson's staff) read a paper on "Linear Perspective Illustrated by Photography." Mr. Sherar condemned the confusion of ideas expressed by the ambiguous term "picture" and discussed some of the questions arising from this confusion. He described the elementary conditions on which perspective depended, and distinguished between the perspective appearance of objects as we see them and the perspective as we draw them on paper. He showed two photographs of the same building from the same spot—the one on the right-hand side of the photographic plate and the other on the left-hand side—which were quite different in the perspective and explained that they were both equally correct records of perspective appearance as we saw it, but records only. He pointed out the rule that the perspective appearance depended on the position of the spectator, and on this only; and that the perspective image depended on the surface on which it delineated, whether it was a picture plane, vertical or horizontal, or a picture curved as a panorama, &c. In dealing with the distance which a spectator should be from the object in order to produce an agreeable result, he showed three photographs of the east end of Princes Street, showing the Calton Hill in the distance, and said he had often heard it said that photography did not give correct perspective, hills, &c., always coming out too small. The first

photograph above referred to showed the Calton Hill about a quarter of the height of the buildings, the second showed it the same height, and the third showed it twice the height. This, he said, all depended on the distance the spectator or photographer was from the objects to be represented. The choice of this distance, he said, was one of the most important preliminaries of picture-making, whether by photography or other means. No rule could be laid down, except in a general way, in order to guide the artist, the conditions varying so much in each individual case. He laid great stress, however, on the fact that these conditions should be thoroughly understood, and said they were the very things that were not clearly defined in modern books on perspective. The lecture was illustrated by original photographs, diagrams and illustrations of drawings.

## THE NATIONAL GALLERY.

AN altar-piece by Jacopo Pacchiarotto, of the Sienese school, has been purchased for the National Gallery, and is placed in room No. II, in the gallery in Trafalgar Square. The central picture represents the Nativity, with attendant saints; on the frame are six small figures in niche-shaped panels, and below is a predella with five subjects from the Passion of Our Lord.

Mr. Arthur H. Kay, of Glasgow, has presented to the National Gallery a small picture of the interior of a church in Holland by Pieter Saenredam, now hanging in the Exhibition of Old Masters at the Royal Academy. This painter's works are very rare.

The portrait of Baron de Linter of Namur, by Jacob Jordaens, also now in the Exhibition of Old Masters, has been purchased for the National Gallery. None of these three masters has hitherto been represented in the National Collection.

Mr. W. Sandby, of Windsor, has presented to the National Gallery four water-colour drawings by Paul Sandby, and one by Thomas Sandby, all representing architectural subjects. They are hung in the Tate Gallery at Millbank.

## THE MANCHESTER BUILDING BY-LAWS.

THE improvement and buildings committee of the City Council recommend for adoption the new building by-laws which were at the last meeting of the Council sent back to the committee for further consideration. The committee have resolved unanimously, "That the Council be again recommended to make the amended by-laws, which have been formulated and approved in draft by the Local Government Board." In a report on the matter the deputy town clerk states that "the desirability of amending some of the existing by-laws first received consideration by the improvement and buildings committee in April 1897. The amendments had reference to the thickness of walls of domestic buildings; and especially of party walls, the construction of flues, the regulation of roof battens, the adaptation of the dimensions of timbers in common use by builders, provision for ceiling joists, the repeal from the by-law as to open spaces in front of houses with an exception in favour of plans approved before June 22, 1890, which became obsolete in 1893 by reason of the enactment of section 19 of the Manchester Corporation Act, 1891, limiting the operation of approvals to a period of two years; amendment of the by-law respecting down spouts so as to prevent their direct communication with drains; better provision as to ventilation of house drains; better and more complete provision as to the size and ventilation of soil pipes; and an amendment of the by-law relating to plans and sections so as to require them to be prepared in a permanent manner and upon durable material. The amendments have, ever since April 1897, been under the consideration of the improvement and buildings committee, and they have been submitted to and approved by the sanitary committee, the Manchester Society of Architects and the Local Government Board, with whom many conferences and much correspondence have taken place." He further points out "the great desirability of permitting the new by-laws to be brought into operation as early as practicable, having regard to the fact that the committee (contrary to his frequently expressed opinion) have been sanctioning plans in accordance with such amendments."

The London School Board have agreed to raise the maximum salary of the principal clerk of the Works Department from 500*l.* to 600*l.*, that of the assistant architect for buildings and of the assistant architect for repairs from 400*l.* to 450*l.*, and that of the assistant to the measuring surveyor from 300*l.* to 360*l.*, by increments of 15*l.* per annum.



## NOTES AND COMMENTS.

THE interest of the Louvre has now been enhanced by the opening of the rooms which are assigned to the collection of goldsmiths' work bequeathed by the late M. ADOLPHE DE ROTHSCHILD, a collection of drawings by great masters and a collection of pastels. In the first-named is a triptych of immense value from the Abbey of Floreffe, and attractive as a fine example of Flemish art of the thirteenth century. There are also reliquaries, crosses and various ecclesiastical ornaments. A bas-relief in marble of exquisite execution is by AGOSTINO DI DUCCIO, and represents the Madonna and Child. Among the original drawings are examples of DA VINCI, RAPHAEL, MICHEL ANGELO, CORREGGIO, ANDREA DEL SARTO and others. In the Flemish collection is a splendid design by RUBENS. REMBRANDT and other Dutch artists are also represented. Among the pastels those by LA TOUR are perhaps the most prominent. The rooms have been decorated in order to increase the effect, and a great improvement has been effected, for which visitors will be thankful.

FOR some years past Bristol has not presented as many signs of improvement as are generally found in flourishing English towns. If a stranger inquired why the streets were not cleaner it would be sure to be answered that so much money was required at Avonmouth there was nothing left for scavenging. Bristol at one time possessed a monopoly of the imports and exports for the West of England. But younger rivals have arisen, and Bristol has been compelled to succumb to them. It is only by providing superior accommodation for vessels that the old trade has a chance of coming back to the city. In consequence of that necessity the works of the new dock at Dunball Island were started by the Prince of WALES on Wednesday. As the contract has been taken by Sir JOHN AIRD & SONS it is sure to be efficiently carried out. A return of trade would mean more expenditure on the city. Bristol must formerly have been one of the most charming places in England, and no architect can walk through the streets at the present time without feeling how easy it would be to make of Bristol a city that could not fail to be admired and remembered. If the port once more becomes prosperous that end may be attained, for many of the old buildings are lessons in picturesque architecture.

MANY people are willing to agree about the duty of aiding the poor, and especially in obtaining for them convenient dwellings. But abstract propositions and doctrines impose unexpected sacrifices when an attempt is made to put them into practice. A seaside hospital, for example, may be most desirable, but the majority of visitors to a watering-place would not care to encounter the patients every day. This may appear to be selfish conduct, but human nature must be taken as it is, and generous sentiments do not always tally with actions. Ninety-nine out of every hundred people would object if they found that a hospital, or refuge, or benevolent institution were set up opposite their dwelling-houses, and more especially if they were not able to abandon them without suffering loss. The action WRIGHT v. BERRY, which came before Mr. Justice BYRNE on Saturday, will therefore cause some alarm among the purchasers of building plots. An estate was sold at Ealing in 1899 which consisted of 133 large choice plots for private residences. One of the conditions was that "no building of any kind other than a detached or semi-detached house with appropriate offices and outbuildings to be appurtenant thereto or occupied therewith shall be erected on any plot." The plaintiff purchased four plots and on them erected four private dwelling-houses. Two plots immediately opposite were purchased by the defendants, and after a time a notice-board was put up stating that the ground was to be used as a site for a home for poor people, and subscriptions were implored. Some correspondence followed, and eventually it was announced that what was to be erected was a set of self-contained living-rooms to accommodate about fourteen families. The plaintiff was of opinion that his property would be diminished in value by at least 30 per cent., and sought for an injunction to prevent the construction of the buildings. The view taken by the judge was that the buildings which the defendant proposed

to erect were an ordinary eight-roomed house on each plot and it seemed to his Lordship as if the architect designed the buildings in such a way that they could be used at any time as private dwelling-houses. It was proposed user of the buildings that the plaintiff objected to, but that was not mentioned in the motion, and no grievance is only one example among many which arise whenever building estates are laid out. Vendors are eager to sell, especially to the first-comers, in order that the money may not appear to be a failure. The only remedy is either to have stringent building regulations which can be broken unless under a penalty, or for a purchaser to select neighbouring plots which might be used to his disadvantage and to resell them.

AN effort is being made in New York to restrict the number of architects to whom commissions can be given for any kind of municipal buildings. A Bill has been introduced in the Assembly, the character of which can be inferred from the following sections:—"On or before June 1, 1902, the Mayor of the city of New York shall select a list of not less than 100 architects to be proposed to by the Fine Arts Federation of New York, not later than May 1, 1902, at least fifty architects who, in his judgment, are qualified to be entrusted with the design and with the supervision of construction, repair and alteration of public buildings in the said city, and the names of the architects so selected by the Mayor shall be placed on a list to be known as 'The Eligible List of Architects for Municipal Work.' The name of any architect may be removed from the list by the Mayor whenever in his judgment the public interests shall so require. Nothing in this Act shall be construed to prevent the proposal by the Fine Arts Federation of New York for the said eligible list, or the selection by the Mayor, of architects not resident in the city of New York. On or before June 1, 1903, and on or before June 1 in each successive year thereafter, the Mayor may select not more than five architects from a list of not less than fifteen architects to be proposed to him by the Fine Arts Federation of New York on or before May 1 of each year, and may cause their names to be placed on the aforesaid eligible list, until the number of names on the eligible list, exclusive of vacancies arising from death, resignation or removal, shall amount to 100." We assume that the Bill aims at the removal of some architects who have been receiving municipal commissions, as well as the appointment of their successors. It originated with the New York Chapter of the American Institute of Architects and has been endorsed by the Fine Arts Federation.

## ILLUSTRATIONS.

THE LATE JOHN FRANCIS BENTLEY, ARCHITECT OF WESTMINSTER CATHEDRAL, &c.

CATHEDRAL SERIES.—RIPON: THE THREE STONE SEDGECOMBE HOUSE, FAR HEADINGLEY, LEEDS: STAIRCASE. CORNER OF

PAIR OF COTTAGES AT WOODCHURCH, CHESHIRE.

ST. MARY, NEWINGTON, CORONER'S COURT.

THIS court was built on a very irregular site at the corner of a roadway leading out of Manor Walworth Road. The court is about 34 feet long, 12 feet wide, and is lighted from an octagonal lantern, the top of which is 26 feet above the floor. There is a gallery for the public at one end of the court, reached by a flight of stone steps. The seats and tables for the coroner, jurymen and reporters are of oak, the floor is of wood blocks. The mortuary chambers have plate glass next the passage to the jury, the walls are lined with glazed bricks, and the roof is of asphalt. The external walls are faced with bricks, with box-ground Bath stone dressings.

The builders were Messrs. BURMAN & SON, 10, Kennington Park. The architect is Mr. HENRY JAMES.

ALL SAINTS, WEST BROMWICH.

THE carver of the organ-case and stalls was Mr. ADVENT HUNSTONE. The mosaic floor was by Messrs. BURKE & CO.



## CELTIC GOLD ORNAMENTS.

LEGAL and antiquarian circles are beginning to stir themselves, says the *Irish Times*, over the probable outcome of the approaching action which is to be heard in the London Courts, and in which the law officers of the Crown, on the one hand, and the authorities of the British Museum on the other, are the chief litigants. It is anticipated that the case will come on for hearing some time about Easter. Ireland will have an especial interest in the proceedings, inasmuch as the question to be settled is whether a number of old Celtic ornaments now lying in the British Museum shall remain where they are, or shall be transferred to the keeping of the Royal Irish Academy in Dublin. Up to now there is no precedent for the conflict of this kind between the Crown and the British Museum authorities. It may be said that in the long and involved controversy as to who should retain possession of this valuable collection of Celtic ornaments, valuable both from an antiquarian and a financial standpoint, the ruling powers of the British Museum have shown a tenacity and an ingenuity worthy of a better cause. In view of the general public interest which the case is sure to awaken, it will not be out of place to show how the dispute at present stands. Early in 1897, a farm labourer, ploughing the lands of Mr. Joseph Gibson, in the neighbourhood of Limavady, in the North of Ireland, turned up a number of curious old objects, which on subsequent secret examination proved to be (1) a hollow collar in two sections, with elaborate repoussé ornament of eccentric designs; (2) a model boat with eight thwarts (originally nine), a number of oars, spars, &c.; (3) a hemispherical bowl of metal, with four rings at the edges for suspension; (4) a torc of stout wire, with a thinner wire twisted round it; (5) a half of a similar torc; (6) a necklace formed of three twisted chains, with a peculiar fastening; and (7) a thin, single necklace of the same plaiting. After passing through the hands of Mr. Gribben, a jeweller, of Belfast, and Mr. Day, collector of antiquities and a Fellow of the Society of Antiquaries of London, the British Museum authorities, in the autumn of 1897, purchased the collection for 600*l*. In the course of a paper read by Mr. A. J. Evans, keeper of the Ashmolean Museum, Oxford, the following opinion was given as to the discovered character of the articles:—"There is at least no question as to the indigenous Celtic character of the most important relic contained in the Irish hoard. The hollow gold collar, with its bold repoussé designs, is undoubtedly an ancient Irish fabric, and is at the same time the finest example existing of this class of work." In due course, when the real nature of the "find" on Mr. Gibson's farm came to the knowledge of the Irish members of Parliament, and to the authorities of the Royal Irish Academy, a resolution was made that the ornaments were treasure trove, and, as such, should at once be surrendered to the Royal Irish Academy, as the legal guardian of all treasure trove found in Ireland. To this contention the British Museum replied that, the ornaments having been bought in the open market they would not be given up, and that the statutes governing the British Museum explicitly forbade the Museum authorities parting with such possessions, even if they so minded. At this point several discussions took place in the House of Commons, in the course of which it was made plain that both Mr. Balfour and the Attorney-General for Ireland were in sympathy with the claims of the Royal Irish Academy. There was no escape, however, from the fact that the only direct way of compelling the British Museum to give up possession of the articles in dispute was to pass a Bill through Parliament. An enabling Bill was consequently introduced by Mr. William Redmond, but as it was systematically "blocked" by the friends of the British Museum it never stood a chance of becoming law. The next step taken was the appointment by the Government of a special committee in 1899 to examine the whole question. Of this committee Lord Rathmore was chairman, and the membership included Mr. John Morley, Sir John Lubbock, Sir Herbert Maxwell, Sir John Evans and Sir Thomas Esmonde, the last of whom has been a most persistent advocate of the justice of giving these antiquities in Dublin. The report of this committee, taken as a whole, was unquestionably in favour of the claims of the Royal Irish Academy. Still, however, the British Museum stood firm, and its authorities now added a further defence to the one originally put forward, that the ancient and fast lines of their statutes bound their hands and prevented them from allowing anything which they had acquired legally from leaving their custody. The new defence advanced was that the charter issued by Charles I. to the London companies of Ulster gave the right to all treasure trove found within their jurisdiction to these London companies, and as one of these companies, the Royal Irish Academy, acquiesced in the claim of the British Museum, nothing further was to be said. Sir Thomas Esmonde thereupon carefully examined the charter in question, and found that there was no mention of any concession of treasure trove in it, and that nowhere in it did the Crown give

away its rights. A new phase of the struggle was entered on at this discovery. The Irish law officers now came to closer quarters with the holders of the ornaments. They announced that having gone fully into the case they had come to the conclusion that the right to treasure trove in these antiquities vested in the Royal Irish Academy, and they summoned the British Museum people to surrender them at once. Whereupon these tough antagonists retorted that the ornaments, over which the whole fight was being waged, were neither treasure trove nor even Irish. This interposed fresh delay. Finally the Irish law officers, losing all further patience, served legal notice on the Museum authorities to hand over their purchases to the Royal Irish Academy. An additional curt refusal came to hand, with a notification that the Museum would defend its position in the law courts. So the case now stands, the law officers halting for the moment to enable the authorities of the British Museum to file their defence. It is assumed, as I have said, that the actual proceedings in the courts will be reached by Easter.

On Monday, in the House of Commons, Sir T. Esmonde asked the Chancellor of the Exchequer whether he could say out of what fund the legal expenses of the British Museum in the case for the recovery of the Irish gold ornaments were being defrayed; and, in view of the fact that the Irish and the English law officers of the Crown were unanimous in the opinion that these ornaments were illegally retained by the British Museum, and that a demand had been addressed by the Crown to the British Museum to deliver up these ornaments, whether he would see that the legal expenses of the British Museum in connection with the case were not paid out of the public funds.—The Chancellor of the Exchequer in reply said: I understand that the trustees of the British Museum are advised that they have no legal right to give up these ornaments, and that, therefore, they feel they cannot do so without the decision of a Court. In order that the case may be properly placed before the Court it is necessary that some legal expenses should be incurred on behalf of the trustees, which could not properly be charged on the ordinary votes by which the Museum is supported, nor could they be asked to pay such expenses themselves, as, even assuming them to be wrong, they are only acting to the best of their judgment in their official capacity. Their expenses will, therefore, be paid from the vote for law charges.—Sir T. Esmonde also asked the Chancellor of the Exchequer whether he could state when the trial between the Treasury and the British Museum for the recovery of the Irish gold ornaments would take place.—The Chancellor of the Exchequer said he understood that the time given by the Court for the delivery of the defence expired on the 8th inst. It was not possible to state in advance the exact date on which the trial will take place.

## SCOTTISH ART IN THE TURIN EXHIBITION.

AN International Exhibition of Modern Decorative Art is to be held this year in Turin, from April till November. The project, which has received the patronage of the King of Italy, is under the presidency of the Duke of Aosta. A large guarantee fund has been collected by contributions from Turin and from the neighbouring towns, aided by the generosity of the aristocracy and commercial men of the district. The committee is composed of two sections, one artistic, the other administrative. An imposing and extensive building has been erected to house the various exhibits, and every European nation is to be represented. The building has been divided into sections, and these sections have been allocated among the different exhibiting nations. The majority of the continental nations who are contributing have received subsidies from their respective Governments, and this State aid has enabled certain countries to erect and decorate particular buildings and pavilions. Notably has this been done by France, Belgium and Austria. Special sections have been given to England and to Scotland, and to these two countries a sum of money has been respectively voted by the Council of the Exhibition in Turin. In England the delegate appointed is Mr. Walter Crane, who has been assisted in the secretarial duties by Dr. Maris Borsa. Acting under Mr. Crane's direction, the work to be sent from England has been practically confined to that produced by members of the Arts and Crafts Exhibition Society, and most of the better art workers have contributed specimens of their craft. A member of the Executive Council from Turin visited Glasgow in September last, says the *Glasgow Herald*, and Mr. Francis Newbery was appointed delegate for Scotland to collect and select work. Dr. Fernando Agnoletti was associated with him as secretary, and the winter has been spent in obtaining from Scottish art workers the best that was obtainable by their efforts. A scheme of decoration for the Scottish section has been drawn out by Mr. Charles R. Mackintosh, and this scheme is in active progress in Turin. A 7 feet dado of gold and purple goes round the walls of the section the upper



part of the walls and the roof being coloured white. The entire space is broken at intervals by pierced decorative wooden constructions, through which a brightly-coloured stencil is seen. The electric lighting has received special attention in its arrangement, and the decoration of the whole section is to be in itself of the nature of an exhibit, the aim being that the spectator shall on his entrance be at once struck with the treatment. To Mr. Mackintosh and Mrs. Macdonald Mackintosh a space has been reserved, which they are to fill with their exhibits, and the same has been done in the case of the artists, Mr. Herbert M'Nair and Mrs. M'Nair. Mr. James Salmon and Mr. J. Gaff Gillespie take charge of another portion of the section, while yet a fourth space is to be reserved for embroideries and needlework, in which will be seen the work of Mrs. Traquair, Miss Ann Macbeth (medallist at the last "Studio" Exhibition), Miss Beveridge and Mrs. Newbery. Articles of furniture will be grouped at differing spaces along the walls of the section, and cases filled with bookbindings, enamels, metalwork, glass and small "objets d'art" are to be placed in the centre of the floor. Among the enamellists sending work are the names of J. Cromer Watt, of Aberdeen, and Miss Dewar and Miss Harvey, of Glasgow. About a dozen pieces of brightly-coloured pottery are to be spotted over the section. These latter are to be executed and exhibited by Mr. Arnold Fleming. Treatments of ornamental leadwork are to be in the windows, and a section of a carpet from a design by Mrs. Newbery is being executed for the section by the firm of Alexander Morton & Co., of Darvel. The official opening has been fixed for April 26, and probably one or more artists will be deputed to proceed to Turin to arrange the Scottish section.

#### SUBURBAN HOUSES OF NEW YORK.

AT the present time the landowners who are developing under careful restrictions the pleasantest suburbs near New York, says the *Architectural Record*, rarely sell plots which are less than an acre, and while such plots are available only for relatively well-to-do people, it is after all only the relatively well-to-do who, under present conditions, count at all in the process of architectural improvement. As the popular taste for the proprieties of suburban architecture becomes more refined, the size of the average plot upon which the suburban house is built will most assuredly increase, and the tendency will be accelerated by the constantly larger and consequently cheaper amounts of land which will be opened up by improved methods of communication.

The larger building plot would enable the architect to situate the buildings very much further back from the street; it would give him a chance to provide an effective approach, a proper grouping of trees and foliage, a good distribution of spaces, and, in general, a plan for the grounds which was convenient, logical and appropriate. The house would become more of a country house, with a definite place in the landscape, and an arrangement of the grounds which would give its owner a chance by their cultivation and development to take more than a languid or sentimental interest in the soil. At present this is undoubtedly the crudest aspect of American suburban architecture. One sees many suburban houses which must be and are extremely comfortable places in which to live. One sees fewer, but still a good many suburban houses, in which an intelligent attempt has been made to draw an appropriate and well-proportioned façade; but it is a very rare thing to come across a suburban place, no matter how large, in which the grounds have been treated with any kindness or any feeling for landscape architectural effects. A privet hedge outlining the property, a few shrubs scattered promiscuously about, a tree here and there where it has happened to grow, a hydrangea or a bunch of geranium in the midst of the lawn—that is, as a rule, as much landscape gardening or architecture as the ordinary suburban resident needs, and when he seeks for more the result is so flagrant that one inevitably regrets that he had not remained content with less.

This deficiency in the ordinary American suburban and country house is due to the failure of the average American to make any adequate provision for the treatment of his grounds in relation to his house, and the consequent inexperience and lack of training of suburban architects in this class of work. But conditions are likely to improve in this as well as in other respects. Although very few actual results of the demand have as yet been produced, there is a manifestly increasing interest in the appropriate treatment of the grounds; and it is to be expected that in time this interest will have a wholesome and pervasive effect upon all the better grades of suburban architecture. In that event the good suburb will cease to become the commonplace and dreary thing which it now so often is, but the precise forms which the change will take are not easy to predict. In the better American suburbs of the

present time the effect which, by the natural process of tradition, both owner and architect have sought to attain something like that of a New England country town. The streets are lined with two or four rows of elms or maples, the house is separated from the street by a considerable strip of lawn, but no attempt is, as a rule, made to obtain actual privacy, and the walls which so frequently shut off the grounds of the house from the street in a foreign suburb are rarely if ever seen. It is improbable that American neighbourliness will ever consent to the complete separation both from the passers-by and each other which the suburban resident likes; but as the desire for a more formal and architectural treatment of the grounds becomes stronger, it is probable that screens, both of brick and foliage, will be more freely used than at present. The use of such screens have at least one good result. The American suburban resident of the present day not only likes to expose himself and his family to public view, but he has a much less commendable want of reticence about some of his domestic arrangements, such, for instance, as the drying of his laundry—which are either interesting or seemingly objects of public inspection, one of the first reforms of suburban architecture will most assuredly be the more general erection of some effective barrier, behind which the household can dry its linen.

We have already indicated the point of view from which in the past the American suburban house has been so frequently and most flagrantly open to criticism, and that it has not been, architecturally speaking, a country house at all. The one characteristic which should distinguish rural architecture is that of possessing some organic and necessary relation to the land on which it is situated and the landscape by which it is surrounded. This appearance of composing unobtrusively and effectively with their site surroundings has been obtained in rural buildings by various methods. In some of the French country architecture and that of the Italian villas it was obtained by low, simple outlines and masses which fitted the structure snug and close to the land on which it was built. On the other hand, in the English country houses a building which structurally was very well adjusted to its site was given an equally appropriate effect by means of the planting and treatment of the land in which it was, as it were, built up and worked over until it presented a most picturesque, attractive and eminently habitable appearance. The very same thing was frequently done in former times in this country, and the better American architecture in the Colonial period, whatever its defects, was eminently suited to the country in which it was built and the uses to which it was put. But more recently the American country, and particularly the suburban house, has not been informed by any proper feeling as to the kind of building which fitted the land, and the country house will improve just in proportion as this feeling is renewed among suburban architects and their clients.

From 1885 until 1895 the great majority of suburban houses were built in what was known as the Queen Anne style. Surely no style was ever invented which lent itself more to freakish and meaningless eccentricities which are as utterly out of place in rural as they are in every other kind of architecture. A Queen Anne cottage was at best a prettified boudoir building, which in its design was a collection of incongruous and in its effect gave the impression of something put upon the land instead of something growing logically out of it. And the detail was as incongruous and meaningless as the masses and outlines. On the inside the better grade of houses were extremely comfortable, and this fact showed both their designers and owners had most at heart in draught and approving the plans. The outside practically took care of itself, except so far as the piazza was concerned, for the average American's idea of a country or suburban place was a place in which he could sit on a "piazza" and, while reading the Sunday newspaper, "look at the view." The piazza itself was as a rule an appendage which absolutely contradicted a logical and appropriate design. No one will dispute the fact that in the summer climate of America a veranda of some kind is an absolute necessity; but the conception of making a suburban house practically nothing but a comfortable interior and a spacious piazza could have originated only among people whose interest in the country was most external, official and occasional. It is only people who rarely go off to the piazza who could sacrifice the whole building to such an extension into the open air of the interior of the house.

Since 1895 there has been a marked tendency toward improvement in the design of the better class of suburban houses. By the better class of suburban houses we do not mean those that are built by exceptionally wealthy men, but plans by well-known city architects; we mean the suburban house which costs somewhere between 8,000 dollars and 15,000 dollars, and which is as a rule designed either by local architects or perhaps some local builder. As a rule they are not cocked up capriciously in the air, but take their place naturally and smoothly upon the ground. The piazza is



frequently the chief external feature. While it is still in cases unduly prominent, it is either much better managed or design is frankly adapted to it. The roofs are for the part pitched lower, and the outline is not broken by a part of meaningless and fussy gables. The whole design is to be decidedly simpler and more logical, and whatever mental detail there is, is better managed. The buildings in for the most part commonplace, and they are likely to be as successful where they are most original. They indicate rather the prevalence of a better general tradition than training and taste on the part of their individual makers. Several good types of design and material have been introduced by well-known architects, and these types are little more than leavening the whole mass. For Americans are the quick imitative people in the world; and when their civility has a standard to copy which makes an appeal to a sense of excellence, good effects follow with astonishing rapidity.

Generally speaking, it may be said that the designs indicate certain tendencies. In the first place, there is the tendency to rate within bounds of taste and decorum the peculiarities of the Queen Anne cottage. Gables are cut out, the roofs are less inclined and a coherent, modest and decent tendency tends to emerge. More distinctive and dignified effects are, however, obtained by the much more frequent use of colonial forms. The Colonial house had the immense advantage of being a country house of moderate height and good proportions, built by people who lived and not merely slept in the country, and its increased adaptation to modern uses, of which there are many signs, can be productive of nothing but good. Naturally, it is natural that the Elizabethan timbered house should begin to be more extensively used, for it always appeals to people whose taste in architecture is for the quaint and picturesque. Its danger always is the sacrifice of simplicity for good proportions to mere picturesque charm; and it needs softening and moderation of a much more elaborate and dignified treatment of the surrounding land than it has yet received in this country.

That the suburban architect should then try to obtain, in the first place, a good general lay-out of the suburb in which he is interested, the division of the land into plots large enough to give individual surroundings to each particular building, and an architectural treatment of this plot which seems to create an agreeable relation between just that site and just that building. The best that can be said for contemporary suburban architecture is that in individual and selected cases one finds a better plan, larger plots and more seemly buildings; but in general has full architectural advantage been taken of these improved conditions. While architects and owners are feeling their way in the right direction the process of improvement is in its earliest stages.

### THE ORDNANCE SURVEY.

WHEN the Ordnance Survey was first undertaken in 1784, it was merely intended to produce a military map of the southern counties of the kingdom. As the work advanced it fell into general favour as a road map, a travelling map, a map and general geographical map. In 1824 Lord Angle and the Irish members of Parliament came to the conclusion that it would be advisable, in the adaptation of the Ordnance survey to Ireland, to secure some further social advantages, and especially to make it subservient to the proper assessment and collection of the grand jury cess and other taxes in that part of the kingdom. A committee of the House of Commons sat in 1824, which recommended a town-land survey of Ireland on a scale of 6 inches to a mile. That was accordingly adopted. When a portion of Ireland had been completed, the Government was further induced to complete the details of the survey from the boundaries of town-lands to the subdivisions of fields.

In 1840 all England, with the exception of the six northern counties, had been surveyed on the scale of 2 inches, and had been engraved on the scale of 1 inch to a mile, and a portion of Scotland had been previously surveyed on a similar scale.

The survey of Scotland was suspended in 1828, in order that the survey of Ireland might be proceeded with. Previously to that suspension the county of Wigton and one-half of the counties of Ayrshire and Kirkcudbright had been surveyed and drawn for the 1-inch scale, and on the completion of the survey of Ireland in 1840 the survey of Scotland was resumed on the 6-inch scale, which had been found of such great value in the survey of Ireland. Thus the work which had been previously done on the 1-inch scale was thrown away, and the distinction between the peculiar advantages of a 6-inch survey, applicable to the townlands of Ireland in comparison with the larger territorial divisions of Great Britain, was not at that time sufficiently taken into consideration. The survey was

proceeded with in the three counties of Wigton, Kirkcudbright and Edinburgh, which were accordingly mapped and engraved by the Ordnance on the 6-inch scale.

The next step of importance was Lord Elcho's committee on the Scotch survey, which sat in 1851. The state of the case as regards Scotland then was that a 6-inch map had been resolved upon, but no 1-inch map. The question before the committee was simply whether they would have a 6-inch map or a 1-inch map. An alternative between those two maps was the only question proposed to them, and they pronounced in favour of the 1-inch map, on the ground that it was better adapted to geographical purposes, and that the 6-inch map alone was not of sufficient public utility to justify the large expenditure of public money that was required. The committee also appears to have acted under a general impression that by dispensing with the 6-inch scale the 1-inch scale would be more speedily proceeded with.

Orders were given by the Treasury and Ordnance in conformity with the report of that committee. Lancashire, Yorkshire, Kirkcudbrightshire and Edinburghshire, being nearly finished, were ordered to be completed on the 6-inch scale, and the remaining four counties of England and the rest of Scotland were to be done on the 1-inch scale.

These instructions produced the greatest dissatisfaction in Scotland and in the unsurveyed portion of England.

Consequently, in 1852 and 1853, numerous representations were received from commissioners of supply, Royal burghs and various bodies in Scotland, and from the magistrates and others connected with the colliery and mining interests in the North of England, the object of which was to induce the Treasury to rescind the orders which had been given in accordance with the recommendation of the committee of 1851 in favour of the 6-inch scale. Some of these memorials were referred to the Board of Ordnance by the Treasury in June 1852, and a determination was come to by those departments that the survey of Fife, which was at that time going on, should be conducted on the 6-inch scale, and that the question of the scale as to the rest of the country should be reserved for future consideration. Meanwhile the desirableness of an increased scale was much discussed by professional persons, and a more mature knowledge of the subject was arrived at.

In February 1853 Lord Elcho drew up a very able memorandum on the survey which, with numerous letters on the subject, was transmitted, with the Treasury circular letter of April 16, 1853, to a large number of the most experienced and scientific societies and persons in the kingdom, requesting them to state their opinion on the comparative merits of a 6-inch as contrasted against any larger scale for the purposes of a national survey, it being understood that the inch scale would under any circumstances be proceeded with. The replies were as follow:—In favour of the scale of 6 inches, 32; in favour of a larger scale, 120. The weight of authority being in favour of a larger scale, a second circular was addressed to the same parties, requesting them to state what scale they would recommend.

These replies were, by a Treasury minute, dated June 13, 1854, submitted to Sir John Burgoyne, Mr. Blamire and Mr. Rendel, with instructions to report the result of the answers to the Treasury circular of 1853. They unanimously reported that the weight of the evidence in the printed correspondence before them was decidedly in favour of the scale of one two-thousand-five-hundredth part of the linear measure of the ground to be mapped (popularly termed the 25-inch or 1 square inch to 1 acre scale).

Under these circumstances the Treasury determined, by a minute dated July 15, 1854, "That the surveys of Ayrshire and Dumfriesshire should be laid down and drawn on paper on the scale recommended by the committee, *i.e.* of one two-thousand-five-hundredths of the linear measurement of the ground; also that until a final determination should be arrived at as to the scale upon which the Ordnance Survey should be conducted and engraved, the course which has been authorised in reference to Ayrshire and Dumfriesshire should be applied to other districts."

Colonel James was first employed as a director of the Ordnance Survey in 1854. On May 18, 1855, the Treasury recorded a minute, founded on a report and memorandum submitted to them by Colonel James, in relation to the engraving of the Ordnance Survey of Scotland which required immediate steps to be taken, in which their lordships stated that they arrived at the following conclusions:—1. That it is unnecessary to have plans of the Highlands and uncultivated districts on the scale of one two-thousand-five-hundredths, and that the superintendent of the survey should exercise his discretion as to the districts, the plans of which are to be made on that scale. 2. That plans on the one two-thousand-five-hundredths scale should not be engraved, but that copies when wanted should be made by the anastatic process. 3. That the Highland and other partially cultivated and thinly-peopled districts should be drawn on the scale of six inches to a mile, and copies when wanted should be furnished by the anastatic process.



4. That the general map of Scotland on the scale of 1 inch to a mile should be proceeded with as rapidly as possible. 5. That the plans of towns containing more than 4,000 inhabitants should be drawn on the scale of one five-hundredths linear measurement.

Since the Ordnance Survey has been undertaken general attention was more immediately directed to its object. There was a gradual progress of public opinion in favour of conducting it on the larger scale of 25 inches to a mile, equal to 1 inch to an acre. This was ably explained by Sir Roderick Murchison, Sir John Burgoyne and Sir C. Trevelyan, who all concurred in stating that the further the larger survey had proceeded the more they had become prepossessed in its favour. It is likewise worthy of observation that at Aldershot, Portsmouth and in several places in the South of England previously surveyed on the 1-inch scale, a re-survey on a scale of 25 inches to the mile has been found essential for military purposes.

The idea of a cadastral survey of 25 inches originated with Delambre and Laplace in 1793. A commission, of which they were members, recommended it to Napoleon in 1807, who adopted it, and carried out the survey of France upon that scale with signal success. It appears that the proposal to adopt the 25-inch scale in Great Britain originated with Colonel Dawson, attached to the Tithe and Inclosure Commission, who stated that had his suggestions been adopted in 1837, when the 1-inch Ordnance maps were found utterly inapplicable to and useless for the purposes of the Tithe Commission, an expense of 3,529,830*l.* might have been saved to the country, besides a further considerable outlay in respect of surveys for roads, canals, water supply and the sale and transfer of property, which he had no means of estimating.

## ARCHITECTURAL TREATMENT OF BRIDGES.

A LECTURE on "The Architectural Treatment of Bridges" was delivered at Carpenters' Hall, London Wall, on the 27th ult. by Mr. H. Heathcote Statham. Mr. Aston Webb, A.R.A., presided, and there was a large attendance.

Mr. Statham said that the subject of the architectural treatment of bridges was essentially modern, for the reason that until the nineteenth century bridges were built for the most part as utilitarian structures. In recent times it had been perceived that bridges might have architectural importance, good or bad. Bridges could be grouped under the headings of stone, steel with stone piles, steel alone, and wooden. There was something to be said for those included in the last heading, namely, that they were picturesque, for they could hardly help being so. To illustrate this point, pictures of old Putney Bridge, Jenny's Whim Bridge, a Japanese bridge and others were thrown on the screen. He put in a plea that some of the old wooden bridges up the Thames might be allowed to remain, because they added greatly to the beauty of the river and were much to be preferred to ugly iron structures, which unnecessarily spoil the river scenery. With regard to steel bridges, he divided them into beam, suspension and trussed bridges, and said that the less ornament there was in them the better. Pure structure was never in bad taste, and he thought that much of the public criticism of engineers of iron bridges was uncalled for and absurd. Several examples of beam bridges were shown, and included a bridge at Rotterdam and Britannia and Saltash bridges. In the construction of suspension bridges, he said that beauty was an essential characteristic, and after referring to the simplicity of Hungerford Bridge, now Clifton Bridge, and others, Mr. Statham called attention to the bad ornamentation on Hammersmith Bridge, contrasting it with the superior order of the art in French bridges. In dealing with the Tower Bridge he styled the architecture as that of mistaken Mediaevalism. Among trussed bridges he mentioned Richmond railway bridge as one of the most pleasing about London. There was, however, much to be said for that at Southwark, which was a real cast-iron arch. The great advantage of cantilever bridges was that an enormous space could be spanned by them. He gave as examples the Forth Bridge and a very crude structure by North American Indians over a ravine in Canada, an instance of the unconscious use of the cantilever principle by uncivilised man. After dealing with the structure of several bridges which formed the connecting link between stone and steel bridges, he spoke of design, dealing first with the treatment of arches and then with cutwaters. As to the treatment of piers, he said that in modern times there seemed to be a notion that the correct thing to do was to place a column with a capital on it. The piers of Blackfriars Bridge were, in his opinion, perfectly out of place, and were designed, it would seem, for the purpose of carrying a superstructure. Piers should properly be buttresses, and if an order were introduced it should be proportioned to its position and apparent work. Views of Lynmouth, Wallingford, old Westminster and old Blackfriars bridges were shown as illustrating

the various forms of arches. With reference to London Bridge, which was one of the finest bridges ever built, he expressed the view that the proposed alterations would spoil the look of the bridge. He regretted that it was thought necessary to make any alteration, for it had not been shown that it was practically required. He then remarked upon the detail of the piers of Vauxhall Bridge, and showed views of design. In conclusion, he said that the real treatment of bridges was to be found in the adoption of Gothic principles even if Classic details were used.

The Chairman, in moving a vote of thanks to Mr. Statham, said it was very important that they should have right notions as to how a bridge should be built, and also how it was to be kept. With regard to London Bridge, he was quite sure that they would all agree with the lecturer that the alterations were unnecessary. If, however, those alterations were to be carried out, he thought they were entitled to know what was going to be done, and they ought to be in a position to form an opinion as to what was the correct thing to do. At the present time they must give way to the French as the great bridge builders. The new bridge constructed for the Paris Exhibition was a magnificent structure, and he only hoped that Vauxhall Bridge would be built in some way to vie with it.

The motion was carried and the proceedings terminated.

## BRITISH MUSEUM.

IT is understood that the problem of how to provide sufficient accommodation at the British Museum for the rapidly accumulating mass of old newspapers has at length been solved, the trustees, says the *Times*, having obtained the sanction of the Treasury to the establishment of a separate branch of the Museum at Hendon for the storage of this class of material. It may be recalled that the British Museum submitted to Parliament two years ago would have empowered the trustees to "make and give effect to arrangements with the council of any county or borough (including the town council or borough commissioners of any burgh or parishes in Scotland) for placing in the custody of the council copies of any newspaper published in or near the county or borough, which have been received by the trustees since the year 1837, or which may be hereafter received by them. Every council shall make due provision for the preservation of copies so placed in their custody." This proposal, however, was so strongly opposed by those having practical acquaintance with the subject that, although the House of Lords passed a Bill, it had to be dropped; and the alternative scheme adopted may be regarded as an evidence that the objection to a plan of decentralisation has been finally abandoned. The total estimated cost of the new building and of the site upon which it is to be erected is 18,000*l.*, of which 3,000*l.* will be provided in the Civil Service Estimates for 1902-03. It is intended that students wishing to refer to old newspapers shall be put to the inconvenience of making special visits to Hendon for the purpose, the suggestion being that a notice shall be required in order that the volume to be consulted may be brought to the Museum headquarters at Bloomsbury.

## THE DISCOVERY AT ST. JAMES'S PALACE.

ST. JAMES'S PALACE and the adjoining Park, says the *Standard*, are closely associated with monastic institutions. Not far from the Palace stood what was certainly the last Roman Catholic foundation by an English Sovereign, probably the last monastic house in London before the Reformation in the middle of the nineteenth century. This was occupied by a community of Benedictines established by James II., which, of course, did not survive that monarch's flight, and the accession of William III. in 1688. Some twenty years earlier than this, on a site not far from where Marlborough House now stands, there was built for Catherine of Braganza, the wife of Charles II., a house of Capuchin friars. Cardinal Howard, the Queen's almoner, took Pepys "through the whole house and chapel and new monastery," and the immortal diarist, in his record of the visit, shows himself more than usually pious. He is quite unable to appreciate the spirit of monasticism, which, whether one approves of it or not, must be admitted to have a lofty ideal—the individual working out his own salvation by means of the moral or material service of the community. Of this Pepys sees nothing, or, at any rate, says nothing. He notes the meat roasting at the fire, goes into the cell of one of the fathers and remarks that it was very clean, "hung with pictures and set with books," and then wished that he were a Capuchin friar. Of the inner life he was ignorant, and the sincerity of his wish may be gauged by the fact that on the same day he went to the King's House and saw Nell Gwynne play Beaumont and Fletcher's "Humorous Lieutenant." Evidently, more than these houses by six or seven hundred years was



hospital of St. James the Less, some of the stonework of which was uncovered in 1838, when part of the Chapel Royal was taken down. There is little reason to doubt that the human remains met with in the course of the recent excavations in one of the courtyards are those of some of the inmates. The precise origin of the house is lost in the mist of ages, and the earlier incorporating has been searched for in vain. According to Dugdale, who quotes from Tanner's "Notitia Monastica," the hospital was founded in the fields near Westminster by some well-disposed citizens of London "beyond the memory of man and (as some think) before the Conquest," for fourteen maidens that were leprous. Afterwards eight brethren were added. It seems to have been fairly well endowed, for Stow says that it had two hides of land, with the usual appurtenances of the parish of St. Margaret, to which sundry devout men of London added "six-and-fifty pounds rents," while other devout persons bestowed on it four hides of land at Westminster and eight acres of land and wood in Hendon, Chalcote and Hampstead. The house was rebuilt in the reign of Henry III., so that the Norman stonework found in 1838 would appear to have belonged to an earlier structure. Edward I. granted the community the privileges of a seven days' fair, which is the origin of the famous May Fair, formerly held in the fields near Piccadilly. The government was in the hands of a master, and of these officers Dugdale records one, the first in the reign of Edward III. and the last in that of Henry VI., who granted the perpetual custody of the foundation to Eton College, by which it was surrendered to Henry VIII. in the twenty-third year of his reign in exchange for Chattisham and other lands in Suffolk, and was then valued at 100*l.* a year. That ended its existence, for the king pulled down the old structure and erected on the site what Stow calls "a goodly manor," of which the gatehouse and turrets facing James's Street are all that remains. There is no record as to the exact status—secular or regular—of the clerics who had the cure of souls of these leprous maidens. But in support of the view that they belonged to the regular clergy, it may be alleged that the Benedictine abbots of Westminster claimed jurisdiction over them, and that the leper-house of St. Giles's, founded in 1118 by Matilda, wife of Henry I., was a cell of the London Lazars, in Leicestershire, which was in turn subject to the house of St. John of Jerusalem. How great a scourge leprosy was in this country in the Middle Ages may be gathered from the fact that about twenty foundations similar to the leper-house of St. James the Less have been traced. The traditions of these houses must have been animated by the same spirit which impelled Father Damien to dedicate his life to the service of the lepers of the Pacific, and won for him the title of the "Martyr of Molokai."

The coffin and skeleton discovered in Colour Court, St. James's Palace, were removed on Saturday to the British Museum.

A correspondent of the *Times* writes:—The lead coffin which was found last week in the soil of the Colour Court at St. James's Palace contained nothing but the remains of the skeleton of a powerful man some 5 feet 10 inches high. The continued damp, and perhaps some acids in the ground, had dissolved the lower portion of the lead to waste away, and bits of the skeleton had perished and passed through the opening. There was no metal remaining attached to the body which might give a clue to the date of sepulture. The remains were sealed and buried. The upper slab of the coffin was in good order, and carried a cross in raised ropework, extending to full length and breadth. The coffin was found in the layer of soil only 2 feet lower than that disturbed some forty years ago for the insertion of a water-pipe to the main building. Scattered bones have been found throughout the excavations, and these are being collected and reburied.

Another correspondent writes:—Although, owing to various circumstances, it is practically impossible to fix the date of the interment by the condition of human bones, yet, within the precincts of such an historic building as St. James's Palace, it might not be very difficult to decide whether the burial-place recently disturbed belongs to monastic times or is of a later date. This is no doubt being considered in connection with the exact spot where the discovery has been made, and the relics besides bones which may have been unearthed. The fact that one body has been found wrapped in a leaden shroud of unusual shape would hardly seem to be sufficient to warrant its being considered that of a Mediæval monk, for at all times and in many places special persons have been buried in an individual manner. In old palaces and houses such as St. James's, used successively by different Royal and noble persons and their households, it was quite usual to set aside a portion of the premises, sometimes an open piece of ground and sometimes vaults under a portion of the buildings, for the interment of members of the household. The Savoy and Somerset House are cases in point. But it is by no means improbable, as suggested in your paragraph in to-day's issue, that the spot recently discovered may have been a burial-place belonging to the ancient almshouse

or hospital of St. James's, originally founded for the reception of "fourteen sisters, maidens, that were leprous, living chastely and honestly in Divine service," and acquired about 1532 by Henry VIII. Some remains of St. James's Hospital have been found, according to the Rev. W. J. Loftie, in Arlington Street, which is a little distance from the Palace. The insanitary practice of monastic times of burying the dead in the midst of the living is, curiously enough, surviving still. For although we can hardly believe that it would be permitted now to use as a burial-ground a portion of the garden of any ordinary town school or institution, yet this is being done in certain Roman Catholic establishments in populous parts of London, as well as in the suburbs and the provinces; and it is a little difficult to understand why in places such as present-day nunneries, to which it is so exceptionally difficult to obtain access for inspection, the Home Secretary still gives permission for old burial-grounds to be used and new ones to be formed.

It is to be hoped that further discoveries in St. James's Palace may lead to the settlement of the question as to the approximate date of this interesting place of interment.

### THE ROMAN SETTLEMENT AT CLAUSENTUM.

At a recent meeting of the Society of Antiquaries in London a paper was read by Mr. William Dale, F.S.A., of Southampton, on discoveries made at Clausentum, near Southampton. About a year ago, when Bitterne Manor began to be handed over to the builders, interest was aroused in the matter in London, and in May last Mr. George E. Fox, F.S.A., director of the Silchester explorations, and Mr. St. John Hope, secretary of the Society of Antiquaries, paid a special visit to the spot, and the following report was drawn up:—

"The site of the Roman station in question is on a peninsula formed by two bends of the river Itchen, about two miles above the junction of that river with the Southampton Water. Across this peninsula at its broadest part, which is towards the east, runs a wide fosse from bend to bend of the river, cutting off a triangular area roughly 27½ acres in extent, the point of which is to the west, the base being to the east. In a somewhat parallel direction to this trench, but 800 feet to the west of it, another trench crosses the area, parting off the end of the triangle, and forming, with the river on the other two sides, a second enclosure. It is this smaller enclosure which is the station proper, and its triangular area may be roughly estimated at 6½ acres. Towards the river it is margined by a wide foreshore and was apparently fortified on all three sides by a wall, the trench last mentioned running in front of the landward wall. Of the walls there appear to be now no visible remains, but such remains, and also those of bastions, probably one at each angle, are mentioned by Sir Henry Englefield in his work entitled 'A Walk Round Southampton,' published at the beginning of the nineteenth century. It seems that this second enclosure, which contains Bitterne Manor House and grounds, will not be touched for another two years, but that the space between the eastern line of the Roman station and the fosse across the base of the peninsula will be taken in hand first. Trial holes have been dug in it at different places. None of these which had been dug in the ground south of the modern road, which traverses the site from west to east showed, as far as I and Mr. Hope, who accompanied me, could see, any signs of Roman material. The vegetable soil was shallow, and beneath it lay river shingle, but from the two holes in the area north of the road mentioned, where the vegetable soil was deeper, shards of pottery, both common and of pseudo-Samian, had been cast up, and we picked up a fragment of flue tile and an indecipherable bronze Roman coin on one of the heaps by them. Calling at the Manor House, we were permitted to see what remains were preserved there and in the grounds. These are of little importance, with the exception of some of the inscribed and carved stones which are preserved in a summer-house in the garden. The latter are all figured in Sir H. Englefield's work. With respect to the question of excavation on the site, it seemed both to Mr. Hope and myself that there are some points in the portion immediately threatened by building operations which would repay exploration. These are marked A, B, C, D, E on the accompanying plan. I would submit that it would be advisable by sections at the spots so marked to ascertain the nature of the outer defence, and also to find if possible the remains of the south-east corner of the station wall—perhaps at where there might have been a bastion. As the new street and houses will completely efface the outer fosse at some not distant period, the examination of the points marked should be the first to be undertaken. Whether any trenching of the area between the outer line of defence and the station wall west of it would repay the trouble and expense incurred in doing it is a matter of some doubt, but at least it might be recommended that someone should watch



the building operations on the site when they are fairly undertaken. As to the area of the station proper, when the time came for it it might be well worth excavation. Only the portion of the site more immediately threatened is dealt with here. In the appended plan the red lines show the directions of the outer defence and the lines of the walls of the station so far as they can be conjectured. The pink tint marks the width of the foreshore on the two sides of the enclosure next the river, and the dotted area is that on which building operations have already been commenced. As mentioned, the area of the station proper is not yet threatened, except a small portion at the south-east corner." This report is signed by Mr. Fox.

Nothing further was done in the matter until the autumn, when the treasurer of the Society wrote to Mr. Dale to say that 20% had been voted by the Society for the purpose of exploration, provided it could be used to advantage. By this time, however, the new roads had been made and several houses built, and Mr. Dale did not think that the time had yet come for the formation of a committee or the spending of money in trial diggings. In his paper Mr. Dale described the position of the new roads on the six-inch Ordnance map, and said that in making them the ground had been as well sampled as any trial trenches could do. In the area between the outer and inner fosse the soil was thin, and the subsoil of river gravel was soon reached. A few coins, some lumps of Bembridge limestone and shards of common pottery and brick were found, and near the northern foreshore two big pieces of limestone looked like the remains of a wall. Within the triangular inner area, which was the true Roman fort, there was more of interest. Here the soil is thick and black, and in digging the foundations of the houses there was ample evidence of Roman occupation. Coins are always so common at Roman stations that they are of no great value, and a great many were found here—Vespasian, Domitian, Diocletian, Crispus, Trojan, Claudius, Gallienus, Magnentius, Constans, Faustina, Hadrian, Valens, Constantine Max, Tetricus 1 and 2, Carausius and Allectus were all represented. Several denarii of Antoninus Pius were found and a denarius of Caligula and Augustus, which is a scarce coin. There were also a good many bronze objects, several fibula, a spatula, a lamp hook and other small articles. Concerning the coins, Mr. Dale said that it was thought by some that a mint existed at Clausentum, although Mr. Haverfield, one of our great Roman authorities, will not have it. The letter C on the coins of Allectus refers either to Camelodunum (Colchester) or Clausentum. The coins of Allectus lately found at Clausentum were shown to Sir John Evans, and he said he was inclined to give the Hampshire people the benefit of the doubt, but hoped more would be found. Much pottery, bricks and a few flue tiles were turned out. A good deal of the pottery was coarse, but there was some of the Aretine ware, which was made abroad. It has embossed figures upon it. Sir Hy. Englefield in his "Walk Round Southampton" mentions the occurrence of this ware, and gives a list of potters' names found upon it. Several of the pieces exhibited by Mr. Dale had names upon them, but none of those mentioned by Sir Hy. Englefield. In cutting the road across the inner fosse, a neat little black pot was found quite perfect, and covered with a lid. It did not contain anything but earth. Nowhere in the course of the digging had any foundations of buildings been discovered. Several non-Roman objects were discovered, a penny of Henry III., a neolithic implement, and an urn burial of the bronze age. In concluding his paper, Mr. Dale said that at present he thought no local committee need be formed, but later on, when the ground near the Manor House is touched, it might be desirable to take united action.

A discussion followed, in which Sir Henry Howarth, M.P., the Rev. H. Engleheart and others took part. Mr. Engleheart referred to the fact that the coins of Vespasian found at Clausentum were always well preserved. He said there was a tradition that this Emperor landed in the Isle of Wight, and he may have had his station at Clausentum.

The President thanked the reader of the paper for the trouble taken, and also for the interesting exhibition of articles found.

## TESSERÆ.

### Positions of Temples.

VITRUVIUS teaches us the peculiar situations and aspects which the Greeks selected for their temples, but we are bound to state that there are numerous exceptions to his rules. According to this authority, however, the situations were regulated chiefly by the nature and characteristics of the various divinities. Thus the temples of Jupiter, Juno and Minerva, who were considered by the inhabitants of many cities as their protecting deities, were erected on spots sufficiently elevated to enable them to overlook the whole town, or at least the principal part of it. Minerva, the tutelary deity of Athens, had her seat on the Acropolis, so that all those who arrived in the city might behold it while yet afar off. The temples of

Mercury were ordinarily in the Forum, or otherwise, like those of Isis and Serapis among the Egyptians, in the market-places. Those of Apollo and Bacchus were placed beside the theatre. The temple of Hercules was commonly built near the gymnasium, the amphitheatre, or circus. Those of Mars, of Venus and of Vulcan, had their place generally without the walls of the city, but near the gates. The temples of Ceres were likewise placed, in most instances, outside the town in a retired and quiet place, and were visited by few persons except such as were initiated into the mysteries of her worship. The Greeks rarely placed the temples of Vesta without the walls, and on the contrary were accustomed to select for them the most commodious and beautiful sites. The temples of Esculapius, however, were uniformly built in the neighbourhood of the towns, on some elevated and desirable spot, where the pure air might be inhaled by the invalids who came to invoke the aid of the god of health. In order, says Vitruvius, to give to the temples the most convenient direction relatively to all the quarters of the horizon, the architects so constructed them as to admit of the statues of the divinity in the cella being turned towards the east, to which quarter all those who came to pray or sacrifice likewise bent their regard. When a temple was situated beside a river its principal façade faced the stream. A similar system was also observed with respect to such as were erected beside the public ways. Sometimes the particular spot on which the temple was erected had been pointed out by an oracle or presage. In the cities the houses of the inhabitants clustered round the temples: from this observation, however, we must except the citizens of Sanagra in Boeotia, who separated their dwellings altogether from the vicinity of the temples, which were constructed on spots perfectly apart from the carrying on of any civic occupations.

### Sir William Chambers.

At the age of sixteen William Chambers was appointed supercargo in a ship belonging to the East India Company, and it is said he held the post for five or six years. Abandoning, however, his commercial pursuits, says Hardwicke, pupil and biographer, he followed the natural bent of his genius and travelled into Italy, for the purpose of studying the science of architecture, not only by measuring and drawing the invaluable remains of antiquity, but likewise the admirable productions of the revivers of the arts which distinguished the fifteenth and sixteenth centuries. He carefully examined and studied, with unwearied application, the works of Michel Angelo, Sangallo, Palladio, Scamozzi, Vignola, Peruzzi, Sanmichele, Bernini and other Italian architects, whose designs were in general guided by the rules of the ancients, but whose extraordinary talents, exalting them above the character of mere imitators, produced an originality in their compositions that fully established their fame, and pointed them out as the fittest models for succeeding artists. Chambers knew how to distinguish and to combine all the excellences of the great men, and his intuitive good taste and sound judgment led him also to examine into the merits of those French architects whose productions have since been so much esteemed and applauded, among whom Claude Perrault and Jules Mansard held the most distinguished rank. At Paris he studied under the celebrated Clérissieu, and acquired from him a freedom of pencil in which few excelled him. Having made himself acquainted with Roman art, he supposed he knew enough; so without visiting Sicily, where Greek architecture abounded, he returned to England, and taking a house in Portico Street, commenced the profession of an architect. There was a tradition that poverty obliged him to quit Italy, but it is certain that the story of his having wrought as a carpenter on his arrival in London is without foundation. This latter could never have been a credible one; a man cannot be a carpenter when he chooses, he must learn the trade before he can hope for employment, and, moreover, Chambers was an accomplished draughtsman, and as such must always have been able to command bread. To his skill as a draughtsman he added a certain agreeable and winning way, partly the result of nature and partly the result of his intercourse with the world, which assisted him in the pursuit of notice and patronage; nor did accident, to which we all owe more than we care to acknowledge, refuse to lend him a helping hand. A taste in architecture was wanted for the Prince, afterwards George III., and the Earl of Bute was informed by John James Oglethorpe of York, whom he consulted, that Chambers was very skilful and his conversation and manners not only unexceptional but inviting. All this and more was confirmed to Lord Bute by a personal interview. Chambers was introduced to the Prince, who became in the course of his studies so attached to him that, on his accession to the throne, he appointed him royal architect, and promoted his interest on all occasions.

### Artists and Artisans.

The Greeks and Romans do not seem to have distinguished by names the difference between the artist and the artisan, the workman, *teknites* with the one and *artifex* with the other.



being indifferently applied to either. The Italians, on the contrary, appear to have been the first to give them their just appellations. "Artista," says Milizia, "è chi esercita le belle arti. Artigiano è chi pratica qualche arte meccanica." The words have come to our language through the French, with the Italian or proper meaning. An artist is one who professes to practise a liberal art, an artisan one who follows or exercises a mechanical trade. The mason, the bricklayer, the carpenter, the smith, the house-painter, the paperhanger, the room decorator and such like, are artisans; the architect, the sculptor, the painter, the engraver, &c., are artists. For too great a length of time have artisans been permitted to usurp the title of artists—a name which they have assumed, perhaps, because they follow some inferior branch of art carried on after the manner of a trade. But it is time that the correct definition of the word should be adhered to, and that the honourable title of an artist should only be allowed to such who practise a liberal art after a liberal manner. Custom in England does not give the name of artist to the poet, the musician or the comedian, although the arts which these professors exercise are liberal in the fullest extent of the word, because their own distinctive titles are sufficiently high and specific, and because, perhaps, that the professions of the painter, the sculptor, the architect and the engraver, with their several subordinate departments, have each of them a certain portion of mechanical art, and are of more obvious and immediate use to the community, while the art of the poet, the musician, the dramatist have nothing, or at least should have nothing of mechanical art, or what was formerly termed handy work, the *artes manuarie* of the Latins, to distinguish them from the *artes liberales* in them, and are more the results of the wants of the mind or sentiment than of the body, in France the custom is somewhat different, for in the vocabulary of its language, the comedian, the pantomimist, the dancer, the juggler, the cook, the hairdresser are all artists. This honourable title should not, however, be thus indiscriminately prostituted, but bestowed after the manner of the great men of the best days of Italian art and literature upon the professors of the fine arts only, and then only upon such as practise them as an art and do not mix them up with trade, or lower them by their practice to assimilate with the most sordid parts of commerce. The builder should not be called an architect, nor should the sign-painter, the figure caster or plasterer, the chair sculptor, commonly called cabinet-maker, the paperhanger and wall decorator be called artists. Their proper appellation, artisan or tradesman, and the certain profit attendant on all their labours are sufficient to their exertions, because their employment does not consist in the exercise of the higher faculties of the mind, but in practising lower departments of art, or in executing the thoughts, the designs of others, without possessing that ardour, that enthusiasm, those sentiments and feelings for the sublime and beautiful in art, that sensibility which approaches to or rises in the aid of poetry and nourishes a brilliant fancy, and these indescribable faculties of the mind which alone can constitute the artist.

#### Tintoretto's Methods.

The nocturnal studies of Tintoretto from models and artificial groups have been celebrated; these, prepared in wax or clay, he arranged, raised, suspended, to produce masses, shortening and variety of effect. It was thence he acquired that decision of chiaroscuro unknown to more expanded daylight, by which he divided his bodies, and those wings of purity and light by which he separated the groups of his composition, though the mellowness of his eye nearly always instructed him to connect the two extremes by something intermediate that partook of both, as the extremes themselves by the reflexes with the background or the scenery. The general rapidity of his process, by which he baffled his competitors, and often overwhelmed himself, did not indeed always permit him to attend deliberately to this principle, and often hurried him into an abuse of practice which in the lights turned breadth into mannered or insipid flatness, and in the shadows into total extinction of parts. Of all this he has, in the schools of San Rocco and Marco, given the most unquestionable instances; the Resurrection of Christ and the Massacre of the Innocents comprehend every charm by which chiaroscuro animates its votaries. In the Vision dewy dawn melts into deep but pellucid shade, itself rent or reflected by celestial splendour and angelic hues, whilst in the Infant-massacre at Bethlehem alternate sheets of stormy light and agitated gloom and horror on the astonished eye. He pursued, however, another method to create, without more assistance from chiaroscuro than individual light and shade, an effect equivalent, and perhaps superior, to what the utmost stretch of its powers could have produced in the Crucifixion of the Virgin or Guest Room of San Rocco, the largest and most celebrated of his works. The multitudinous rabble dispersed about that picture (for such, rather than composition, one group accepted, that assemblage of accidental figures deserves to be called), he connected by a sovereign tone, engulfing the whole

in one mass of ominous twilight, an eclipse, or what precedes a storm or hurricane or earthquake, nor suffering the captive eye to rest on any other object than the faint gleam hovering over the head of the Saviour in the centre, and in still fainter tones dying on the sainted group gathered beneath the cross. Yet this nearly superhuman contrivance, which raises above admiration a work whose incongruous parts else must have sunk it beneath mediocrity, Agostino Carracci in his print, with chalcographic callus, has totally overlooked, for notwithstanding the iron sky that overhangs the whole, he has spread, if not sunshine, the most declared daylight from end to end, nor left the eye uninformed of one motley article or one blade of grass.

#### The Duke of Richmond's Academy.

In the year 1758 the Duke of Richmond opened a gallery of casts from the antique, in Whitehall, forming an academy or gratuitous school of design for young artists, and he established premiums for the best design. This school was under the management of Cipriani for drawing, and Wilton for sculpture or modelling; but, like its predecessors, its existence was of short duration, and its ultimate effect was in proportion, though probably to many young artists individually it was of considerable benefit. An advertisement notifying the opening of this gallery "for the use of those who study painting, sculpture and engraving," appeared in the *Chronicle* of February 25, 1758. Youths under the age of twelve were not admitted—a proper restriction; but the age of fifteen would perhaps have been better, for to the practice of schooling children into the professional use of the pencil, when they are scarcely strong enough to hold it firmly, to teach them to draw sometimes before they have well learnt to read, may be attributed the too frequent general incapacity of the mature artist in after life. Shortly, however, after the opening of this gallery an impudent placard, posted upon the door, forced the duke to close it again. The cause of the placard was the duke's omitting to award the promised premiums. It was the time of the third Silesian or Seven Years' War, and he was called away suddenly to join his regiment on the Continent, and in his absence the premiums were not given. When he returned he found a sarcastic placard, in his own name, upon the door of his gallery, apologising for his poverty, and expressing his sorrow for having promised rewards which he could not pay. He immediately closed the gallery; he, however, opened it again after a little time, and placed it under the superintendence of the newly incorporated Society of Artists, at the request of that society; but it was gradually less frequently attended, until it was finally wholly superseded by the foundation of the Royal Academy in 1768. It remained open, however, some years after that event.

#### Early Marine Charts.

Fournier ascribes the invention of charts to Henry, son of John, king of Portugal; certain it is that marine charts appear first to have issued from the Portuguese. Bagford says the first step that was made toward a knowledge of our own coasts was by an almanac, with a chart of the coasting part of England printed on vellum or parchment, by Wynken de Worde, 1520, and bound in a small portable volume. This was the first he had seen of the kind. John Rotz, a native of Dieppe, and servant to King Henry VIII., made for the king's use a book of Hydrography, so called, being an account of the compass, elevation of the pole, latitude, sea coasts, &c., 1542, finely painted on eighteen very large skins of parchment, still preserved among the royal manuscripts in the British Museum. Of this description also is a very curious chart, preserved in the same collection, formerly belonging to Lord Oxford, and probably of as early if not an earlier date than Rotz's charts. New Holland is laid down upon it as an island, under the name of Java le Grand. Captain Flinders when asked for his opinion whether this portion of the chart could have been laid down from actual observation, answered, "Most certainly, for lines of red dots are made to border the coast exactly to the extent to which it is coral-bound and no further; I was wrecked upon one of those reefs and have reason to remember them." The names of places are occasionally given upon the different shores in this chart in French, and the very spot upon it which Captain Cook afterwards named Botany Bay is designated as Côte des Herbages. The generality of the early Portuguese charts seem to have been made toward the close of the fifteenth century.

#### Rubens's Freedom.

No man ever more completely laid the reins on the neck of his inclinations, no man ever more fearlessly abandoned himself to his own sensations, and, depending on them, dared to attempt extraordinary things, than Rubens. To this, in a great measure, must be attributed that perfect originality of manner by which the limits of the art may be said to be extended. Endowed with a full comprehension of his own character, he waited not a moment for the acquisition of what he perhaps deemed incompatible excellence. His theory once



formed, he seldom looked abroad for assistance; there is, consequently, in his works very little that appears to be taken from other masters, and, if he has occasionally stolen anything, he has so well digested and adapted it to the rest of his composition that the theft is not discoverable. But, though it must be allowed that he possessed, in many respects, the true art of imitation, though he looked at nature with a true painter's eye, and saw at once the characteristic feature by which every object is distinguished, and rendered it at once on canvas with a vivacity of touch truly astonishing; though his powers of grouping and combining his objects into a whole, and forming his masses of light and shade and colour, have never been equalled; and though the general animation and energy of his attitudes, and the flowing liberty of his outline, all contribute to arrest the attention and inspire a portion of that enthusiasm by which the painter was absorbed and carried away, yet the spectator will at last awake from the trance, his eyes will cease to be dazzled, and then he will not fail to lament that such extraordinary powers were so often misapplied, if not entirely cast away; he will inquire why Rubens was content to want so many requisites to the perfection of art, why he paid no greater attention to elegance and correctness of form, to grace, beauty, dignity and propriety of character—why every subject, of whatever class, is equally adorned with the gay colours of spring, and every figure in his compositions indiscriminately fed on roses. Nor will he be satisfied with the ingenious, but surely unfounded, apology that these faults harmonise with his style, and were necessary to its complete uniformity; that his taste in design appears to correspond better with his colouring and composition than if he had adopted a more correct and refined style of drawing; and that, perhaps, in painting, as in personal attractions, there is a certain agreement and correspondence of parts in the whole together, which is often more captivating than mere regular beauty.

#### Roman Curtains.

The Roman judges in criminal causes were in the habit of having a curtain raised before their tribunal, in order to admit of their discussing the subjects in their hands with freedom and secrecy. In cases of minor interest and importance the veil was left undrawn, and hence arose the two Latin expressions—*ad vela sisti* to denote the curtain being drawn, and *levato velo* to specify an open investigation. In the temples a siparium often concealed the statue of the deity in times when sacrifice was not performing. In the theatres it was adapted to pretty much the same purpose as in our own; but to develop the scene it was customarily lowered instead of raised, and left during the spectacle on the ground under the anterior part of the proscenium until increased skill enabled them to sink it beneath the stage by means of a prop. Human figures were represented upon theatre curtains whose feet appeared to rest upon the stage when this screen was drawn up. We further learn that the figures were sometimes those of Britons woven in the canvas and raising their arms in the attitude of lifting up a purple curtain so as to be introduced in the same manner as Atlantes, Persae and Caryatides.

#### GENERAL.

**His Majesty the King** is giving sittings to Mr. Luke Fildes, R.A., and to Mr. George Ward for a portrait and statue which they are respectively executing for His Majesty.

**The Council** of the Royal Institute of British Architects have granted the sum of 50*l.* to the Cretan Exploration Fund towards the completion of Mr. Arthur Evans's excavations at Knossos. Since the appeal issued in December the sum of 1,600*l.* has been raised. It was unfortunately necessary to devote 600*l.* of this to the partial extinction of the deficit on last season's work. Consequently only 1,000*l.* is available for the present season. Mr. Evans estimates that at least 2,000*l.* will be required to finish the work at Knossos, so it is still urgently necessary that further contributions should be made to the fund, in order to obviate the risk of leaving this very important work unfinished.

**Mr. Samuel Blow**, builder, London, has left property valued at 20,253*l.* 11*s.* 9*d.*

**The Death** is announced of the Rev. Frederick Spurrell, who was an authority on Sussex archaeology. Among his publications are "Architectural History of Fletching Church," "Roman Remains at Newhaven," "Inventory of the Household Goods of Cornelius Humphrey of Newhaven, 1697," and "Relics of Lewes Priory."

**Mr. Edward Onslow Ford, R.A.**, sculptor, whose estate has been valued at 10,720*l.* gross, has ordered in his will that the President and Council of the Royal Academy should have the option of selection from the plaster casts in his studio, subject to the rights of reproduction of persons interested, and that his children should then each have the choice of one plaster cast, and that the remainder should be offered to such institution or institutions as his son Wolfram may choose.

**M. Charles Toche** is to design the large tapestry to be presented to the Emperor of Russia by the delegates of the Peace Congress at The Hague.

**The Natal Institute of Architects** have held their first general meeting at Durban. The chairman, Mr. A. Fyfe, said the provisional committee had no report to make, but a Draft Bill, proposed to be introduced in Parliament to incorporate the Institute, would be read. This was done and the Bill approved of. Mr. W. E. Robarts was elected president and Mr. A. Fyfe vice-president, Mr. A. M. Ritchie, secretary, and Messrs. Methuen, Wills, Price, Powell, Farrell and Lucas members of the committee.

**The Wiltshire County Council** will shortly hold an inquiry into the obstruction of alleged public rights of way by the erection of barbed wire fences round the Druidical remains at Stonehenge.

**The Vacant Piece** of land in Fleet Street fronting St. Bride's Church has been sold by the Court of Common Council for 10,150*l.*

**An Arts Exhibition** will be held in St. Andrew's Hall, Norwich, from April 8 to 26. From the many promises of support which have been received, it is expected that the Norwich school of painting, Lowestoft china and old silver will be well represented.

**A Meeting** of the Surveyors' Institute will be held on Monday, March 10, when a paper will be read by Mr. C. H. Bedells entitled "Notes on the Insurance of Buildings against Fire."

**The Chairman** of the London County Council will open to-morrow the new southern approach to the Tower Bridge from Old Kent Road to Tooley Street, constructed by the Council at a cost of nearly 400,000*l.*

**The Rev. Dr. Samuel Kinns** has been unable to give his free lectures in the Assyrian and Egyptian galleries of the British Museum in consequence of an attack of nervous debility, which has assumed the form of paralysis agitans.

**An Exhibition** of Cornish pictures will be opened at the Whitechapel Art Gallery on March 26 by Lord Crewe.

**A Library** is to be erected at Dulwich College as a memorial to those old Alleynians who have fallen in the war in South Africa. The estimated cost of the building is 3,000*l.* exclusive of ornamental sculpture, which, it is hoped, will be given by the public. More than half the cost has been already given or promised, and plans have been prepared by Mr. Edwin T. Hall.

**The Paris Academy** of Inscriptions and Belles-Lettres have voted a subvention of 3,000 francs to the Rev. Fath Delattre to enable him to continue the excavations which have already yielded such satisfactory results on the site of ancient Carthage. A sum of 800 francs was also granted to M. Hon for his researches as to the topography of Rome in the time of Aurelian.

**The Fine Art Society** will open on Monday next an exhibition of statuettes by sculptors of to-day. It will comprise 100 works contributed by all the sculptor Academicians, some of the most notable French artists, and by about forty other living British sculptors. It will also include statuettes by the late Lord Leighton, Onslow Ford and Harry Bates.

**The House of Lords** have agreed to the following resolution communicated by the Commons, viz. "That it is expedient that a select committee of this House be appointed to join with a committee of the Lords to consider the standing orders relating to houses occupied by persons of the labouring class, and the clauses usually inserted in private and local Bills and Provisional Order Confirmation Bills in pursuance thereof, and to report whether any amendments should be made in such standing orders and clauses, and especially whether any amendment what provision should be made for better securing the housing of all persons of the labouring class who may be displaced in connection with the undertakings to which the Bill relate, whether displaced under the powers given by the Bill or otherwise."

**The Edinburgh Gladstone Memorial Committee** have chosen a site in St. Andrew Square at the extreme east end of George Street—the Albert Memorial is situated at the west end—for the memorial of the great statesman to be erected in the Scottish capital. The site is at present occupied by the group of Alexander and Bucephalus, which is to be removed from the square, and will be re-erected in all probability in Princes Street Gardens.

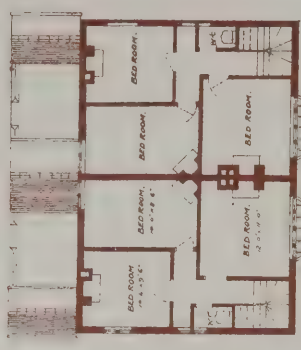
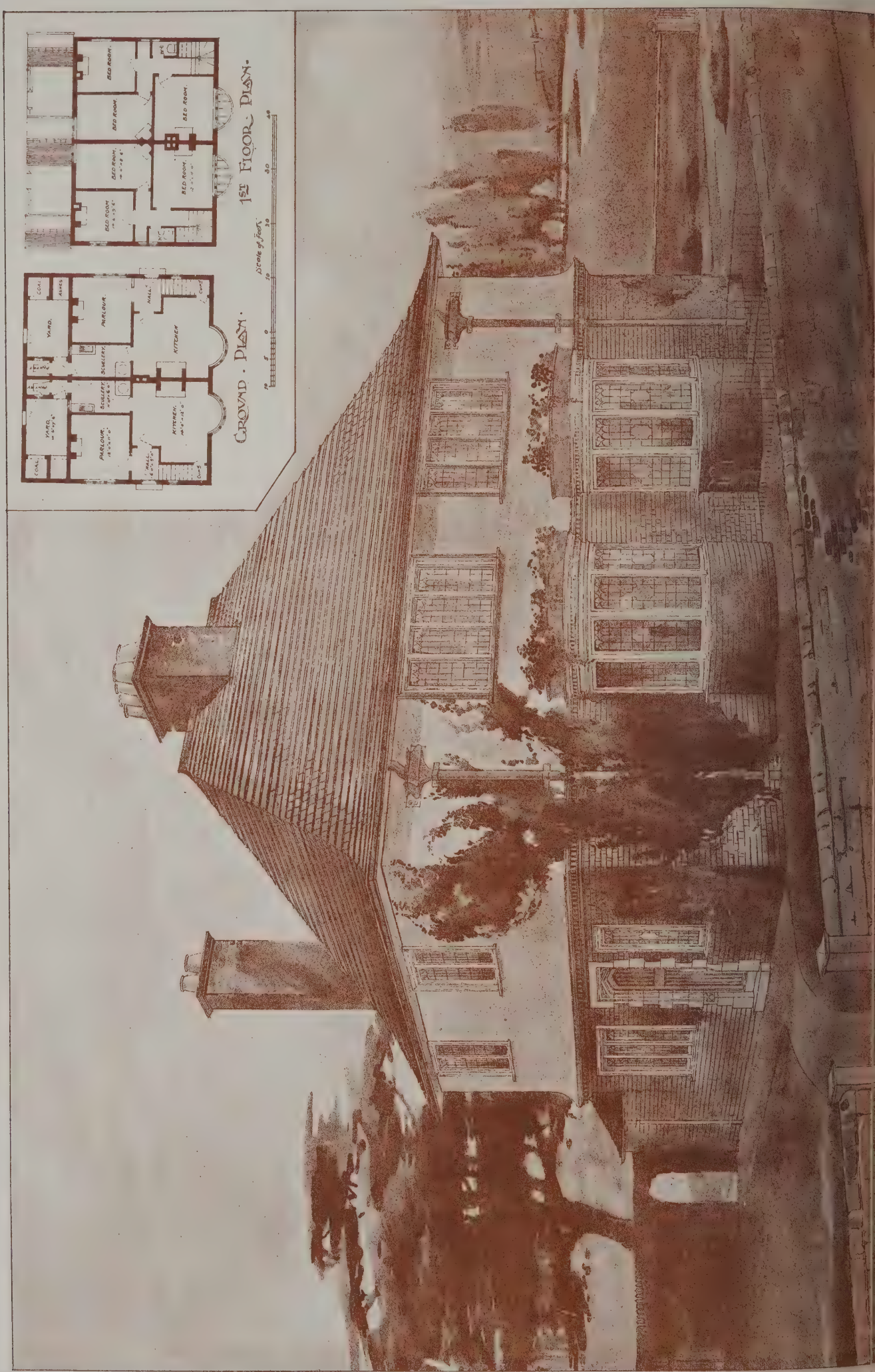
**The Private View** of the eighth exhibition of sketches by the members of the London Sketch Club will be held on Saturday, March 8, at the Modern Gallery, 175 Bond Street, W., and the exhibition will be open to the public from March 10 to the 27th, inclusive.

**The Annual General Meeting** of the subscribers and donors to the Architects' Benevolent Society will be held in the rooms of the Royal Institute of British Architects, 9 Conduit Street, Hanover Square, on Wednesday, March 12.



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1st Floor Plan.



Ground Plan.

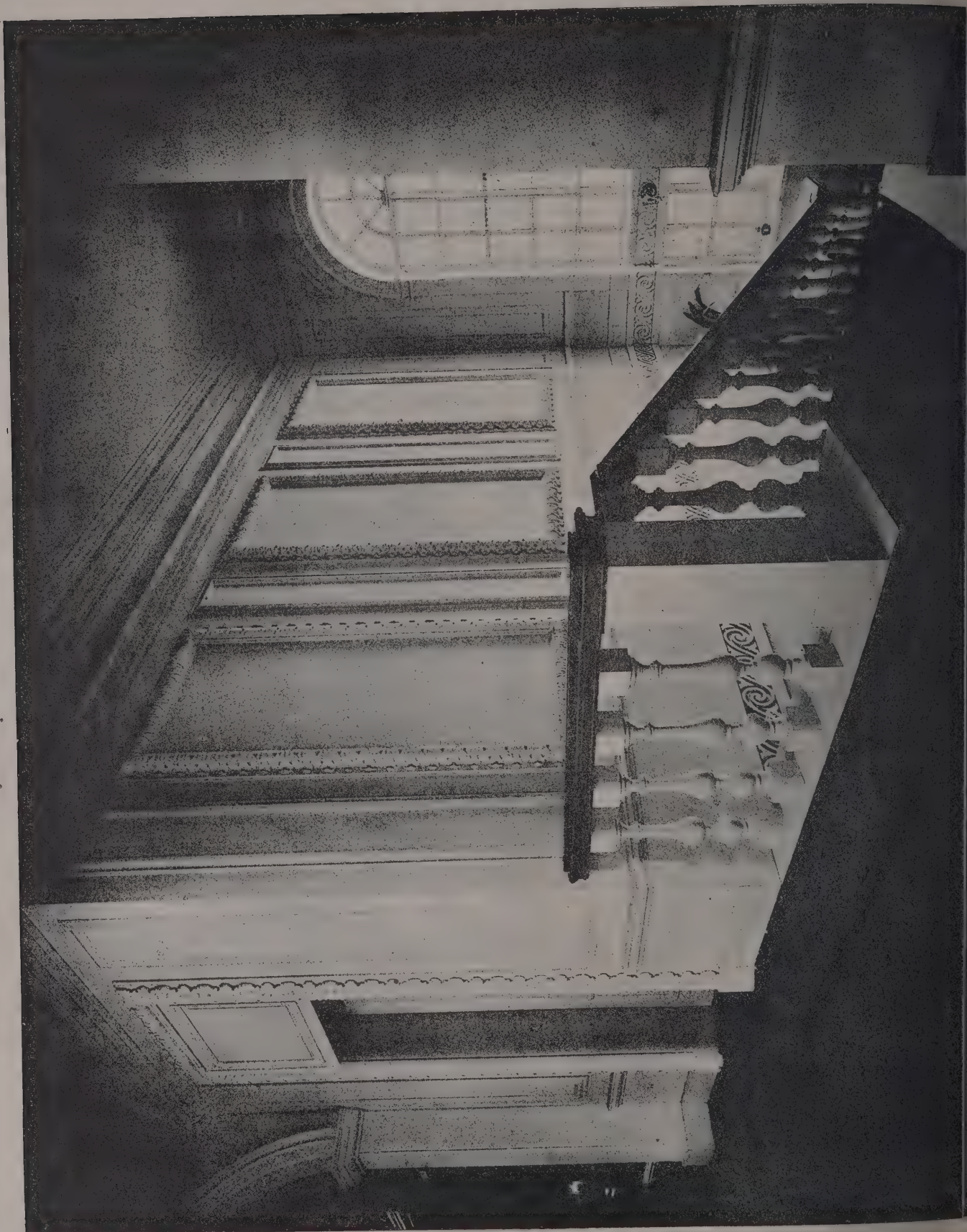
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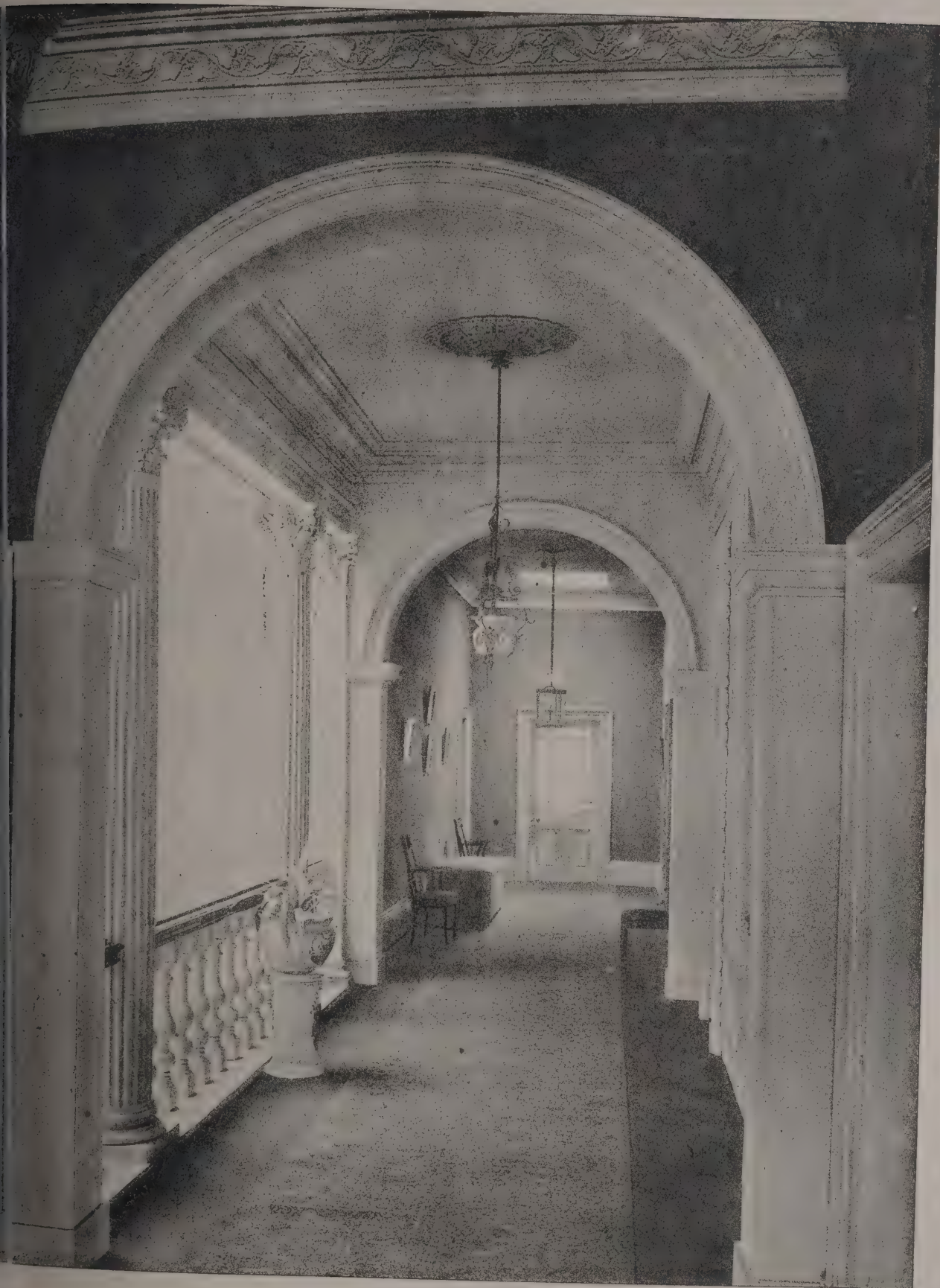








*The Architect*, Mar 7<sup>th</sup> 1902.



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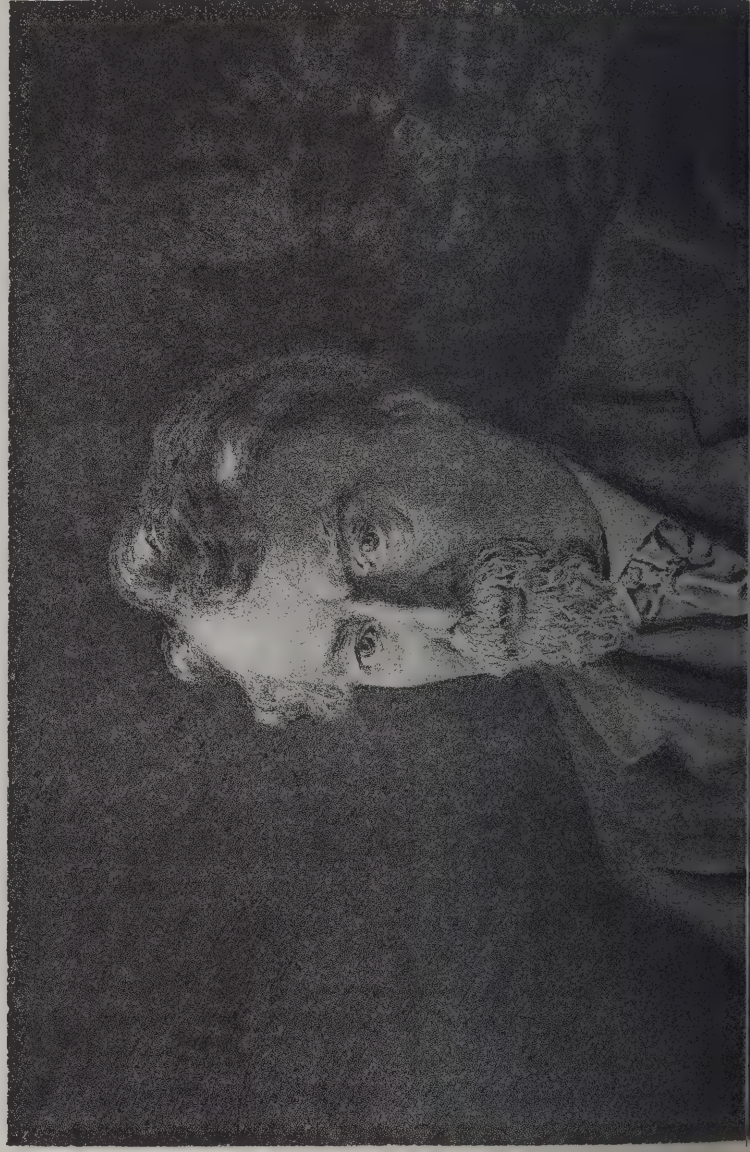




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THE LATE JOHN FRANCIS BENTLEY,  
Architect of the Westminster Cathedral, &c.

From the Oil Painting by RENÉ LE BRUN

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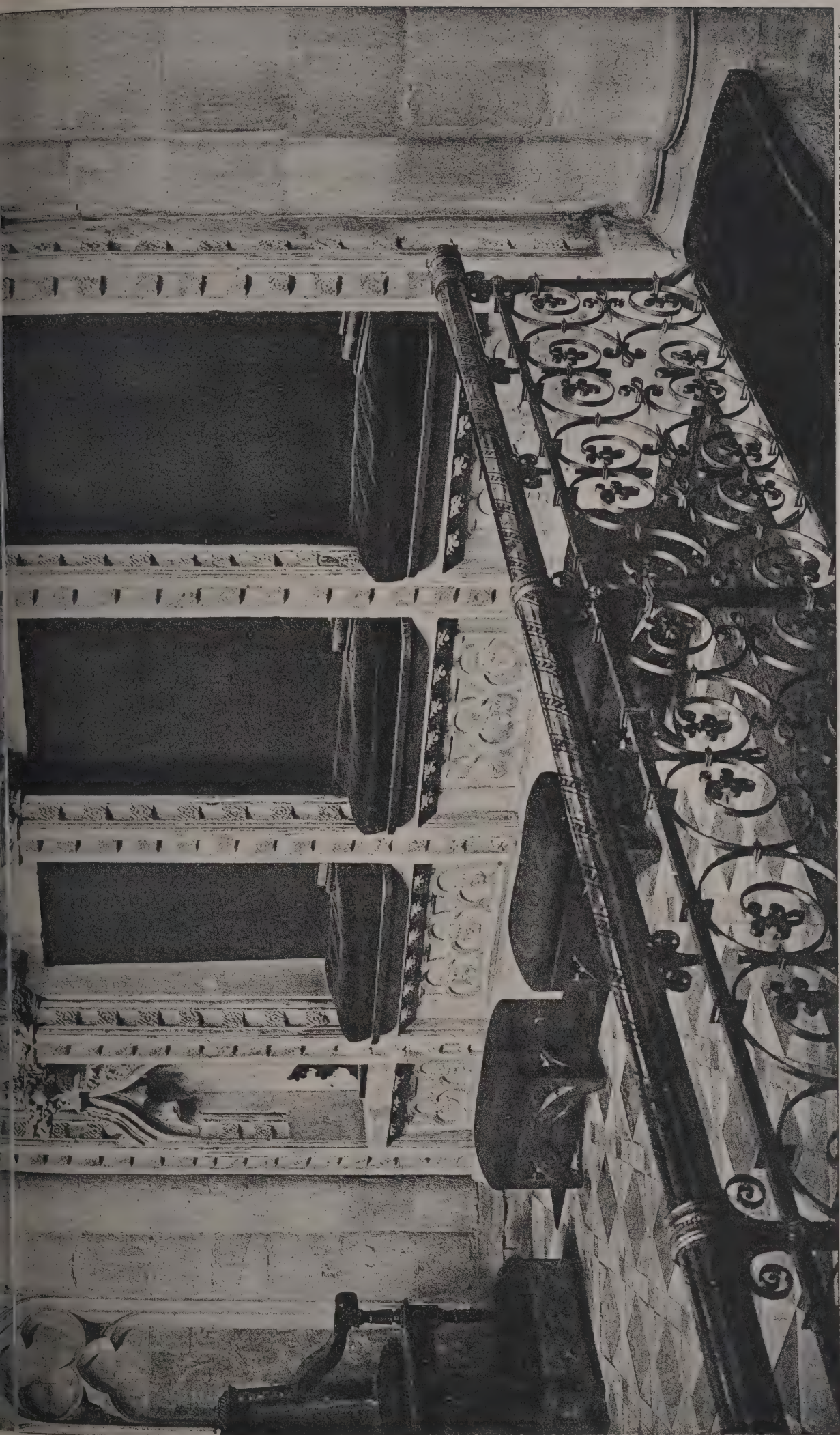




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CATHEDRAL SERIES, No. 381.—RIPON: THE THREE STONE SEDILIA.







# THE Architect and Contract Reporter.

## EDITORIAL NOTICES.

few of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

## TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

ALDERSHOT.—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for the second and third best plans. Mr. Nelson F. Dennis, M.C.E., surveyor.

AUSTRALIA.—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West-mer.

DUNSTABLE.—March 14.—Plans are invited, with estimate of expense, for a six-bed infectious diseases hospital to be erected near Dunstable. A premium of 5*l.* 5*s.* offered for the best selected. Mr. C. Crichton S. Benning, town clerk, Dunstable.

HARROGATE.—May 14.—Competitive designs are invited for a new town hall, the cost of which must not exceed 40,000*l.* Premiums of 150*l.*, 100*l.* and 75*l.* are offered for the three best designs. Mr. F. Bagshaw, borough engineer, Municipal Offices, Harrogate.

IRELAND.—April 21.—Prizes of 20*l.* and 10*l.* respectively will be awarded for the first and second schemes in order of merit for utilising to the best advantage a plot of ground acquired by the Council for the erection of about twenty-five workmen's houses in Coleraine. Mr. William Henry, clerk, Town Hall, Coleraine.

LANGHO.—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

OLDHAM.—April 8.—Competitive drawings are invited for erection of new market hall and shops in Albion Street and Henshaw Street. Premiums will be awarded to the authors of the three selected designs, viz. 50*l.* for the design placed first, 30*l.* for the design placed second, and 20*l.* for the design placed third. Mr. S. A. Pickering, borough surveyor, Oldham.

## CONTRACTS OPEN.

ALDERSHOT.—March 18.—For supply and erection of a pair of large gates, with wicket gate, at the isolation hospital, Cemetery Road. Mr. Nelson F. Denis, surveyor, 126 Victoria Road, Aldershot.

ALDERSHOT.—March 19.—For erection of the brickwork, &c., connected with two sewage filters to be constructed at the sewage works. Mr. Nelson F. Denis, surveyor, 126 Victoria Road, Aldershot.

ARNcliffe.—For taking-down and re-erecting a portion of the old Black Dyke, Arncliffe, Westmorland. Mr. J. E. Cottage, Milnthorpe.

AYLESbury.—For repairing the old upper street. Mr. J. Taylor, architect, 26 Temple Street.

AYLESbury.—For repairing the almshouses, cottages, and construction of a soft-water tank at the lower almshouses, with pump and penthouse over it, new privies and other sanitary work, and a new road to Gardeners' Leys allotments, with new gates and fences, &c. Mr. Fred Taylor, 26 Temple Street, Aylesbury.

BALHAM.—March 15.—For alterations and additions to the Balham branch library, Ramsden Road. Particulars may be obtained at the Surveyor's Office, 215 Balham High Road, S.W.

BAWTRY.—For erection of a Dutch barn, 40 yards by 20 yards, in two spans, 18 feet high, covered with corrugated iron, and covering in two fold yards, 35½ yards by 17½ yards, with wood roof at Plumtree Farm. Mr. Thos. Shearman, 10 and 11 Oriental Chambers, Doncaster.

BECCLES.—March 13.—For erection of Wesleyan school-room at Barnby. Mr. R. Scott Cockrill, architect, Crossley House, Lowestoft.

BLACKBURN.—March 12.—For erection of homes for inebriates at Langho, near Blackburn, Lancashire. Mr. Henry Littler, county architect, County Offices, Preston.

BRAMPTON.—March 10.—For pulling-down and building house and stables, and for making alterations and additions to

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the Brampton police station, Cumberland. Mr Geo. Dale Oliver, county architect, 5 Lowther Street, Carlisle, or at the Police Station.

BRIDGWATER.—March 11.—For alterations, repairs, renewals, painting, papering, &c, of 65 St. John Street. Mr. W. T. Baker, town clerk, Municipal Offices, High Street.

BRIDLINGTON.—March 11.—For alterations and additions to shop and premises, 10 Prince Street. Mr. J. Earnshaw, architect, Wellington Road, Bridlington.

BRIDLINGTON.—March 15.—For restoration of the Wesleyan chapel, North Burton. Mr. Samuel Dyer, architect, Bridlington.

BURGH-BY-SANDS.—March 12.—For erection of stable and out-offices and additions to house at Burgh-by-Sands. Messrs. Johnstone Bros., architects, 49 Lowther Street, Carlisle.

BURY.—March 17.—For alterations and additions to laboratory and locomotive shed. Mr. John Haslam, town clerk, Corporation Offices, Bank Street, Bury, Lancs.

CANTERBURY.—March 26.—For erection of eighteen cottages, &c., at the Kent County Lunatic Asylum, Chartham Downs. Mr. Francis R. Howlett, clerk to the Kent County Asylums' committee, 9 King Street, Maidstone.

CHARTHAM DOWNS.—March 26.—For erection of eighteen cottages and works in connection therewith at the Kent County Lunatic Asylum, Chartham Downs, near Canterbury. Mr. Francis R. Howlett, clerk to the committee, 9 King Street, Maidstone.

CONINGSBY.—March 10.—For erection of a farmhouse at Tumby Wood Side, near Coningsby, Lincoln. Mr. J. Miller, 123 Speakman Road, St. Helens, Lancashire.

DARTFORD.—March 24.—For erection of a pair of semi-detached cottages at the sewage pumping station at Slades Green, near Erith. Messrs. Tait & Hobbs, architects, Lowfield Street, Dartford.

DARWEN.—March 10.—For erection of two tramway waiting-rooms and underground conveniences in connection therewith on the Belgrave Square, Darwen, Lancs. Quantities with form of tender may be obtained on application to the Borough Engineer, Municipal Offices.

DURHAM.—March 17.—For erection of a cottage, with outbuildings and storehouse, at Meadowfield. Mr. W. Harding, secretary, District Council, 10 Crown Street Chambers, Darlington.

ELLAND.—March 11.—For supply of following plant: (Section No. 1) quick-speed engines for direct coupling dynamos; (2) dynamos, booster and balancers; (3) storage battery; (4) switchboard; (5) travelling crane; (6) supply and laying of cables; (7) condenser apparatus. Mr. Walter Emmott, consulting engineer, 35 Commercial Street, Halifax.

EPSOM.—March 24.—For additions, alterations and extensions at the isolation hospital at Hook Road, Epsom. Mr. Edward R. Capon, surveyor, Bromley Hurst, Church Street, Epsom.

EXETER.—For additions and alterations at the West England Institution for the Deaf and Dumb, Topsham Road. Mr. James Jerman, architect and surveyor, 5 Bedford Circus, Exeter.

GREAT HARWOOD.—March 29.—For erection of public slaughter-houses in Wood and Balfour Streets, Great Harwood. Mr. Alfred H. Dunkin, surveyor, Town Hall, Great Harwood.

GRIMSBY.—For erection of stables, stores, &c, at the end of Granville Street. Messrs. J. & C. Popple, Fish Dock Road, Grimsby.

HALIFAX.—March 17.—For erection of model bakery, shops and offices, and stabling in Horton Street. Messrs. Walsh & Nicholas, architects, Museum Chambers, Halifax.

HARNHAM.—March 10.—For pulling-down some cottages and rebuilding the Swan inn, Harnham. Messrs. John Haining & Son, architects, Salisbury.

HEMSWORTH.—March 11.—For carting and laying about 680 yards of 3-inch water-mains, the fixing of meters, hydrants, &c., connected with same, in the township of Havercroft-with-Cold, Hiendley, Hemsworth, Yorks. Mr. T. H. Richards, surveyor, Hemsworth.

HESTON.—March 10.—For erection of a sexton's cottage, dwarf walling and other work at the new burial-ground, Sutton Lane, Heston, Middlesex. Messrs. Parr & Kates, architects, 5 Brentford Road, Brentford, W.

HODDESDON.—March 18.—For repairs to the superintendent's lodge at the burial-ground, Hoddesdon, Herts. Mr. Philip R. Longmore, clerk to the burial committee, High Street, Hoddesdon.

HORSHAM.—March 11.—For additions and alterations to the Station hotel, Horsham. Mr. William Buck, architect, Horsham.

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HULL.—For erection of Baptist church in the Boulevard, Hull. Mr. T. Brownlow Thompson, architect, 15 Parliament Street, Hull.

HULL.—March 12.—For erection of a park-keeper's lodge at the West Park. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

HULL.—March 12.—For erection of postal sorting office at Hull. Forms of tender may be obtained at H.M. Office of Works, &c., Storey's Gate, S.W.

IRELAND.—March 10.—For erection of an iron isolation hospital at the Down District Lunatic Asylum, Downpatrick. Mr. James Heron, C.E., county surveyor, Court House, Downpatrick.

IRELAND.—March 11.—For erection of a dwelling-house at Northland Road, Londonderry. Mr. R. Eccles Buchanan, architect, Castle Street, Londonderry.

IRELAND.—March 12.—For erection of a gentleman's residence and offices on the Donovan estate, adjoining the Queen's college grounds, Cork. Messrs. W. H. Hill & Son, architects, South Mall, Cork.

IRELAND.—March 13.—For erection of a central creamery Tobercurry. Mr. James Donohoe, hon. secretary, Tobercurry.

IRELAND.—March 13.—For alterations of the present disinfected fever hospital at Clones to a workhouse infirmary. Mr. Clarke, clerk, Workhouse, Clones.

IRELAND.—March 18.—For providing a gravitation water supply at the County Asylum, Antrim. Mr. J. Walker, clerk, County Asylum, Antrim.

ISLEWORTH.—April 1.—For additions to the Percy House schools, Isleworth. Mr. W. H. Ward, architect, Paradise Street, Birmingham.

KENDAL.—March 10.—For erection of Crosthwaite garage. Mr. Joseph Bintley, architect, 7 Lowther Street, Kendal.

KENDAL.—March 12.—For altering the Golden Lion hotel, Kendal, and for fitting-up for the electric light. Mr. John Walker, architect, 57 Highgate.

LAMBETH.—March 20.—For erection of a disinfecting chamber, stabling, &c., at the Council premises, Wanless Road, Loughborough Junction. Mr. Henry Edwards, C.E., borough engineer, Lambeth Town Hall, Kennington Green, S.E.

LEEDS.—For erection of warehouse offices, York Place, Leeds. Mr. T. H. Rhodes, architect, 17 Hyde Terrace, Leeds.

LEEDS.—March 10.—For erection of police-station buildings at the junction of Ashley Road and Stanley Road. Mr. W. J. Jeeves, town clerk, Leeds.

LIVERPOOL.—March 17.—For erection at Highfield, Knotty Ash, near Liverpool, of a group of buildings intended to be an infirmary for the aged bedridden poor of the parish. Mr. Kirby and Mr. Willink, architects, 5 Cook Street, Liverpool.

LONGTOWN.—March 15.—For erection of a four-roomed cottage at Longtown. Mr. J. J. Millican, Park Gate, Springfield, Grainey.

LONDON.—For erection of blocks of flats, South-West district. Mr. Gray, 11 and 12 Clement's Lane, E.C.

LONDON.—March 13.—For erection of an engineer's cottage at the Park Fever Hospital, Hither Green, S.E. Specification, conditions of contract and form of tender may be obtained at the office of the Metropolitan Asylums Board, Embankment, E.C.

LONDON.—March 13.—For erection of a gate porter's lodge and an addition to the steward's house at the Northern Convalescent Fever Hospital. Specification, conditions of contract and form of tender may be obtained at the office of the Metropolitan Asylums Board, Embankment, E.C.

LOUGHBOROUGH.—For erection of a house, Herrick Road, Loughborough, Leics. Mr. Albert E. King, architect, Baxter Gate, Loughborough.

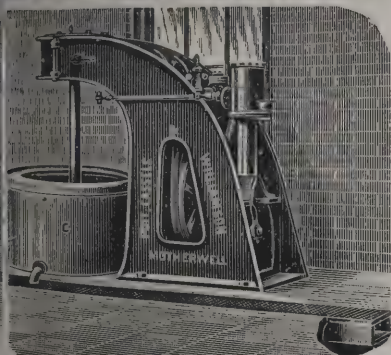
MACCLESFIELD.—March 22.—For preparation of the levelling of site and construction of foundations, and drainage of the new infirmary annexe at the Parkside Asylum. Mr. H. Beswick, county architect, Newgate Street, Chester.

MANCHESTER.—March 10.—For construction of Section D E of a subway for electric cables across Ashton New Road, Bradford. Particulars may be obtained at the office of the City Surveyor, Town Hall.

MANCHESTER.—March 12.—For erection of an electricity sub-station at Fallowfield. Particulars may be obtained at the office of the City Surveyor, Town Hall.

MORECAMBE.—March 10.—For erection of a sanatorium, &c., at Heysham. Mr. H. G. Nicholson-Lailey, surveyor, Council Offices, Heysham.

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**NEWCASTLE-UPON-TYNE.**—March 15.—For alterations and additions to premises in Blenheim Street. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

**NEW MALDEN.**—March 10.—For erection of a small house, Thetford Road. Mr. Vincent Davison, architect, Market Place, New Malden.

**NEWMARKET.**—March 17.—For erection of a female infirmary, additions to male infirmary, nurses' home, maternity ward, administration buildings, laundry, porter's lodge, receiving wards, alterations to existing buildings, &c., at the workhouse. Messrs. Holland & Sons, architects, High Street, Newmarket.

**NORTHAMPTON.**—For erection of infirmary and converting the old building into the administrative block. Mr. C. S. Risbee, secretary, Union Offices, Northampton.

**NORWICH.**—March 21.—For erection of the Silver Road school, Norwich. Mr. C. J. Brown, architect, Cathedral Offices, Norwich.

**OULTON.**—For erection of Primitive Methodist chapel at Oulton, Lowestoft. Mr. F. W. Richards, architect, Stanley Street, Lowestoft.

**PADDINGTON.**—March 10.—For the construction of three gates, with wickets and stone piers, and for pointing walls and other incidental matters in connection with the new coroner's court and mortuary, Manor Place, Paddington. Mr. Frank Dethridge, town clerk, Town Hall, Paddington, W.

**PICKERING AND KIRBYMOORSIDE.**—March 31.—For laying six miles of 3½-inch and 3-inch cast-iron water-mains, the construction of impounding tanks and service reservoir and the supply of about 210 tons of cast-iron pipes and fittings for the joint water-supply of Spaunton, Lasingham and Appleton-le-Moors, Yorks. Mr. J. E. Parker, engineer, Post Office Chambers, Newcastle-on-Tyne.

**PILTON.**—March 14.—For erection of two cottages, Pilton Street, Pilton. Mr. J. Thomas, Bull Hill, Pilton.

**PRESTON.**—March 14.—For alterations and additions to the Corporation Arms, Lune Street and Wharf Street. Particulars can be obtained of the Borough Surveyor, Town Hall, Preston.

**PUDSEY.**—March 12.—For rebuilding of spinning mill. Messrs. Jowett Kendall & J. Harper Bakes, architects, Calverley Chambers, Victoria Square, Leeds.

**RADCLIFFE.**—March 15.—For erection of engine-house, boiler-house, offices, stores and other works in connection with the electricity station in Dale Street, Radcliffe, Lancs. Mr. J. Sharples, clerk, Urban District Council Offices, Radcliffe.

**RAMSBOTTOM.**—March 18.—For erection of the Hazlehurst Board school, Ramsbottom. Mr. Thomas Bell, architect, 14 Grimshawe Street, Burnley.

**ROMSEY.**—March 29.—For taking-down existing church at Sherfield English, near Romsey, Hants, and the erection of a new church on same site. Mr. Fred. Bath, architect, Crown Chambers, Salisbury.

**ST. HELENS.**—March 12.—For construction of a covered service reservoir of concrete, to contain ten millions of gallons, at Brown Edge, St. Helens, Lancs. Mr. J. J. Lackland, water engineer, Town Hall, St. Helens.

**ST. PANCRAS.**—March 14.—For foundations for the extension of the King's Road power station. Mr. C. H. F. Barrett, town clerk, Town Hall, Pancras Road.

**SCOTLAND.**—March 10.—For erection of a villa at Nairn. Mr. R. B. Pratt, architect, Town and County Bank Buildings, Elgin.

**SCOTLAND.**—March 11.—For additions to Home Farm steading, Delgaty. Messrs. James Duncan & Son, architects, Turriff.

**SCOTLAND.**—March 11.—For erection of a warehouse at Ardmore Distillery, Kennethmont. Mr. Charles C. Doig, architect, Elgin.

**SCOTLAND.**—March 12.—For erection of the Western District Hospital at Oak Bank, off Fossil Road, Glasgow. Messrs. D. Wilkie & Sons, architects, 53 Bothwell Street, Glasgow.

**SCOTLAND.**—March 13.—For erection of a new retort bench, chimney, &c., at the new gasworks, Friarton, Perth. Mr. John Begg, town clerk, City Chambers, Perth.

**SCOTLAND.**—March 15.—For erection of twenty workmen's houses, Blairadam. The Fife Coal Co., Ltd., Leven.

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SCOTLAND.—March 17.—For introduction of a water-apply to Prestonpans water district. Mr. J. D. Watson, county clerk, Haddington.

SHAW.—March 10.—For erection of the proposed Primitive Methodist school-chapel, Refuge Street, Shaw, Lancs. Mr. J. Harper, architect, 54 Long Row, Nottingham.

SHEFFIELD.—March 17.—For erection of a hospital atighton, near Sheffield. Mr. J. D. Webster, architect, Cairns Chambers, 19 St. James Street, Sheffield.

SHEFFIELD.—March 21.—For erection of sale shops and premises at the corner of Castle Street and Haymarket. Messrs. Gibbs & Flockton, architects, 15 St. James's Row, Sheffield.

SOUTH TOTTENHAM.—March 26.—For erection of about 50 feet of fence wall at the North-Eastern Hospital, St Ann's Road. Messrs. A. & C. Harston, architects, 15 Leadenhall Street, E.C.

STRATFORD-ON-AVON.—March 13.—For erection of an infirmary for women, at Stratford-on-Avon workhouse. Messrs. Charles Smith & Son, architects, 164 Friar Street, Reading.

SWINDON.—March 15.—For alterations and additions to Regent Street. Mr. R. J. Beswick, architect, 35 Regent Street, Swindon.

SWINDON.—March 15.—For addition to Mr. Hunter's premises, Regent Street. Mr. R. J. Beswick, architect, Regent Street, Swindon.

TOOTING.—March 13.—For erection of a visitors' room at Grove Fever Hospital. Specification, conditions of contract and form of tender may be obtained at the office of the Metropolitan Asylums Board, Embankment, E.C.

WALES.—For erection of a Presbyterian church of Wales, Builth Wells. Messrs. Habershon, Fawcaker & Groves, architects, Pearl Street, Cardiff.

WALES.—For alterations and additions to The Hill, Abergavenny. Mr. E. A. Johnson, architect, Abergavenny.

WALES.—March 10.—For roofing, &c., of Brynhenllan chapel, Dinas Cross. Captain Perigrine, Smithfield Place, Dinas Cross.

WALES.—March 11.—For erection of public offices and premises at Abergarw, Brynmenin. Mr. S. H. Stockwood, clerk to Urban District Council, Post Office Buildings, Abergarw.

WALES.—March 13.—For erection of a chapel at Hopkinstown. Mr. A. O. Evans, architect, Pontypridd.

WALES.—March 14.—For renovation of the Wesleyan chapel, Aberayron. Rev. J. Lloyd, Greenland Terrace, Aberayron.

WALES.—March 15.—For erection of a schoolroom at the Presbyterian church, Llanymynech. Rev. G. O. Evans, Gardd, Llanymynech.

WALES.—March 15.—For erection of an hotel at Blaengarw. Mr. P. J. Thomas, architect, Bridgend.

WALES.—March 15.—For erection of a retort house, coal store, exhaustor, boiler purifying and station meter houses and tar and liquor well, and the supply of iron and steelwork and materials in retort stack mountings (including firebrickwork of stack and benches), condenser, exhaustor, tower scrubber, purifiers and revivifying shed, valves and connections at the gasworks, Aberavon. Mr. M. Tennant, town clerk, Aberavon.

WALES.—March 17.—For erection of twenty-six cottages, a shop and a detached villa residence at Ebbw Vale. Mr. J. F. Jones, 28 Commercial Street, Ebbw Vale.

WALES.—March 17.—For erection of a Congregational church, Waunllwyd. Mr. J. Phillips, Cwm Road, Waunllwyd, Mon.

WALES.—March 18.—For erection of a new farmhouse at Ffynonwen, near Talybont-on-Usk, Llanfeigan, Breconshire. Particulars may be obtained from Mr. D. T. Isaac, Brecon.

WALES.—March 19.—For erection of a Forward Movement hall at Barry. Mr. George Thomas, architect, Queen's Chambers, Queen Street, Cardiff.

WARRINGTON.—March 12.—For erection of manager's house and alterations to existing baths. Mr. T. Beesley, architect, 28 Bold Street, Warrington.

WEST HAM.—March 11.—For erection of an electric generating station and offices at Quadrant Street, Canning Town. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

WEYBRIDGE (SURREY).—For additions to the National schools and master's new house, comprising alterations to the existing buildings, five new classrooms, with cloakroom, corridors, outbuildings and master's new house. Mr. A. H. Ryan, architect, 12 Little College Street, Westminster, S.W.

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**TENDERS.****BRADFORD.**

For extension of the Rawson Place markets. Messrs. T. C. HOPE & SON, architects, 23 Bank Street, Bradford.

*Accepted tenders.*

P. Drake, Bradford, mason and excavator.  
Helliwell & Co., Ltd., Brighouse, roof glazier.  
Hillam Bros., Horton, slater.  
A. Ross, Shipley, plumber and glazier.

**BREWOD.**

For reseating the nave of the parish church in oak. Mr. ASHTON VEALL, architect, Wolverhampton.

J. HATCH & SONS, Lancaster (accepted) . . . £558 0 0

Note.—Twenty-six tenders received, ranging from £340 to £1,300.

**BRIDGWATER.**

For construction of collecting trenches and other works upon the Willoughby estate.

CASE SEA DEFENCE SYNDICATE, LTD., London (accepted) . . . £632 0 2

**BROMLEY (KENT).**

For erection of a brick wall and street works in connection with the widening of a portion of Park Road.

*Estimate No. 1.*

J. Coker . . . . .	£139 18 8
J. Mowlem & Co. . . . .	111 13 1
Lawrence & Thacker . . . . .	106 1 1
H. Woodham & Sons . . . . .	93 2 7
Wallace & Inns . . . . .	89 4 7
M. DINNIE, Chislehurst (accepted) . . . . .	84 13 3

*Estimate No. 2.*

J. Coker . . . . .	138 11 6
Lawrence & Thacker . . . . .	113 2 6
Wallace & Inns . . . . .	107 3 0
J. Mowlem & Co. . . . .	107 1 10
H. Woodham & Sons . . . . .	101 9 0
M. DINNIE (accepted) . . . . .	88 2 6

**BOURNEMOUTH.**

For tramway works. Mr. F. W. LACEY, borough and tramway engineer.

*Contract No. 12.—Overhead equipment.*

G. Hill & Co. . . . .	£22,901 1 9
Lowdon Bros. & Co. . . . .	21,419 16 4
Macartney, McElroy & Co., Ltd. . . . .	19,734 10 0
J. G. White & Co., Ltd. (alternative) . . . . .	19,533 3 0
British Insulated Wire Co. . . . .	19,203 14 0
J. G. WHITE & CO., LTD. (accepted) . . . . .	18,933 3 0
British Thomson-Houston Co., Ltd. (informal) . . . . .	—

*Contract No. 13.—Cables, &c.—With stoneware ducts.*

J. G. White & Co., Ltd. . . . .	£26,873 0 0
J. G. White & Co., Ltd. (alternative) . . . . .	22,988 0 0
Siemens Bros. & Co., Ltd. . . . .	24,056 3 1
W. T. Glover & Co., Ltd. . . . .	24,006 0 0
St. Helens Cable Co., Ltd. . . . .	23,875 10 6
W. F. Dennis & Co. . . . .	22,914 0 0
Western Electric Co. . . . .	22,885 6 9
British Insulated Wire Co., Ltd. . . . .	22,398 2 1
British Insulated Wire Co., Ltd. (alternative) . . . . .	21,835 9 3
W. T. Henley's Telegraph Works Co., Ltd. . . . .	22,274 15 5
CALLENDER'S CABLE AND CONSTRUCTION CO., LTD. (accepted) . . . . .	20,669 13 5
Johnson & Phillips (informal) . . . . .	—

*With Howard conduits.*

Siemens Bros. & Co., Ltd. . . . .	27,858 11 8
St. Helens Cable Co., Ltd. . . . .	26,102 0 1
Western Electric Co. . . . .	25,662 19 3
W. T. Glover & Co., Ltd. . . . .	25,551 0 0
W. F. Dennis & Co. . . . .	25,395 4 9
British Insulated Wire Co., Ltd. . . . .	25,367 2 10
W. T. Henley's Telegraph Works Co., Ltd. . . . .	24,871 14 11
CALLENDER'S CABLE AND CONSTRUCTION CO., LTD. (accepted) . . . . .	24,509 10 10
Johnson & Phillips (informal) . . . . .	—

**CHESTERFIELD.**

For erection of five separate pairs of semi-detached houses at Bolsover. Mr. W. H. WAGSTAFF, architect, Chesterfield.  
J. VASEY & SON, 87 London Road, Sheffield (accepted).

**C. B. N. SNEWIN & SONS, LTD.** MAHOGANY, WAINSCOT, AND TIMBER MERCHANTS. BACK HILL, HATTON GARDEN; & RAY ST., FARRINGTON ROAD. LONDON, E.C. Telephone 274 Holborn.

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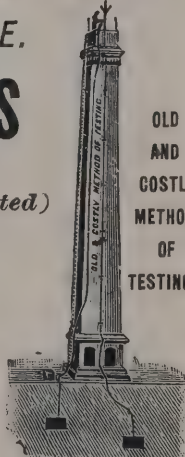
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CANTERBURY.

construction of sewers, outfall works and pumping station for draining the parishes of Harbledown and St. Nicholas, near Canterbury. Mr. A. BROMLEY, engineer, Cathedral Precincts, Canterbury.

ramor & Sons	£5,190	0	0
allis & Sons	4,437	0	0
S. Ingleton	4,149	0	0
Denne	4,100	0	0
oke & Co.	4,096	0	0
we	4,046	0	0
llingback & Co.	4,037	0	0
Wilson	3,978	0	0
J. ADCOCK, Canterbury (accepted)	3,851	0	0

CLIFTON JUNCTION, &c.

widening line at Clifton Junction for the Lancashire and Yorkshire Railway Company.

H. BENTLEY, 45 Horton Grange Road, Bradford, Yorkshire (accepted).

widening line between Bromley Cross station and King William goods yard on the Bolton and Blackburn Line.

TRIGLEY, Central Station Buildings, Blackpool (accepted).

DARLINGTON.

erection of an additional wing and other extensions to the Darlington Training College. Messrs. J. P. PRITCHETT & SON, architects, 24 High Row, Darlington.

Accepted tenders.

ackenzie, Duke Street, bricklayer, mason and plasterer. Lancaster, Bondgate, slater.

Richardson, Barton, Darlington, carpenter and joiner.

Coates, Mechanics' Yard, plumber and glazier.

Davidson & Son, Skinnergate, painter.

DORSET.

erection of a fire-escape, wrought-iron staircase, &c., at the Cerne Union workhouse.

Dibben & Sons	£88	13	6
Barrett & Son	84	15	0
G. Hodges	62	15	0
tt & Walne	53	15	0
Hazell	39	16	0
J. MITCHELL, Cerne Abbas (accepted)	38	17	6

EASTBOURNE.

For building new technical institute. Mr. P. A. ROBSON, architect.

	Technical Institute.	Fire Station.
J. S. Kimberley	£42,355	£6,267
Mark Hookham	40,328	6,549
W. & E. Noakes	38,158	5,440
Longley & Co.	37,439	5,420
Strange & Sons	37,112	5,368
W. J. Bloxham	37,011	5,303
J. E. Johnson & Son	36,936	5,438
Harris & Rowe, Ltd.	36,900	4,600
Goddard & Son	36,770	5,600
C. Jackson	36,599	5,833
Martin Wells & Co.	35,999	5,413
Holliday & Greenwood	35,777	5,085
Maple & Co.	35,436	5,115
Gann & Co.	35,100	5,120
F. G. Minter	34,730	5,096

Mr. Minter's tender was recommended for adoption by the committee, but the Council declined to have the works commenced without further deliberation.

FARNBOROUGH.

For supply of about 1,480 lineal yards of Pennant stone kerbing, and labour and materials required in laying same.

Mr. J. E. HARGREAVES, surveyor.

W. Norris	£302	7	6
Tytherington Stone Co.	283	10	0
S. T. Clothier	272	17	6
West Gloucester Pennant Stone Co.	233	15	8
T. Free & Co.	226	0	0
FREE BROS., Marlborough (accepted)	225	5	0

HULL.

For erection of a steam-roller shed and coal store at Hornsea. Mr. W. E. WARBURTON, surveyor, Public Rooms, Hornsea.

Grantham & Robinson	£200	11	10
W. Turner	199	10	0
J. R. Woods	184	0	0
W. Burdett	183	14	10
G. D. Scott	182	16	0
J. O. Pickering	151	11	6
H. HULSE, 61 Leonard Street, Hull (accepted)	145	0	0

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## GUILDFORD.

For street works in the New Down and High Path Roads.  
Mr. JOHN ANSTEE, surveyor.

*New Down Road.*

Streeter & Todhunter . . . . .	£487	0	0
T. Free & Sons . . . . .	476	0	0
W. G. Edwards . . . . .	460	0	0
W. H. Wheeler . . . . .	444	15	4
E. H. King . . . . .	427	11	6
G. A. FRANKS, Guildford ( <i>accepted</i> ) . . . . .	394	17	10

*High Path Road.*

A. C. Evan . . . . .	522	5	0
Streeter & Todhunter . . . . .	487	0	0
T. Free & Son . . . . .	483	10	0
W. G. Edwards . . . . .	466	0	0
W. H. Wheeler . . . . .	450	11	0
E. H. King . . . . .	433	0	0
G. A. FRANKS ( <i>accepted</i> ) . . . . .	438	17	0

## HACKNEY.

For erection of casual wards, clothes store, laundry and other buildings at Gainsborough Road, Hackney Wick.

A. Monk . . . . .	£35,000	0	0
Todd & Newman . . . . .	32,946	0	0
Kirk & Randall . . . . .	31,313	0	0
J. Appleby . . . . .	30,950	0	0
W. H. D. Kelland . . . . .	30,400	0	0
McCormick & Sons . . . . .	29,876	0	0
Coulson & Lofts . . . . .	29,800	0	0
Thomas & Edge . . . . .	28,884	0	0
B. E. Nightingale . . . . .	28,500	0	0
W. Lawrence & Son . . . . .	28,500	0	0
W. J. Clark . . . . .	28,419	0	0
H. Lovatt . . . . .	28,300	0	0
J. Chessum & Sons . . . . .	28,009	0	0
Wilson Bros. & Lamplough . . . . .	27,856	0	0
Kilby & Gayford . . . . .	27,828	0	0
Perry & Co. . . . .	27,495	0	0
Snewin Bros. & Co. . . . .	27,243	0	0
C. G. Hill . . . . .	26,985	0	0
W. Shurmur & Sons, Ltd. . . . .	26,946	0	0
C. Dearing & Son . . . . .	24,983	0	0
HERBERT BROS., Corporation Street, West Ham ( <i>accepted</i> ) . . . . .	24,100	0	0

## HENDON.

For conversion of about 2,000 yards superficial of old filter beds into coarse bacteria beds at the sewage outfall works Renter's Lane, Hendon. Mr. S. SLATER GRIMLEY engineer.

*Accepted tenders.*

J. Shepherd, Belle Vue Terrace, Hendon, for about 1,000 yards 3s. 6d. per yard superficial.  
G. Wells, 16 New Brent Street, Hendon, for about 1,000 yards, 3s. 6d.

## HUNSTANTON.

For erection of the Glebe hotel, new stables, &c., Hunstanton.

W. H. Brown . . . . .	£1,719	0	0
W. Sindall . . . . .	1,515	0	0
John Cracknell . . . . .	1,419	0	0
Geo. Chambers & Sons . . . . .	1,411	6	0
Reuben Shanks . . . . .	1,394	0	0
W. Saint . . . . .	1,384	0	0
A. F. Foreman . . . . .	1,370	12	0
F. Giddings, St. Ives, Hunts* . . . . .	1,338	0	0

\* Accepted conditionally.

## IRELAND.

For erection of a villa residence at Bandon, co. Cork. Messrs W. H. HILL & SON, architects, Cork.

D. MURPHY, Bandon (*accepted*) . . . . . £550 0 0

For erection of three dwelling-houses at Summerhill South Cork. Messrs. W. H. HILL & SON, architects, 28 South Mall, Cork.

J. E. O'Connell . . . . .	£1,495	0	0
J. Lisk . . . . .	1,495	0	0
A. Gaul . . . . .	1,400	0	0
J. Kearns . . . . .	1,325	0	0
E. FITZGERALD, Geraldine Place, Cork ( <i>accepted</i> ) . . . . .	1,200	0	0

## LANCASTER.

For construction of steel roofs over engine and boiler-house and supply of steel girders, &c., required in erection of buildings at the electric power station, Morton Street. Mr. JOHN COOK, borough surveyor.

E. WOOD & CO., LTD., Ordsal Lane, Manchester (*accepted*)

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DILWORTH, 1 Childwall Road, Wavertree,  
Liverpool (accepted) . . . . . £16,400 0 0

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enlargement—boys and girls, 100. Classrooms: boys',  
50; girls', 50. Additional cloakrooms and lavatories for  
boys and girls, providing infant teachers' room and girls'  
staircase and stockrooms for boys and girls, Mowlem  
Street, Hackney.  
Cormick & Sons . . . . . £3,398 0 0  
rover & Son . . . . . 3,256 0 0  
eslie & Co., Ltd. . . . . 3,151 0 0  
L. Green . . . . . 3,147 0 0  
Gregar & Son . . . . . 3,135 0 0  
larke & Bracey . . . . . 3,115 0 0  
newin Bros. & Co. . . . . 3,080 0 0  
taines & Son . . . . . 3,056 0 0  
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Chessum & Sons . . . . . 3,026 0 0  
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Shurmur . . . . . 2,987 0 0  
& F. J. Wood . . . . . 2,985 0 0  
H. & R. Roberts . . . . . 2,984 0 0  
Lawrence & Sons . . . . . 2,911 0 0  
Cox\* . . . . . 2,910 0 0

altering position of boys' entrance doorway, in order to  
obviate passing through the schoolroom, as at present,  
including new fixed glazed framing to form passage and  
lobby in connection therewith, Hanbury Street, Tower  
Hamlets.  
ibb & Co. . . . . £297 0 0  
H. Jackson . . . . . 274 10 0  
E. Symes . . . . . 245 0 0  
Johnson & Co. . . . . 241 0 0  
F. Holliday . . . . . 212 0 0  
Barker . . . . . 205 0 0  
J. Sheffield . . . . . 190 0 0  
& F. J. Wood\* . . . . . 190 0 0

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## LONDON SCHOOL BOARD—continued.

For removing the defective zinc covering and gutters to roof  
over art-room and replacing them with new material  
(second competition), Saffron Hill, Finsbury.  
W. Hornett . . . . . £184 0 0  
T. L. Green . . . . . 143 0 0  
Vigor & Co. . . . . 138 10 0  
Marchant & Hirst . . . . . 125 0 0  
General Builders, Ltd. . . . . 123 0 0  
Stevens Bros.\* . . . . . 118 0 0  
F. T. Chinchin & Co. . . . . 45 10 0

For executing alterations in drainage and sanitary arrange-  
ments, providing new stoves, also minor repairs and  
cleaning and painting throughout (second competition),  
Kentish Town Road, Marylebone.

E. Triggs . . . . . £490 0 0  
Stevens Bros. . . . . 479 0 0  
Marchant & Hirst . . . . . 465 0 0  
M. Pearson . . . . . 410 0 0  
F. Chidley\* . . . . . 325 6 0

Unless where otherwise stated, the interior work at the  
following schools will be carried out between March 8 and  
April 5, 1902, and the exterior work between March 8 and  
April 12, 1902:—

For painting exterior and cleaning interior (old portion),  
Oxford Gardens, Chelsea.

G. H. Sealey . . . . . £308 0 0  
C. Curd . . . . . 207 0 0  
F. Chidley . . . . . 179 10 0  
W. R. & A. Hide . . . . . 172 15 0  
S. Polden . . . . . 172 15 0  
C. Gurling . . . . . 171 0 0  
G. Neal . . . . . 167 10 0  
W. Chappell . . . . . 165 0 0  
W. Hammond . . . . . 137 0 0  
F. T. Chinchin & Co.\* . . . . . 134 14 0

For painting interior and exterior, Harvist Road, Finsbury.

C. & W. Hunnings . . . . . £379 10 0  
J. Watkins . . . . . 343 0 0  
Marchant & Hirst . . . . . 334 0 0  
Stevens Bros. . . . . 333 0 0  
W. Sayer & Son . . . . . 297 0 0  
Bate Bros.\* . . . . . 265 0 0

\* Recommended for acceptance.

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## LONDON SCHOOL BOARD—continued.

For painting exterior and cleaning interior (old portion), and painting interior and exterior (enlargement), Buckingham Street, Finsbury.

J. Watkins . . . . .	£513	0	0
C. & W. Hunnings . . . . .	448	0	0
McCormick & Sons . . . . .	420	0	0
Stevens Bros. . . . .	394	0	0
W. Hornett . . . . .	381	0	0
Marchant & Hirst . . . . .	378	0	0
S. Polden* . . . . .	350	0	0

For painting interior and exterior (old and new portions), Hargrave Park, Finsbury.

Bristow & Eatwell . . . . .	£705	0	0
C. Dearing & Son . . . . .	693	0	0
Marchant & Hirst . . . . .	669	0	0
McCormick & Sons . . . . .	638	0	0
C. & W. Hunnings . . . . .	596	10	0
T. Cruwys . . . . .	576	0	0
Stevens Bros. . . . .	548	0	0
W. Sayer & Son* . . . . .	473	0	0

For painting interior and exterior, Rotherfield Street, Finsbury.

C. Dearing & Son . . . . .	£666	0	0
J. Grover & Son . . . . .	652	0	0
McCormick & Sons . . . . .	616	0	0
C. & W. Hunnings . . . . .	600	15	6
Holliday & Greenwood, Ltd. . . . .	547	0	0
Marchant & Hirst . . . . .	531	0	0
C. Willmott & Son . . . . .	500	0	0
J. Haydon & Sons . . . . .	438	15	0
G. Barker . . . . .	437	0	0
A. W. Derby* . . . . .	423	0	0

For painting interior and exterior, Ennersdale Road, Greenwich.

A. J. Sheffield . . . . .	£367	0	0
C. G. Jones . . . . .	333	15	0
W. Banks . . . . .	324	12	6
Lathey Bros. . . . .	323	0	0
E. Proctor . . . . .	309	10	0
W. Hornett . . . . .	293	0	0
T. H. Jackson . . . . .	293	0	0
H. Groves . . . . .	275	0	0
W. Hayter & Son* . . . . .	265	0	0

\* Recommended for acceptance.

## LONDON SCHOOL BOARD—continued.

For painting interior and exterior (infants'), Rochelle Street, Hackney.†

W. Silk & Son . . . . .	£240	0	0
W. Shurmur & Son, Ltd. . . . .	195	0	0
Barrett & Power . . . . .	192	0	0
J. F. Holliday . . . . .	191	0	0
C. Willmott & Son . . . . .	185	0	0
G. Wales . . . . .	181	10	0
J. Haydon & Sons . . . . .	174	0	0
Corfield & Co. . . . .	167	0	0
J. Chessum & Sons . . . . .	165	0	0
E. Triggs* . . . . .	135	0	0

† In this case the interior work will be carried out between March 15 and April 5, 1902, and the exterior work between March 15 and April 12, 1902.

For painting interior (old portion), Upton House, Hackney.

J. Grover & Son . . . . .	£494	0	0
Barrett & Power . . . . .	450	0	0
J. Chessum & Sons . . . . .	432	0	0
W. Silk & Son . . . . .	420	0	0
A. J. Sheffield . . . . .	387	0	0
Vigor & Co. . . . .	382	0	0
C. Willmott & Son . . . . .	382	0	0
M. Pearson . . . . .	380	0	0
W. Shurmur & Sons, Ltd. . . . .	379	0	0
G. Wales* . . . . .	343	0	0

† Six weeks will be allowed for the execution of this work.

For painting interior, King and Queen Street, East Lambeth.

Martin, Wells & Co. . . . .	£805	0	0
Hudson Bros. . . . .	755	0	0
W. Downs . . . . .	685	0	0
Maxwell Bros., Ltd. . . . .	573	0	0
W. V. Goad . . . . .	545	0	0
Holliday & Greenwood, Ltd. . . . .	493	0	0
W. H. Lorden & Son . . . . .	488	15	0
W. King & Son . . . . .	448	0	0
E. Triggs . . . . .	445	0	0
J. Garrett & Son . . . . .	419	0	0
W. Sayer & Son . . . . .	394	0	0
G. Kemp . . . . .	375	0	0
J. & M. Patrick* . . . . .	368	0	0

\* Recommended for acceptance.

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ST. MARY, NEWINGTON, CORONER'S COURT.

LONDON SCHOOL BOARD—continued.

Cleaning interior (boys, girls and infants'), Brecknock, Marylebone.			
Halfour & Co.	£292	10	0
Chant & Hirst	287	0	0
Chappell	280	0	0
How & Eatwell	269	0	0
W. Hunnings	266	10	0
Olden	250	0	0
Ens Bros.	245	0	0
ayer & Son	212	0	0
hidley*	210	0	0
Painting interior (old portion) and interior and exterior (enlargement), Rolls Road, Southwark.			
King & Son	£660	0	0
well Bros, Ltd.	567	0	0
M. Patrick	566	0	0
son & Co	514	0	0
Bulled & Co.	459	0	0
Howie	457	0	0
& Son	449	0	0
doctor	424	0	0
Williams*	380	0	0

\* Recommended for acceptance.

PENISTONE.

sewerage and sewage disposal works, Penistone, Yorks. Messrs. C. H. MARRIOTT, SON & SHAW, engineers. BENTLEY, Bradford (accepted) £1,428 0 0

MALTON.

For works of water-supply for the village of Welburn, Yorks, and for erection of wheel and pump-house and reservoir, together with the necessary pumping machinery, collecting and distributing works, mains, fountains, street wells, hydrants, &c. Mr. ROBT. RICHARDSON, engineer.

Accepted tenders.

J. & R Ritchie, Middlesbrough-on-Tees, pipes	£305	6	3
T. Leefe, Malton, fittings and plumber's work	188	13	4
G. Harrison & Co., Ripon, pumping machinery	168	17	0
A. Lyons, Norton, reservoir	135	7	0
J. Morgan, Coneysthorpe, collecting works and pumping station	73	15	0
J. Morgan, excavator	65	0	0

PUTNEY.

For erection of four shops in Upper Richmond Road, Putney. Mr. J. C. RADFORD, architect, 163 Upper Richmond Road, Putney.

W. J. Renshaw	£5,991	0	0
H. Roffey	5,772	0	0
Adamson & Sons	5,725	0	0
J. Knight	5,475	0	0
W. Bishop	5,450	0	0
Parsons & Co.	5,411	0	0
F. G. Minter	5,178	0	0
Read & Wilkinson	4,997	0	0

SCOTLAND.

For erection of the Eskdale infectious diseases hospital on a site about a mile south of Langholm, Dumfriesshire. Mr. TWEEDIE, architect, Annan.

Accepted tenders.

J. Rae & Sons, Annan, masonwork.	
W. Riddell & Sons, Hawick, joinerwork.	
R. Ramage, Langholm, plumbing.	
J. Bell, Langholm, plasterwork.	
J. T. Kellett, Carlisle, slating.	

SOOTHILL NETHER.

For construction of settling tanks, with valves, sluices, channels, &c., also the draining and levelling of land, Soothill Nether, Yorks. Messrs. C. H. MARRIOTT, SON & SHAW, engineers, Church Street Chambers, Dewsbury. W. WARING & SONS, Spring Wood, Huddersfield (accepted) £1,031 14 0

7 PALL MALL, S.W.

7 PALL MALL, S.W.

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FOR

CORONATION ILLUMINATIONS.

BECAUSE:—

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2. It can be APPLIED in the SHORTEST SPACE of TIME.
3. It can be FIXED ANYWHERE to ANY DESIGN.

BIGGEST EFFECTS AT SMALLEST COST.

ELECTRIC LIGHTING BOARDS

(BRITISH MANUFACTURING COMPANY, Ltd.),

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E.L.B.  
E.L.B.  
E.L.B.  
E.L.B.  
E.L.B.  
E.L.B.  
E.L.B.  
E.L.B.



## SKIPTON.

For additions and alterations to residence and erection of new stabling and carriage-house to Carla Beck, Carleton, Skipton. Mr. JAMES HARTLEY, architect, Swadford Chambers, Skipton.

*Accepted tenders.*

R. Wood, Bingley, mason.  
Greenhow & Murgatroyd, Keighley, joiner.  
G. H. Mason, Skipton, plumber.  
L. Shuttleworth, Skipton, plasterer.  
R. Thornton & Sons, Skipton, slater.  
Ellison & Co., Skipton, ironfounder.

## SNETTISHAM.

For erection of a house at Snettisham, Norfolk, for Mr. E. Lambert.

Chilvers & Son . . . . .	£1,503	10	4
F. Giddings . . . . .	1,292	0	0
Chambers & Sons . . . . .	1,285	0	0
Reuben Shanks . . . . .	1,264	0	0
F. Southgate, Hunstanton* . . . . .	1,242	0	0

\* Accepted conditionally.

## SOUTHAMPTON.

For supply of laundry fittings and hardware for new workhouse infirmary, Shirley Warren.

LANKESTER & SON, LTD., High Street (*accepted*).

For furnishing officers' apartments, nurses' home, and for cork carpets at the new workhouse infirmary, Shirley Warren.

*Accepted tenders.*

R. S. Smith & Co., High Street, cork carpet and furnishing officers' apartments.

Baker & Co., East Street, furnishing nurses' home.

## STAFFORD.

For supply and fixing of about 125 yards of wrought-iron unclimbable fencing at the workhouse.

W. Hayward & Sons . . . . .	£60	0	0
R. McBean . . . . .	58	17	6
Hill & Smith . . . . .	50	0	0
W. MILLER & SONS, Wolverhampton ( <i>accepted</i> ) . . . . .	34	10	9

## STAFFORD—continued.

For erection of four fireproof staircases, sundry smoke doors, &c., at the workhouse.

A. F. Whitto . . . . .	£373
F. Espley & Sons . . . . .	369
Adams & Pemberton . . . . .	360
S. H. Scarlett . . . . .	324
W. SKELHORNE, Stafford ( <i>accepted</i> ) . . . . .	320

## THIRSK.

For enlargement of St. Oswald's Church, Sowerby, and erection of a new north aisle.

WILSON & SONS, Leeds ( <i>accepted</i> ) . . . . .	£1,048
--	--------

## TONBRIDGE.

For alterations and additions to the Great Fish Tonnage. Mr. DELMÉ G. MOOTHAM, architect, Effingham House, Arundel Street, Strand, W.C.

J. Jarvis . . . . .	£798
Strange & Son . . . . .	761
Punnett & Son . . . . .	641

## TYNEMOUTH.

For providing and laying 12½ miles of 18-inch water from the Font Reservoir, Ewesley, to Stannington, including river and railway crossings, tunnels, &c. JAMES MANSEERGH, engineer, Westminster.

R. HUDSON & SONS, Sunderland, about £50,000 (*accepted*).

## WALES.

For erection of girls' school, classrooms, outbuildings, Blaenllynvi, Maesteg. Messrs. E. W. BURNETT & architects, Tondur, near Bridgend.

I. Rees . . . . .	£3,065
C. H. Cooksley . . . . .	3,040
J. JENKINS, Caerau, Maesteg ( <i>accepted</i> ) . . . . .	2,895

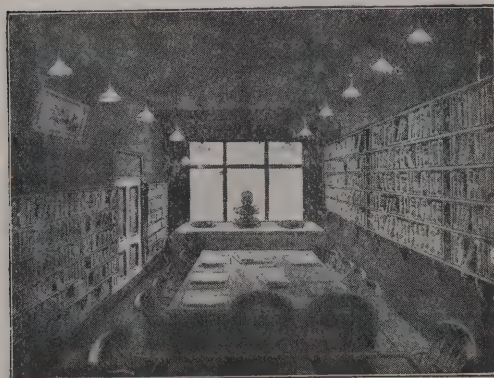
For erection of a public convenience at Canton, Cardiff. W. HARPUR, borough engineer.

W. T. Morgan . . . . .	£242
F. Waterman . . . . .	239
Melhuish Bros. . . . .	238
F. G. Robbins . . . . .	236
Price Bros. . . . .	223
KNOX & WELLS, Cardiff ( <i>accepted</i> ) . . . . .	221

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# NONEX. AN ODOURLESS CEMENT P

Preserves Artistically Iron, Corrugated Iron, Brick Walls (renders Damp-Proof by Sealing all Perforations) Plastering, Stones, Slates, Tiles, &c. Won't rub off. Will wash. Full instructions for use on each

Colours kept: SLATE CEMENT LIGHT MARONE LIGHT BRICK RED SLATE BLUE COLD GREY SLATE YELLOW DARK TERRA-COTTA GREEN LIGHT BLUE

6 lb. Tin of Powder, 1s. at Hull, or 1s. 9d. Carriage Paid to any part of the United Kingdom. Brush 11d. extra Carriage

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WALES—continued.

ending the Aberistedd sewer outfall about 92 feet or  
abouts, and supplying and laying-down a length of  
ch and 2-inch galvanised iron pipes, building brick  
, providing street-watering post and fixing urinal, and  
providing and fixing seven ventilating columns. Mr.  
RIS WILLIAMS, surveyor.

organ . . . . .	£247	19	0
e . . . . .	245	0	0
ve . . . . .	211	0	0
enix . . . . .	185	0	0
erts, Pwllheli* . . . . .	152	1	8
ter . . . . .	145	0	0

\* Accepted conditionally.

tion of a public reading-room at Abercanaid, Merthyr  
il. . . . . £649 10 0  
own . . . . . 643 13 10  
es . . . . . 620 0 0  
es . . . . . 618 12 0  
deredage . . . . . 610 13 9  
LIAMS, Dowlais (accepted) . . . . . 600 0 0

tion of additional classrooms, outbuildings, &c., at the  
tyffylon infants' school, Maesteg. Messrs. E. W.  
NETT & SON, architects, Tondy, near Bridgend.  
Lewis & Son . . . . . £1,450 0 0  
ooksley . . . . . 1,347 8 0  
ns . . . . . 1,330 0 0  
is, Maesteg (accepted) . . . . . 1,295 10 0  
is, Maesteg (accepted) . . . . . 1,050 0 0

tions to the Llandilo Shire Hall, for the Carmarthen-  
County Council. Mr. DAVID JENKINS, architect,  
lilo

EVANS, Llandilo (accepted) . . . . . £930 0 0  
tion of Maesteilo Church, Llandilo, for the Misses  
el. Mr. DAVID JENKINS, architect, Llandilo.  
s BROTHERS, Llandilo (accepted) . . . . . £1,815 0 0  
a for foundation, £200; extra for haulage, £160.  
Total, £2,175.

ding business premises, for Mr. Thomas Evans, Wern  
Llandilo. Mr. DAVID JENKINS, architect, Llandilo.  
s BROTHERS, Llandilo (accepted) . . . . . £455 0 0

WALES—continued.

For erection of electric-light station at Llandilo, for the Llandilo  
Urban District Council. Mr. DAVID JENKINS, architect,  
Llandilo.

THOMAS BROTHERS, Llandilo (accepted) . . . . . £705 0 0

For erection of a dwelling-house, Llangadock, for Miss Lewis,  
Cefngornoth. Mr. DAVID JENKINS, architect, Llandilo.

LEWIS DAVIES, Penygroes, Llandeibie (accepted) £761 10 0

For erection of business premises, Llanwrtyd Wells, for Mr.  
Anderson M. Davies, outfitter. Mr. DAVID JENKINS,  
architect, Llandilo.

EDGAR G. GROOM, Llandovery (accepted) . . . . . £923 0 0

For erection of a butcher's shop, Llanwrtyd Wells, for Mr.  
Wm. Rowlands, Radnor House. Mr. DAVID JENKINS,  
architect, Llandilo.

EDGAR G. GROOM, Llandovery (accepted) . . . . . £537 0 0

For erection of artisans' dwellings, Ammanford, for Mr.  
Thomas Lewis, The Foundry. Mr. DAVID JENKINS,  
architect, Llandilo.

JONES BROS., Ammanford (accepted) . . . . . £1,230 0 0

For erection of a pair of semi-detached houses at Waterloo,  
Llandeibie, for Mr. John Rees, Tanybryn. Mr. DAVID  
JENKINS, architect, Llandilo.

ANTHONY & RICHARDS, Cross Hands and Hendre  
(accepted) . . . . . £416 0 0

For rebuilding Blaen-yr-orfa cottage, Llandeibie, for Mr.  
Phillip Williams, Glyn-Henllan. Mr. DAVID JENKINS,  
architect, Llandilo.

LEWIS DAVIES, Penygroes, Llandeibie (accepted) £190 0 0

WEDNESBURY.

For removing two defective boilers at the public baths, and  
supplying and seating two new Cornish steam-boilers in  
their places. Mr. E. MARTIN SCOTT, borough surveyor.

Harper & Screen . . . . . £115 0 0

Cradley Boiler Works . . . . . 108 0 0

THOMPSON BROS., Bilston (accepted) . . . . . 89 0 0

J. T. Hutchinson . . . . . 81 18 0



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**KINNEAR STEEL ROLLING**

DOORS, SHUTTERS, and PARTITIONS.

Compact.  
Efficient.  
Convenient.

& FOLDING GATE CO., 19, 20 & 21 Tower Street, Upper St. Martin's Lane, London, W.C.



**WREXHAM.**

For construction of sewage-disposal works at the fever hospital. Mr. J. PRICE EVANS, engineer, Argyle Chambers, Wrexham.

Davis & Bros. . . . . £327 12 0  
H. A. JONES (accepted) . . . . . 298 16 7

*Received too late for Classification.*

**HULL.**

For street works of two streets at Sutton. Mr. WILLIAM H. WELLSTED, engineer, Prince's Dock Chambers, Hull.

E. Good & Sons, Ltd. . . . . £527 7 8  
J. Thacker . . . . . 514 1 7  
R. Fisher . . . . . 458 19 4  
A. Brunton & Son . . . . . 426 0 11  
W. Barnard . . . . . 415 13 4  
C. A. W. Napier . . . . . 412 5 3  
W. BURKITT, 1 Crystal Villas, Victor Street, Hull (accepted) . . . . . 401 19 4

**TRADE NOTES.**

THE new tramp wards, Abbeydore, have been fitted with the latest improved hot-water heating apparatus, by Messrs. John King, Ltd., engineers, Liverpool.

MESSRS. POTTS & SONS are fixing a new Cambridge quarter clock at the parish church, Saltburn-by-Sea. It is to be set going at Easter to commemorate Queen Victoria's long and useful reign. They have also in hand one at Egremont, Cumberland, and one at Huddersfield, West Yorks.

**VARIETIES.**

THE new Congregational church at Sheen Vale, Mortlake, was opened on Tuesday. It takes the place of the old Independent chapel, which was established in 1662, and has cost over 5,000*l*.

THE new schools in connection with the Blackburn Road Congregational church, Bolton, have been opened by Mr. W. H. Lever. They have a frontage of 140 feet and a depth

of 81 feet. The central hall will hold over 1,000 people; two wings contain 29 classrooms, an infants'-room for lecture hall, kitchen, lavatories, &c.

THE memorial statue in marble of Queen Victoria, Leamington, which Mr. Albert Toft is engaged on at his in Chelsea has been inspected by a deputation from the borough, and satisfaction was expressed at the striking likeness. The same sculptor has been commissioned to execute a marble of the King, which is to be unveiled on Monday day in one of the royal boroughs.

A FIRE occurred last week at the Strood Station, London, Chatham and Dover Railway. The building of wood, the flames spread rapidly, and none of the offices of the booking office could be saved. By cutting a platform the fire brigade prevented the conflagration from reaching the signal-box and the inspector's residence, but the room on the down platform was burnt out. The passenger way was not damaged.

A NEW post office has been erected at Dalkeith, opened for the transaction of business on Monday last. The building is an attractive one, and the contractors have their contracts in a very satisfactory way. The frontage comprises 420 superficial feet, and there is a spacious hall of 892 feet at the rear. Telephone and telegraphic apparatus are provided of large dimensions. Rooms are provided for post-mistress and for both male and female clerks, as well as for the postmen. Ample store and battery-rooms are furnished. The cost of the new offices is about 2,000*l*.

THE new Municipal Buildings at Clydebank, N.B., on Dumbarton Road, are now approaching completion. The Town Council are arranging for a formal opening of the buildings were begun over three years ago, and the cornerstone was laid by the Provincial Grand Master, Colonel M.P., in June 1900. The suite comprises large hall and hall, public offices for the burgh officials, police court, police station, library and reading-room. There are also annexes of baths and fire station. Mr. Miller, who was the architect for the Glasgow Exhibition, was the architect of the buildings. The total cost of all the buildings has been variously estimated, but it is believed it will at least 50,000*l*. or 60,000*l*.

A MEETING of the architectural section of the Philosophical Society of Glasgow was held on Monday last. Mr. Ninian McWhannell, vice-president, in the chair.

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**Electrical and Mechanical  
Engineers & Brass Finishers.**

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## ARC LAMP ELEVATORS,

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**Other Lighting  
Accessories.**

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**PHENIX ASSURANCE CO., Ltd.**

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19 LOMBARD STREET,

AND

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ESTABLISHED 1782.

Lowest Current Rates.

Liberal and Prompt Settlements.

Assured free of all Liability.

Electric Lighting Rules supplied.



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Liberal Commission allowed to **BUILDERS AND ARCHITECTS** for introduction of Business.

Subscribed Capital, **£2,228,875.**

**CHIMNEY PIPE  
BRATT: COLBRA  
10 Mortimer St. Lo**

**THE HELLIWELL**

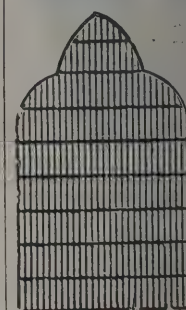
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LONDON OFFICE: 11 VICTORIA STREET, WEST

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BLOOMSBURY BRASS  
46 & 47 HIGH  
NEW OXFORD ST.  
Manufacture of every  
kind of useful and  
ornamental wire

**WIRE**

Sieves, Lime S  
Rails, Wirewo  
Case, Lift

Special low quotation  
for the protection of  
Skylight

Estimates and ill  
free on app  
TELEPHONE 249

**LISTS of ART PLATE  
CATHEDRALS, published in THE  
on application to GILBERT WOOD & CO  
Buildings, Ludgate Circus, London.**



Sommerville read a paper on "The Habitat and Mode of the Dry Rot Fungus." He commented on the interest in the growth and structure of trees on the part of wood, which was no doubt due to the fact that the bulk of the wood used in this country was imported. A brief description of the structure of a piece of wood, that it was a highly organised vegetable substance, all organic substances, was liable to attack by various fungi. Confining his remarks to wood after it has been placed in a building, he pointed out that one of the diseases was dry rot, a disease of civilisation, and was only found in old dwellings and other buildings of man; it had never been found in the forest. The conditions favourable to the growth of the fungus were moisture and a warm still atmosphere. As to its prevention and cure, the foundations of buildings should be so arranged that no water or moisture be allowed to accumulate near them, and buildings should be so constructed as to keep the foundations and other parts of buildings dry. Wood for fittings should also be dried before being used. Deafening materials should be thoroughly sterilised. The spores and mycelium were shown under the microscope. On the motion of the chairman, a vote of thanks was passed to Mr. Sommerville.

### ELECTRIC NOTES.

Mr. O. SACHS will on Thursday, March 13, lecture to the Society for the Encouragement of the Fine Arts on "Artistic Electric Illuminations," having special reference to the impending Coronation. The lecture will be held at the Royal Society of British Artists, Suffolk Street, at 8 P.M.

Liverpool Town Council have adopted a recommendation to the Local Government Board for sanction to the borrowing by the Council of the sum of 300,000*l.* for purposes connected with the supply of electricity.

A monthly meeting of the Worcester City Council was held on Tuesday, and was presided over by the mayor (Alderman Holland). The electricity committee were warmly welcomed upon the success of the year's work, which had resulted in a profit of 1,380*l.*, and 500*l.* of this having already been applied in the rates in repayment of moneys borrowed

to meet losses, the committee were authorised how best the balance might be utilised.

A LOCAL Government Board inquiry was held at the Town Hall, Newcastle, on Tuesday by Mr. A. A. G. Malet, M.Inst.C.E., respecting an application by the Corporation for sanction to the borrowing of 8,615*l.* for the purposes of electric lighting. It is proposed to place the works on land in the possession of the Corporation adjoining the gasworks. The total cost of the works was 8,615*l.* The annual cost of working, 837*l.*, and interest and sinking fund, 544*l.*, made a total yearly cost of 1,381*l.* The estimated income was 1,500*l.*, leaving an estimated annual profit of 119*l.* There was no opposition to the scheme. At the close of the inquiry the inspector visited the proposed site of the works.

COLONEL A. C. SMITH, R.E., Local Government Board inspector, held an inquiry last week at the Guildhall, Nottingham, into the application of the Corporation for sanction to borrow a sum of 15,000*l.* for the purposes of electric lighting. Mr. F. B. Harris, Mr. Arthur Brown (city engineer), and Mr. H. Talbot (electrical engineer) attended on behalf of the City Council, and it was explained that the loan was required in respect of extensions of the existing system, and of its natural growth during the next twelve months. Of the total sum of 15,000*l.* an amount of 10,000*l.* was put down as an estimate for the underground mains. Mr. Talbot informed the inspector that scarcely a meeting of the responsible committee was held without some application for either power or light being received, and having had the detailed estimates laid before him, the inspector proceeded to view the Talbot Street works, and the new power station on St. Ann's Well Road.

### BUILDING AND BUILDERS.

EYEMOUTH, N.B., parish church is to be renovated and improved at a cost of 750*l.*, from plans prepared by Mr. Fortune, architect, Duns.

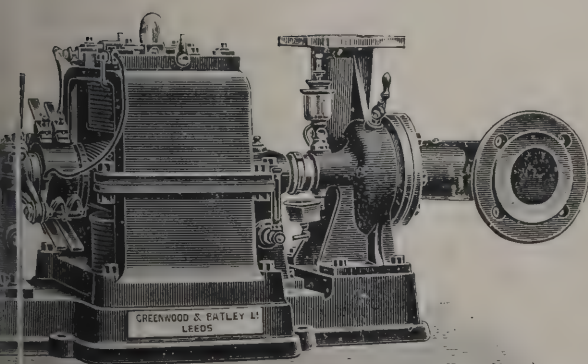
THE Hull Wesleyans are about to erect new buildings in place of George Yard church, which has been the headquarters of the Hull Mission, and which is the oldest Methodist place of worship in the city.

THE North-Eastern Railway Company have let the tender for the erection of another high-level bridge across the Tyne,

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connecting Newcastle with Gateshead, to the Cleveland Bridge and Engineering Company, Ltd., of Darlington. The bridge will take three years to complete, and the estimated cost of the whole undertaking is 477,000*l.*

At Tuesday's meeting of the Worcester City Council it was decided that the time had come for an extension of the Victoria Institute, and, on the suggestion of Alderman J. Millington, referred it to the finance and library committees jointly to consider and report what extension was necessary, how the money should be raised, and what architect should be employed.

The watch committee of the Smethwick Corporation have had before them several sets of competitive plans for the new police buildings which are to be erected in Halford Street. They have, it is understood, decided to recommend the Town Council to accept those submitted by Messrs. Bailey & McConnel, of Walsall, and the work is to be proceeded with as soon as the necessary arrangements can be made. The estimated cost of the buildings is about 12,000*l.* or 13,000*l.*

The enlargement of St. Oswald's Church, Sowerby (Thirsk), is in progress. The number of inhabitants has increased to 2,050, and the church at present provides for 320 persons only. Plans by Mr. Brierley, architect, of York, have been approved, for the addition of a north aisle to the existing church, which will afford accommodation for about 150 free additional places, and for the building of a new and adequate vestry. The committee have accepted a tender from Messrs. Wilson & Sons, of Leeds, for the building of a new aisle, at a cost of 1,048*l.*

The works committee of Aberdeen Harbour Board have resolved to recommend that the wharf at Commercial Road, from the Fish Market to the Graving Dock, be reconstructed of granite at a probable cost of about 20,000*l.* The minority were in favour of a timber wharf, which would cost about half the price of granite. It is proposed that a further 22,000*l.* should be spent in extending the Fish Market and carrying out other improvements, the total expenditure contemplated being 42,000*l.*

A MEETING of the Horwich, Blackrod and Westhoughton Joint Hospital Board was held on the 1st inst. at the Public Hall, Horwich, to further consider the erection of the proposed new hospital at Horwich. Dr. Sergeant, the medical officer of health for the county, and Dr. Whitaker, of Horwich, were present. Dr. Sergeant explained that the health committee

of the County Council did not wish the board to exceed 16,000*l.*, the amount which had been sanctioned for the building of an infectious diseases hospital, and as the lowest tenders sent in was much in excess of this amount, the committee had instructed the architect to remodel the plan to limit the accommodation of the proposed building to thirty beds, and at the same time to bring down the cost to the limit of that figure. It was decided that as far as possible the material required in the erection of the hospital be obtained from local firms. It was also decided to ask the firms already sent in tenders to again tender under the new specifications and quantities.

The foundation-stone was laid on the 24th ult. for Emmanuel Church, Stoughton, Surrey. The erection of the church marks the final stage of the Stoke Church Extension scheme, which embraced the completion of Christ Church, the erection of St. Saviour's and Emmanuel church, and plans for the latter were prepared by Mr. W. Gillib, F.R.I.B.A., of 25 Bedford Row, though it is not contemplated to carry them out in their entirety at present. The capital one, on the main road, and nearly opposite the building which has served so long as the temporary church. The new church will be in the Gothic style and of a Decorated character. When completed it will contain five bays, with north and south aisles, and a large porch at the west end of each. On the south side the chancel will be a large choir vestry and a clergy vestry. Foundations for a tower are being put in, but this portion of the building will not be proceeded with at present. The stage of the intended tower will eventually be used as an organ chamber, a temporary recess being provided for present use. Internally, the windows will be of red brick dressings, and will be glazed with red-light glass of good quality; and the arcades, columns, bases, and all architectural features will be in Bath stone. The roofs will be open-timbered, stained and varnished, and the flooring under the seats will be of wood blocks, and the passages tiled. The roofs will be covered with green slates. The walls externally will be faced with stone, with Bath stone dressings throughout. The church will be heated with hot-water apparatus, and the ventilation provided by vertical inlet shafts built in the wall under the window opening. The new building will seat about 300 persons. The contractors are Messrs. Webster & Cannon, of Aylesbury. The total cost of erection will be 4,510*l.*

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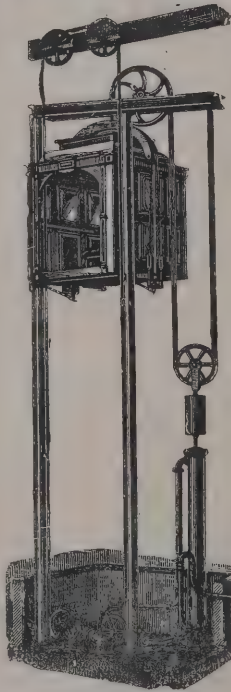
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## MEYORS AND AUCTIONEERS' CLERKS.

A general meeting of the members of the Surveyors and Auctioneers' Clerks' Provident Association was held on Tuesday evening at the Auction Mart, Tokenhouse Yard, London, W. Bilby presiding, in the unavoidable absence of Mr. Watney, the president. The Association was formed in 1883 for the purpose of allowances to members in the event of life assurance, medical advice, superannuation and other benefits in distressed circumstances. The Chairman, in moving the adoption of the report and the accounts, congratulated the members upon the fact that the Association had been a prosperous one so far as the Association was concerned. During the past ten years the membership had increased to 107 members. Twenty-three proposals were received for the year, of which twenty were accepted, one deferred, and one was declined. Two memberships had been taken up, and two members had resigned, while three had resigned. The income for last year was 576*l.* 15*s.* 4*d.*, and the expenditure was 14*s.* 11*d.* The latter were considerably larger than in the preceding year of the Association's existence, and were due for by the fact that, through death, the first two years of the life assurance fund had to be met. The standing to the credit of the Association was 9*d.* The Chairman regretted that a great deal of business had been lost among the class to which the Association was devoted, and pointed out that there were 1,900 auctioneers in London, supposing each employed two clerks, there would be 3,800 men, of whom less than 5 per cent. were members. The Chairman reported that increases had taken place in sick allowance, benevolent and superannuation

The Chairman having seconded the Chairman's motion, the meeting terminated.

## THE E.L.B. SYSTEM IN SPAIN.

The Electric Lighting Boards Company have had their first success in Spain, where they have had to take energetic action against Messrs. Oteyza & Urena, of Madrid, who were infringing the Company's patents and had copied the catalogues. In accordance with the policy of the Company the proceedings of the infringers were carefully watched for a few months until substantial damage had been

done, whereupon action was taken, resulting in the infringers having to give in.

It might perhaps be well to remark that in connection with the upholding of the patents in Spain the company enjoys the advice of quite an array of eminent patent authorities, whose experience is brought to bear on such subjects as occasionally arise. Thus among counsel retained by the company are Mr. Fletcher Moulton, K.C., Mr. Blomfield, K.C., Mr. Walter and Mr. Hutchinson, and we have been given to understand that both the first-named gentlemen have given strong opinions in favour of the company's patents.

Further, the company enjoys such expert support as that of Mr. James Swinburne, their consulting engineer, and Mr. John Imray, of Messrs. Abel & Imray, their patent agents. Messrs. Rose-Innes, Son & Crick act as their solicitors here, whilst in Paris their representative is Mr. Kelly (the well-known American attorney, who did so much to destroy Tammany Hall in New York). In America, where it appears the company have no less than three patents, they enjoy the support of Messrs. Dickerson & Brown, of New York; Mr. Norris, of Washington; and Professor Henry Morton, president of the Stevens Institute of Technology.

But, as above mentioned, the company only use these latent forces after very careful and sometimes times-taking investigation. It is an ill wind that blows nobody any good. As the attempted infringement had called the company's particular attention to the prospects of Spanish business, steps were also immediately taken to accord to Messrs. Paz & Sylva, of Paris, a temporary license of the Spanish patents for the Spanish Coronation which takes place on May 17, and this firm, who have been so successful in representing the company in Paris, immediately commenced operations on a large scale in the Spanish capital, one of their first contracts being from the Government fêtes committee.

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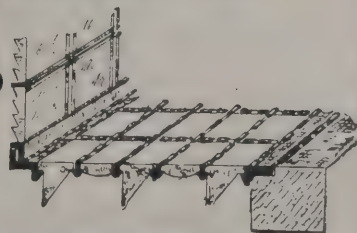
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### SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, March 3, Mr. Percy Griffith, president, in the chair, a paper was read on "British v. American Patent Law Practice and Engineering Invention," by Mr. Benjamin H. Thwaite, C.E.

The author in his prefatory remarks pointed out that during the nineteenth century and up to the seventies British engineering was supreme, and that the railway, gas, sewage, and other undertakings—the productions of British inventors of the early part of the Victorian era—were almost exclusively designed and constructed by British engineers and with British constructional machinery. At the end of the last century the marvellous progress of the Americans displaced England's industrial supremacy, especially in metallurgical and engineer-

ing developments. Much of the engineering work once controlled by British engineers is now being by American engineers.

The author showed that the progress of American manufacturing and engineering industry was directly encouraged by the States Governments from the time of Washington, encouragement given to American inventors by the States had rewarded Americans with a wave of unequalled success. The author pointed out that the British policy in the inventor was quite different from that of the U. S. and that whereas the British inventor might obtain a patent, which was merely a registration of date and disclosure of the invention, and for which, for a validity of fourteen years, he had to pay no less than 3/ odd, of an unprejudiced examination and investigation by experts. If the patent passed successfully through the inventor had to pay an additional fee of 4/ for secured, without any further payment whatsoever, the patent for a period of seventeen years from the application. The chances that an American patent safely through a law contest were 74 to 100, the chances of the British patent being found valid 58 to 100.

The author then showed that whereas in several States, noted for the inventive characteristics of the capital value *per capita* equalled 682 dols., in the U. S. States, each having a population of low inventive capital value *per capita* only equalled 176 dols. He observed that seven-eighths of the many hundreds of dollars of capital invested in American manufacturing industries were applied to the manufacture of patent products or machinery.

To demonstrate the deadly effect of the yearly the British patent system, the author stated that of the British patents applied for during the last five years 104,000 became void in the fifth or sixth year from the application, and the British Government would lose in fees from those abandoned patents nearly three-a million sterling. The author showed that in ten years the profit surplus earned by the British Patent Department over one million sterling; the American Patent earned a profit of 275,000/.

The author referred to the economic policy of



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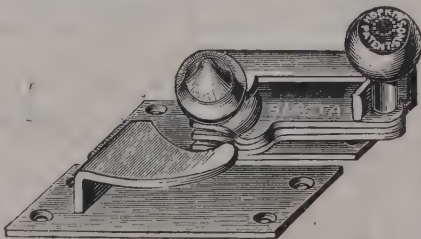
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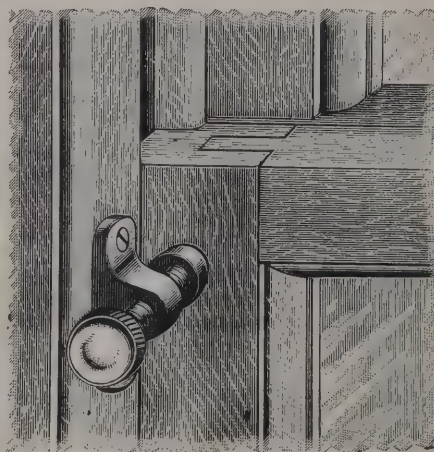
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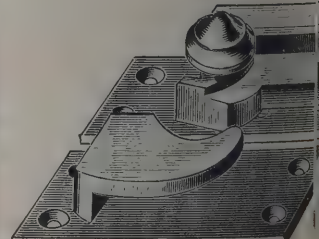
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manufacturers, which explained the reason why modern plant was often replaced by new appliances and increased profits by their improved efficiency. He recommended the adoption of the American patent system, which would stimulate the inventive characteristics of the race. He referred to the 1901 committee appointed by the Government to inquire into the British patent system, and gave their main conclusions and opinions, which were in favour of stringent legislative revision, and he referred to the recent introduction into the House of Commons of a Bill having that object. In his final remarks the author observed that so long as the trade and industry of the world practically to be handicapped the representatives of her industries must be intolerable burdens with impunity, but those burdens must now be removed or England's champions would be reduced to cry "peccavi," and retire discomfited from the

## COLD STORE, SOUTHAMPTON.

The article on the development of Southampton Docks and the port of the *Daily News* describes the new cold store

of mammoth proportions of this warehouse form quite a prominent feature in the landscape of the Southampton Docks. It is 400 feet long, 120 feet broad, and will ultimately be 13 feet from basement to roof. The entire building, of 1,500 ferro-concrete piles, was reared around a skeleton of ferro-concrete uprights and girders, the exterior of which is clad in the same material between wooden panels, and was first equipped with its skeleton of steel bars on either side with a layer of sawdust. The appearance of the cold store before it was that of a huge wooden shed. None would suspect it contained any material other than concrete, but a smart tap, and they answer back with a vibrating sound at a violin string. The building is absolutely fireproof, no matter how severe the conflagration, it is powerless to penetrate the constituent parts of the concrete beams, supports, whereas iron beams and girders expand and warp the walls and floors, and becoming generally a source of destruction as the fire itself.

The building is divided into storeys, the compartments on each, closed by air-tight doors, varying in size according to the nature of the produce for which they are intended. The largest are those for storing whole sides of oxen, and here the ceiling is equipped with "travellers" for running the large pieces of flesh from one end of the building to the other. In aggregate, no less than 2½ million cubic feet of storage are available. On the flat roof are tanks to contain water for refrigerating and machinery purposes, the sides and bottoms of these tanks being formed of ferro-concrete, which, being impermeable, obviates the expense and trouble of erecting iron structures. Standing on the roof, a splendid view over the busy docks and river, thronged with shipping, is obtained. One side of the warehouses fringes a long quay, where the water at the lowest tide does not sink below 30 feet, and hence allows the largest vessels access. Further out dredgers are at work, excavating a new channel 600 feet in width. On another side, beyond the adjoining engine-houses, stretches a large tract of reclaimed land, already pierced by hundreds of ferro-concrete piles and smoothly covered by a concrete floor, on which steam rollers are gambolling. This is the site of the lairages, to accommodate 1,000 head of cattle, the abattoirs, the cooling-rooms and the chilling-sheds.

The engine and boiler-houses for the refrigerating, lighting and hoisting machinery are also built of ferro-concrete. The arrangement of the boiler-house demonstrates the strain which the material can bear, for the first floor, where the coal is stored, is subject to a pressure of one ton per square foot, and the floor above that takes 3 feet of water.

## SCOTTISH MASTER PAINTERS.

THE annual meeting of the Association of Master Painters in Scotland was held on the 28th ult. in the Windsor Hotel, Glasgow. Mr. Alexander Latto, Aberdeen, the president, occupied the chair, and there was an attendance of about 100, including representatives from the English and Irish Associations. Mr. W. B. Crawford, the secretary, submitted the annual report of the committee. It stated that similar national associations now existed in England, Ireland and Wales. Many Scottish members had attended their conventions and had derived benefit from them. Such national associations

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did much to create close and friendly relations between the members, and they also took care of the education of the young people who meant to enter the craft. The state of trade during the year had been satisfactory, and in Glasgow the International Exhibition gave a big impetus to the trade. No strike of importance occurred during the year, and the arrangements of last year would be continued. With the Association there were eleven local associations affiliated, and a new local body in Forfar proposed to affiliate itself. The total membership was about 225. The report was adopted. The President, in his address, remarked that these local associations benefited the men, masters and public. He thought, however, that as an Association they should extend their operations. Disputes should be reported to the general body, which should settle them without those strikes which were always arising. He concluded by proposing that Mr. John Scott, Glasgow, be elected president for the ensuing year. The new president afterwards took the chair. Mr. W. B. Crawford, Glasgow, was re-elected secretary and treasurer. On the motion of Mr. Laidlaw, Hawick, seconded by Mr. Lindsay, Galashiels, it was remitted to the Council to appoint a special committee to consider as to the best means of inducing master painters outside of the Association to become members, and also to induce members of the Association to support the Apprentices' Competition by getting all their apprentices to enter for the competition, and so raise the status of the trade. The report of the adjudicators on the Apprentice Competition showed that thirteen prizes went to Glasgow, a similar number to the Border counties, four to Aberdeen and four to Dundee. In the evening the annual dinner of the Association was held.

#### REGISTRATION OF PLUMBERS.

THE annual meeting of the members of the North of England district of the National Registration of Plumbers was held in the Lecture Theatre at Tullie House on the 28th ult. Mr. Crowder presided, and when the ordinary business had been transacted a lecture on the application of scientific principles to plumbers' work and sanitary arrangements was given by Mr. Joseph Radcliffe, the instructor at the plumbers' classes in Manchester Technical College. During the last sixty years, he said, the work of the plumber had undergone very great changes. The old plumber was easy-going, well paid and respected by those who employed him, he had many friends

and was looked up to by his neighbour. To-day taking into consideration the importance of his work, worked, underpaid and, speaking generally, did not have the confidence of the public except as regarded his work in such a manner that it would be sure to attract attention again in the near future. The reason for this was that the plumber of the former days and the plumber of to-day had changed and the plumber had to the same extent as the work. There were now a few of the fittings of the modern residence, hot and cold water supplies, lavatories, sinks, baths, and vent pipes, &c., and the plumber had time to make pipes and other appliances. To-day these things were for the plumber by improved methods, but the labourers had been extended, and if he would only get out of the old groove and bring himself into line, he would be much improved and the public would be much benefited. The plumber was directed by almost everybody as to what he should do his work; but that was not right. The plumber should be the man to say how plumbers' work should be done. He questioned the work of the doctor, lawyer, architect, and engineer, for the simple reason that they had mastered the principles of their trade, and the plumber, who might be called singly to any house, ought thoroughly to know his trade. Practical work was of much greater value if based on principles, and to understand these principles the plumber should have had a good elementary education, and some knowledge of chemistry, mechanics and physics. Proceeding to the effects of the atmosphere, water and earth on pipes and other appliances, he said that water from a surface with peat would be slightly acid through the decomposition of the peat. If this water should be washed by the rain in the reservoirs where the water was stored for use it would have a distinct action on all the lead pipes through which it passed, and either the water would have to be treated so as to neutralise the acid or pipes would have to be used in which the acid could not come into direct contact with the lead. He gave one among the many examples which he gave of material which the plumber ought to know. The lecturer showed a series of interesting slides showing examples of ancient and modern plumbers' work, and concluded by showing views of the particular regarding the successful classes in Manchester. Mr. Williams, Newcastle, secretary to the Council, expressed the hope that the lecturer would allow his instructions to be printed, and votes of thanks concluded the proceedings.



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# The Architect.

## THE WEEK.

factory to find the President of the Institution of Engineers advising students to give due attention to architecture. Mr. HAWKESLEY last week was at a dinner of engineering students in Leeds. In his speech he said there was no reason why they should continue to uglify the world. Those, he stated, the most perfect which, in addition to special qualities required in them, presented a pleasing appearance. What a different aspect would be given to England if similar advice had been given and acted on in Great George Street by STEPHENSON, HAWKESLEY, BATEMAN, FOWLER, and the other great engineers of planned railways, waterworks and gasworks. If the stations alone could have acquired an architectural character a great improvement would have followed. It is never too late to mend. England may not again witness the repetitions of such colossal structures as those which are to be seen in the country, but in colonies and foreign countries no less vast may arise, and for the sake of the reputation it would be an advantage if they presented a more satisfactory appearance.

Chief Justice and other judges of the Supreme Court of Sydney have united in a communication to the Government Works respecting the need for the construction of new Courts. No surprise is excited in any class, as it has long been known that the buildings used as Courts are altogether inadequate for the administration of justice in so important a colony. There is no doubt that the existing Courts are dangerous to all who frequent them, and in some cases it has been necessary to remove the permanent fixtures to safer premises. The existing Courts are not adapted, but they are detached, and consultations with the judges cause delay. A suitable site is now being selected, and the judges are of opinion that all the Courts should be erected upon it under one roof. The great objection is the expense, but it is understood that in the present year the subject will be dealt with in the House of Representatives. Sydney has lately attained increased importance as a metropolis, and it will have to uphold its position in Australia by buildings which will be worthy of its purposes.

of fixtures is generally looked upon as being the right of tenants. On the other hand, costly fixtures are regarded by landlords as injurious to their property. An example was tried before Mr. Justice FARWELL at Liverpool. The premises in question were held on a lease of Church Street, Liverpool. Among the covenants in the lease the lessee would not make or suffer to be made any alteration unless with the previous consent of the lessors. The lease was afterwards assigned to a tenant, and without receiving permission he put up a clock in diameter in an iron frame supported by brackets which were let into the front wall. The lessors sought a mandatory injunction for its removal on the ground that it was an alteration. On the part of the defendant it was stated that the clock was a fixture used as an advertisement, and that it was not an alteration. Mr. Justice FARWELL, however, held that the clock was an alteration. If trade fixtures were to be set up, his lordship said that every stone in the wall could be made to support some object or ornament, and that the plaintiffs suffered no loss, but it would be necessary to restore the wall to its original condition. The injunction was therefore granted. What would be the result under ordinary circumstances, the judge did not say; but in this case there was a definite finding that no alteration was to be made without the consent of the lessors. When the parties had formed a bargain of that kind there is no necessity to discuss principles. To the people it will appear an advantage for lessors to allow alterations made without cost to them, for if

the premises had gained a reputation for clocks and watches the big clock would be enduring evidence that the business was carried on, although the premises had fallen into the hands of a different lessee.

A STORY is told by M. ALFRED PELLIER about the beginning of the life of FALGUIÈRE, the sculptor, in Paris, which is not surpassed by anything related in the "Vie de Bohème" of MURGER. FALGUIÈRE was a native of Toulouse, and he displayed so much talent that he was allotted one of those bourses which have helped to create many able French artists. It was expected that by means of it and occasional employment in Paris he would be able to attend the Ecole des Beaux-Arts. But to the young and joyous FALGUIÈRE the Tourlousian cafés of the Quartier Latin were more attractive. He did not trouble himself to ascertain whereabouts the school was to be found. There are, however, too many regulations in France to allow recipients of public money to fail in carrying out the conditions of the bond. He was obliged to make inquiries, and then he discovered to his annoyance that his allowance was about to be stopped because he had not forwarded to Toulouse any evidence of his progress. It was incumbent to send a copy after the antique, but that would require at least three weeks' toil. FALGUIÈRE decided on forwarding a substitute. He bought one of those plaster casts of a reduction of the Venus of Milo, which were then to be obtained for a few sous. He soaked it in water, filled the hollow interior with plaster, coated the exterior with "barbotine," and then made a number of scratches on the surface as if he had worked on it in a regular way. It was lodged at the school, and a few days afterwards he received not only his pension, but congratulations on his promising opening.

ONE of the most popular of books at one time was the biography of HIPPOLYTE FLANDRIN. It may be doubted whether so much attention was before or since given in this country to the life of a French artist. He revived the class of paintings which were adapted for churches. His style can be judged from the two large engravings we published of his paintings in the church of Saint Germain des Prés; he also produced the great frieze which is seen in the church of St. Vincent de Paul. He died in 1864. In the biography there is much about his brother JEAN PAUL FLANDRIN, who, like HIPPOLYTE, was a favourite pupil of INGRES. He co-operated in the production of the church decorations. He was more versatile than his older brother. The love of nature became supreme with him, and he devoted himself entirely to landscape-painting. His range was wide, and extended from the environs of Paris to the wildest forests. After a most useful life, he died last week in his ninety-first year, leaving only few survivors of the combatants who took part in the great battle of Classicism *v.* Romanticism.

WHEN it was lately announced that the civic authorities of Chicago had declined to sanction plans for some very high buildings, it was assumed that a reaction against the principle had commenced. If a change had been resolved upon it was never enforced. The authorities have been compelled to sanction schemes for still higher buildings than formerly, and all objections on account of amenity have had to be set aside. Chicago commenced the practice of erecting piles of offices, and it is not likely they will ever be abandoned in that city. They were not dictated by whim or fashion, but by stern necessity, and when an architectural form is so introduced it is not easily set aside. Men of business in America, where minutes are precious, find a convenience in having all the offices in which affairs are transacted by them under the same roof, and it would be difficult to make them return to buildings of a few storeys. English business is conducted in a different way, and the need for twenty or thirty storeys of offices (they propose fifty storeys in St. Louis), is therefore less apparent to us. At the same time, it would not be hard to have a change, especially in some parts of London.



## GREEK ORNAMENT.

THE architectural ornament of the Greeks is easily exhausted. They used the honeysuckle, the acanthus, the bay-leaf, what the French call *feuilles d'eau*, the palmette, and one or two more of uncertain character. By them the whole vegetation of Greece was represented. It is possible that in the hangings which adorned the temples there may have been other forms employed, and on the robes of the statues of the deities there was probably embroidery in which flowers and leaves were imitated. But, unless we are mistaken, the varieties were restricted. When we compare the ornament of Greek temples with that of Mediæval churches we must draw the conclusion either that Greece was not a fertile country or that the artists were indifferent to the forms which sprang from its soil.

There are grounds for both beliefs. Greece was essentially a rocky land. In the neighbourhood of Athens there is but little to be seen which can recall a pastoral or agricultural district. If it were not for the olive trees there was not much on which the eye of a Greek could have rested with delight in the time of the great artists. The gratification of PHÆDRUS at being able to sit on grass under a plane tree suggests the privations of an excursion outside the walls of Athens. Trees rather than flowers were admired. They were even thought to be worthy of employment in a work of art. It is maintained that one of the statues of ATHENÉ bore an olive-branch in the hand, and there was in Rhamnus a statue of NEMESIS by PHIDIAS which carried a branch of an apple-tree in one hand and a vase with figures of Ethiopians in the other. It was not to be supposed that the divinities would derive much interest from the gathering of flowers, or would care much for their representation.

We must not take it for granted that the Greeks, although they possessed many qualities in common with moderns, found that gladness in the presence of nature which is now met with everywhere. The poets contrived to produce great effects without having recourse to the fields for illustrations. One reason no doubt was that owing to the general unproductiveness of the soil the earth could only be looked upon as an agent which was not always favourable to the necessities of those who belonged to it. A Greek was satisfied with plain food and with a small quantity of it. But it was doled out to him by "a stony-hearted stepmother" in a niggardly manner.

We should also remember that the cultivation of the land was in most places imposed on slaves. On that account the ground would not be prized by free citizens who retained the practice of arts and trades in the cities. The Greek was above all a townsman, and he loathed whatever compelled him to withdraw from the public places, which were dearer to him than the most beautiful landscapes. A visit to the country was therefore a task, and if he were obliged to go to his farm he was not likely to bring back bunches of flowers as a memorial of the journey. All this indifference to life-creating earth will seem to us to be unworthy, and evidence of a defective constitution or a prosaic instruction. It was, however, a prevalent shortcoming, and it was expressed beyond all doubt by the trivial quantity of architectural ornament that could be claimed to be inspired by the fields.

It is true that when a poet happened to live in a fertile country such as Sicily or Libya he did not fail to celebrate the fruitfulness of the soil. But the epithets are generally bestowed in a condescending manner, as if Mother Nature had done no more than her duty in obeying the desires of her lord and master, Man. It cannot be said, however, that there was a change in the character of the ornamentation, which everywhere in Greece seemed to be afraid to manifest an indebtedness to the fields.

We have mentioned the possibility of flowers forming part of the ornamentation of stuffs which were used for the adornment of temples. If so, they must have been considered as of minor importance. In the accounts which have come down to us of ancient tapestries we read only of mythical and historical figures, or of arabesques in which animals were elements. The sail of the ship of ATHENÉ, which, like those on the sands at Southport, was mounted on wheels, was covered with representations of the deeds of the goddess, and especially her contest for supremacy in

Athens. In our time it would show a fine all-based on olive leaves. It is also very rarely found on a Greek coin. In the earliest painting judging from modern practice, we might suppose would begin with attempting the representation of figures derived from them, ambitious at first, common, for the subjects described are often of difficult character, which would tax the abilities in an advanced age.

The canons of art generally adopted were in accordance with the saying which was an early philosopher, "Man is the measure of all things." The number of figure-pieces which made up of *ACHILLES*, as recorded by HOMER, suggests simple subjects in an early age were not. The only mention of flowers in that memorable form of a garland. The triple rims are well known. In the vase paintings we find figures introduced in the borders, and although ornamental borders are employed, do not denote any extensive knowledge of botany to the painters. The ornamentist was not confined by any limitation which was imposed on the sculptor in the temple, but considering how vast was the scope of the vases presented the restrictions are remarkable.

We presume that unless vegetation was necessary for the sake of contrast a Greek artist regarded it as a waste of time and opportunity to employ any forms but those of man and noble animals. The proper study of man, it has been said, and it would be endorsed by a Greek sculptor. We are afraid he looked upon temples as gaining importance by means of flowers, or as means for the display of it. Carved ornament has since been devised which seems more appropriate as an aid to architecture than figures as Greek sculptors have produced. There are no curves to be found in plants which have surpassed in the human figure, and we can see how the latter can be adapted to fill triangular spaces. With ornament, in the ordinary sense of the word, there must be repetition, and the Greeks could not avoid repetitions which seemed to have neither beginning nor end, for a border of palmettes could be repeated continuously. With figure subjects there was consistency. The contests with the centaurs, which occupied the metopes in the Parthenon, are independent of each other, and we can make every one of them the subject of a drama or a tragedy. If the spaces had been filled with ornament which was a copy of natural forms, instead of conventionalising of them, they would have long possessed much interest. On that account attention has been made to convince people that Eastern art, especially has a symbolic meaning, for if considered as an arrangement of graceful lines the attraction of any pattern is fleeting.

With the Greeks there is no doubt that the human figure was more expressive than it is with us. It was urged that many of the myths are only allegories for natural phenomena, and the gods or goddesses who are characters in the legends were embodiments of operations which affected the human race. The elements which occur in the atmosphere, the motions of the waves, rain, lightning, light and darkness were in the opinion of some investigators expressed by the figures of mythology. A figure of a god or goddess was more likely to recall to the Greeks much else besides the human form. The Greek himself as struggling with a centaur or controlling a prodigy was also more than the ordinary man. He was a hero who was capable to become a hero, and as such he was called upon to have a contest with a monster. Whenever his country was concerned the Greek was reverential, and even ZEUS himself was treated with respect. The stronger race of Titans were ready to dispute his power.

When such ideas prevailed, the leaves of plants were not the means which were best adapted to express the Athenian spirit. The Greeks, therefore, employed simple forms only in positions and for purposes where the human figure could not be easily substituted. There was no room for all things, and it is possible to have human representations on too small a scale, as well as on too large a scale. The Greeks, therefore, avoided the



to undervalue their own nature by miniature or paintings of it in their temples. But they took suggest that the substituted ornament was of inferior e, and they adopted few models, as if to emphasise instance.

## STEEL COLUMNS.\*

reviewed Professor FIDLER's book at some length when it first appeared. The advantage of it con combination of theory and practice. Investi principles have generally reference to executed here is in consequence, if we might so express much of the air of Westminster introduced into e classroom. The volume has now reached edition. The author has given attention to ges as are demanded by the increased loading of consequence of the additional weight and power er types of locomotives. But as regards the question of the working strength of iron and e is little to correct. According to the Professor, ot yet been found possible to frame any rules t meet with general acceptance, nor to define connection between 'fatigue' and the effect of ued vibrations. If we proceed upon the es that there is no connection, we are logically ules that would condemn as utterly unsafe a large existing bridges; and as the bridges remain safe n they bear a standing witness against the adoption rules." It is not necessary to again notice the isions of the book, and we shall therefore confine or the present to the author's investigation of the strength of columns.

stone columns were first used their proportions tained by appearance rather than by construc sity. The old builders were likely to have known ases in which stone succumbed under the load n it. It would have been quite safe in many ave substituted one of the lighter orders for a sive one. The Greeks, like Mr. Pocock, believed ie of "a little stronger than strong enough," and that their columns should manifest that they u to the duty imposed on them. But it was ept which inspired the proportion recorded by u when he said that the Roman Doric column even times the diameter, the Ionic  $8\frac{1}{2}$  times and nian  $9\frac{1}{2}$  times. These ratios it is needless to say ways followed.

n column of iron or steel or the strut of a large r is designed nobody thinks of the practice of ck and Romans, for appearance is of no account alulations. The whole question resolves itself e flexure or buckling. We have, therefore, to t strength of the material, its elasticity and its urer a weight to depart from the original verti axis. If compression alone had to be regarded ncloubt that cast-iron would be the most eligible eise in columns. When between fifty and sixty e subject of girder construction began to receive , great many patents were taken out for "com ducers" in which cast-iron was employed equally ight-iron. But it was found by experience that es which were to be met did not always act simply reive or tensile, and when cast-iron had to resist n failed. Attempts were also made to combine n account of its elasticity with cast and wrought rd to serve as a means to simplify the strains, arrangement was not more successful. The most e of the combination of cast and wrought-iron Wren girder, which at Newark Dyke was utilised o feet in length. In the top member twenty- t-in pipes were used. There is no doubt that if es which are set into action by the loads on a bridge wa act singly and simply the arrangement would fic. The mere compression in any structure, how-

ever, becomes almost what the French call *une quantité négligeable*. As Professor FIDLER says:—

The most friable material, or even loose sand or water, if it is prevented from escaping laterally, will carry any load that can be placed upon it. Indeed, it is probable that there can be no such thing as failure produced by a direct compressive force pure and simple, because it is impossible to squeeze two ultimate particles into one, and the only way in which the idea of failure can be conceived in the case of a cube or slab is by the lateral motion of the particles sliding past each other and finding some lateral exit by the shearing of friable and crystalline materials, or by the flow of such plastic materials as wrought-iron and steel.

It would therefore seem that the more rational method of indicating the work performed by a column would be by means of bands or ornamentation about the middle of the shaft, as was attempted by some Renaissance architects, rather than by cable fluting in the lower part. The tendency of a column under its load is to become deflected or bowed, and the bands suggested where strength was required. It might be supposed that the entasis of ancient columns was a recognition of the liability to deflection, if it were not that we know it was simply introduced as an optical refinement.

The circumstances under which wrought-iron and steel columns are made do not allow of any concern about the appearance of such supports. Whatever may be the length, it bears some analogy to a cane or stick that is not expected to bend under a pressure that is not extraordinary. We might presume that in the case of a stick or cane any bending would be followed by a resumption of verticality as soon as the load was removed. But in structures where columns are used it cannot be imagined that the load will be diminished, and the stiffness must therefore be sufficient to prevent the deflection from becoming perceptible. According to Professor FIDLER, the resilient or elastic force is proportional to the modulus of elasticity, but is independent of the ultimate strain of the material:—

A long (ideal) column of the strongest steel would be little or no stronger than a similar column of wrought-iron, because the modulus of elasticity is nearly the same in both materials, and however great the ultimate resistance of the steel may be, the crushing stress will inevitably be reached at some period of the increasing bending strain if only the load is sufficient to overcome the resilient force of the bow, and to set up the ever-increasing deflection. The only difference that may be theoretically expected is that the steel column would take a greater ultimate deflection than the wrought-iron column before it became actually crushed or crippled on the concave side, but the breaking weight would be nearly the same for both. Indeed, when the ever-increasing deflection has once been set up, the column may be considered as having failed for all practical purposes, no matter what may afterwards happen to it during the course of that buckling process.

Steel can be rolled so cheaply, it is superseding not only cast-iron but wrought-iron as a material for columns. In practice, columns are built up from the sections which are available in the market. With angle irons, plates and channel irons a great many varieties of columns can be produced. The Americans have, however, a larger number of sections to select from. At one time they used to make an octagonal column by the union of four special channels. The Phoenix column, composed of four or eight rolled segments, with projections to allow of rivetting, is a favourite with the American skeleton builders, partly, no doubt, owing to its roundness. Professor FIDLER says it is very strong and well supported. On account either of the uniformly good quality of the metal, or the admirable form of the section, the strength exceeds that obtained by RANKINE's formula.

Professor BURR, the American engineer, who has given much attention to the subject, has come to the following conclusions from his numerous experiments about the arrangements of the parts of steel columns:—"The material should be disposed as far as possible from the neutral axis of the cross-section; there should be no initial internal stress; the individual portions of the column should be mutually supporting; the individual portions of the column should be so firmly secured to each other that no relative motion can take place, in order that the column may fail as a whole."

*Practical Treatise on Bridge Construction*, being a Text e sign and Construction of Bridges in Iron and Steel, e of students, Draughtsmen and Engineers. By T. Claxton n C.E., Professor of Engineering, University College, h numerous illustrations and lithographic plates. tion enlarged and revised. (London: Charles Griffin &



The science which is required in designing girders and beams and the care which must be taken in their manufacture and adaptation should be enough to overcome the prejudice against their use in buildings. Whatever may be thought of the columns and beams, they can be no more kept out of buildings than the Atlantic was in England through Mrs. PARTINGTON's heroic efforts. The desire which is so often expressed for a new style is really an admission that the old forms of building in which stone, timber and brick were the materials have lost their interest, and therefore men are craving for different arrangements which will allow more scope for inventiveness. With the aid of steel and iron it may be possible to attempt remarkable efforts in building. In that case, however, much else besides Vitruvian rules for columns and traditional dimensions of parts will be required. Science must be utilised, and a book like Professor FIDLER's will have to become as familiar to the architect as to the civil engineer.

Mr. F. O. Taylor read a paper on "The Manor of Kenninghall, and its connection with the Chief Butlership of England." He said that there were three claimants for the position of chief butler—(1) The Duke of Norfolk, who claimed as Earl of Arundel; (2) Lord Mowbray and Stourton, who claimed as the only known heir in the senior line of William d'Albini, the original grantee; and (3) Frederick Oddin Taylor, who claimed as Lord of the Manor of Kenninghall, which his late father, John Oddin Taylor, purchased some thirty years ago of the trustees of the Duke of Norfolk's settled estates. The duty of the chief butler was to serve the king with wine at the coronation banquet, and to provide the wine for all others present at the banquet. The fees in the earlier days were the best gold cup and cover, with all the vessels and wine remaining under the bar and all the pots and cups, except those of gold and silver, which should be in the wine cellar after dinner, but these fees were considerably cut down in later reigns, and on the last occasion when the banquet was held (at the coronation of George IV.) the Duke of Norfolk, who filled the office of chief butler as Earl of Arundel and Lord of the Manor of Kenninghall, received a gold basin and ewer as his fee. The chief butlership

was held by grand serjeanty, and he claimed that of Kenninghall was held by the grand serjeanty of to the kings of England on the day of their coronation manor of Kenninghall, together with the lordships of Bokenham (Buckenham) and Wymondham, Snettisham, were granted by William I. to William who came over from Normandy with him, to be her serjeanty by the service of being chief butler to the king of England on the days of their coronation. The d'Albini married Maud, the daughter of Roger of Norfolk, and both he and his wife were buried at the high altar of the abbey church at Wymondham, where he had founded in the reign of Henry I. His son was Henry II. Earl of Arundel. The office of chief butler was exercised by members of the Albini family for many generations; it was recorded that at the coronation of the queen, the Earl of Warrenne (father-in-law of Hugh d'Albini) as butler in the place of Hugh d'Albini, Earl of Arundel, who was at that time under sentence of excommunication by the Archbishop of Canterbury, "because he was Archbishop was hunting in the said Hugh's lands in Sussex the said Hugh seized his hounds, and the Archbishop claims it as his right to hunt in any land in England whenever he pleases." The Earls of Arundel did not undisputed possession even at this time, for the office was exercised in respect of the ownership of the manor of Kenninghall by Roger de Monte Alto in the reign of Edward I., and by Robert de Monte Alto at the coronation of Edward II. and Edward III. As a result of inquiries by the Barons of Exchequer, concerning which the king said:—"A decree was made that the office of chief butler should be thenceforth performed by the lords of the manors of Kenninghall, Bokenham and Wymondham, and their deputies in turns, and Robert de Monte Alto served in the office at the coronation of Edward II. accordingly." The Duke of Norfolk alleged that this statement was wholly untrue, but if so it was rather a curious claim that claims had been put in by the lords of Bokenham at many coronations, the last of which was that of George IV., when the Hon. and Rev. Mr. John Lubbock, brother of the Earl of Carnarvon, claimed the office, and it was the turn of the manor of Buckenham, and not of the manor of Kenninghall, to the decree above mentioned, and to various other manors in support of his claim. Blomefield, being for so long a time of Fersfield, the adjoining parish to Kenninghall, and having access to documents not now forthcoming, is likely to have been mistaken, corroborated as he is by the claims made in respect of the manors of Buckenham and Kenninghall from time to time. In the year of the coronation of Edward III., namely, 1327, the manor of Kenninghall was settled by Robert de Monte Alto on his wife and his heirs male, with remainder in default of issue to Queen Isabella, mother of the king, for life, with reversion to John de Eltham, the king's brother, and the heirs of John de Eltham, with an ultimate remainder to King Edward III. Robert de Monte Alto died without issue in 1329, and John de Eltham died a bachelor in 1336, when King Edward III. was entitled to the reversion expectant on his mother's death, and it was no doubt by virtue of his claim that the queen dowager occupied the castle at Kenninghall in which she lived many years, and was for some time a prisoner by her son, the king's order. The Duke of Norfolk alleged that the tenure of the manor of Kenninghall by grand serjeanty, if it existed at all, became extinct on the union of the reversion of the manor with the Crown, and could not be so, for it would be noted that the king's claim through any escheat or forfeiture, but under the limitation of the settlement. The king, too, never possessed the manor, as he granted the reversion to William de Montacute, first Earl of Salisbury, in the lifetime of the queen dowager, who did not die till 1358. The manor was in the hands of the Montacute family till 1377, when it was granted by William, second Earl of Salisbury, on the marriage of his son, Sir William de Montacute, Kt., with Elizabeth, daughter of Richard Fitzalan, sixth Earl of Arundel, in fee, with remainder to William, Earl of Salisbury, the fee. In the records of the Court of Claims at the coronation of Richard II. in 1377 (of which a full record exists) the petition of Richard, Earl of Arundel, claiming to serve as chief butler was fully set out, and his claim was disputed by Edmund de Staplegat (Geoffrey Chaucer, the poet), but it was allowed that he should serve at the coronation of the king, and that the rights of all others." The manor of Kenninghall was held for fifty years by Elizabeth de Montacute, who was married to the Duke of Norfolk, and during that time, according to the records, the chief butlership was served by either Fitzalan or Thomas Fitzalan, Earls of Arundel. It is important to notice that these earls were related to the Duke of Norfolk, and, therefore, would act as deputy for her, inasmuch as she could not act in person. At the coronation of



the manor had apparently reverted to the possession of the Montacute family, but at the coronation of Edward IV. it was in the possession of Joan, wife of William Alan, Earl of Arundel, a direct descendant of the Montagues, so that the earldom and manor were practically united in husband and wife, and if William Fitzalan served the office at coronation it was doubtless "jure uxoris." At the coronations of Richard III., Henry VII., and the Queen of Henry VIII., the manor was held in dower by another lady, Elizabeth, daughter of John, the first Earl of Shrewsbury, and widow of John Mowbray, Duke of Norfolk. At the coronation of Henry VIII. (1509) and Anne Boleyn (1533) Dukes of Norfolk, possessing the office of Earl Marshal, were owners of the manor, it might be that these noblemen put in no claim to the butlership, but were content with officiating as Earl Marshal. In 1546, the year of the coronation of Edward VI., Thomas Howard, Duke of Norfolk, was attainted, and the manor went to the Crown, and Henry, Earl of Arundel, held the office of chief butler. In 1548 Edward VI. gave the manor of Kenninghall to his sister, afterwards Queen Mary, who resided at Kenninghall occasionally in the magnificent palace erected about 1525 by the third Duke of Norfolk. She was at Kenninghall at the time of the death of her brother, Edward VI., and wrote a letter asserting her title to the Crown. The palace was pulled down about a hundred years later, and no trace of it remained. In 1590 the earldom of Arundel and the manor of Kenninghall became reunited in the same person, namely, Philip Howard, Earl of Arundel and Duke of Norfolk, and remained so united until Mr. John Oddin purchased the manor from the present duke in 1872. The coronation of Charles II. was the first occasion of a banquet since the reunion of the earldom and the manor, and then it was claimed that the office of chief butler "was appendant to the Earldom of Arundel, and the rather that the said Henry Earl of Arundel held in his right in his demesne as of fees the manor of Kenninghall with the appurtenances in the county of Norfolk, and is, and antiently of long time heretofore was held in his right in his demesne as of fees the principal and chief butler of England on the days of the coronation of the kings of England." The words "and the rather" showed that it was asserted that the claim was mainly and chiefly based on the ownership of the manor of Kenninghall, and claims in exactly the same form were made at subsequent coronations. In the light of these official records, it seemed to him that the office of Norfolk was precluded from alleging that the grand butlership was extinct, or that the manor of Kenninghall had nothing to do with the chief butlership. He sincerely believed the question had been gone into by the Court of Claims the day before the manor of Kenninghall would have been established. In conclusion, he trusted he had shown that his claim to the chief butlership was not a fanciful or imaginary one, but that it rested on a solid foundation. The Court on December 4, without expressing any opinion in regard to the merits of the three claims, directed that they should be recorded for the consideration of right, and they would accordingly be noted in the coronation roll, so that if the banquet should be hereafter given the three claimants would not be prejudiced by the exercise of the office at the approaching coronation of their majesties King Edward VII. and Queen Alexandra.

Mr. L. G. Bolingbroke then read a brief paper on "Old-World Modes of Light and Lighting," illustrated by numerous lantern slides. The first was the flint and tinder, and he said that flint and iron pyrites had been found lying beside the remains of Neolithic man. Flint, steel and tinder were kept together in a tinder-box, which was generally made of tin, and consisted of three pieces, the box, the damper and the lid, the tinder which was used as a socket for holding a rush candle. A spark from the flint had fallen on the tinder a bright flame was lighted from the smouldering linen. At the beginning of the nineteenth century improved forms of tinders were invented. One exhibited was pistol shaped, and a spark was obtained by pulling the trigger. About 1830 tinders began to be supplemented by the match, although a writer asserted that the tinder-boxes would always retain their popularity on account of their cheapness. In the past of the country the use of lamps died out after the agricultural occupation, but lamps similar to those used by the Romans were in use in Scotland quite recently. An old Dutch lamp was of similar principle. In the eastern counties of England lamps were the most universal. A rush fair was formerly held annually in Norwich. About 1835 it was held at the Swan inn, and began on August 2. It died out about 1880. The rushes used were those for candlemaking. There were three kinds; one for tapers and the other for candles. Specimens of both were shown to the audience, and also two of the moulds for candles made in the farmhouses. These moulds contained a cotton wick. Among the accessories were the tapers, specially made to hang on the walls. The rushes are inserted in an iron clip, which was fixed in a block of wood. Not infrequently a combined article was made,

having a clip for the taper and a socket for the rush candle. The ordinary rush candlestick was similar to those now in use, but smaller. Snuffers were to be found of all sorts and sizes, and the essayist stated that Mr. E. Bidwell had 288 of various forms. There were also little dampers—something like scissors—to extinguish the light altogether. Instead of night lights, a candle was enclosed in a perforated iron cage. Those used in nurseries were so enclosed as to render it impossible for children to get at them. He also exhibited a pair of smoker's tongs, which hung at the side of the fireplace. With these the smoker secured a live coal to light his pipe.

The next contribution was on "Norman Fonts in Norfolk," and was delivered by Mr. E. M. Beloe, jun. It was illustrated by a splendid series of lantern slides from photographs taken by Mr. Beloe. These slides indicated to perfection the details—oftentimes very grotesque—of those ancient specimens of the stonemason's art. The first one shown was that at Burnham Deepdale, which is remarkable for the fact that round the sides are twelve figures representing each month of the year, and all engaged in agricultural pursuits. January was represented by a man drinking from a horn; February by a man seated in a chair with his feet on the hearthstone; March by a man digging with a very primitive spade; April by a man with a bill-hook; May by a female figure with a banner and apparently a tree; June by a man either tying a faggot or pruning a tree; July by a man mowing; August by a person tying up a sheaf; September by a man threshing with a flail; October by a man either grinding with quern-stones, or, as was more probable, pouring wine from a bladder through a kind of funnel into a vessel; November by a man killing a pig; and December by four figures eating at a table. On the font at Fincham are the Adoration of the Magi, the Nativity, the Temptation, and the rite of Baptism. The Temptation in the Garden of Eden is very grotesquely represented by the Norman masons. The Norman fonts at Great Snoring and Old Hunstanton were plain, while that at Bagthorpe had ornamentation on one side only. The similarity of the ornamentation on many of these fonts—which the lecturer thought to be derived through Celtic and Byzantine sources from Persia—was fully explained by means of excellent detail photographs. This ornamentation existed on three sides of the font at Sculthorpe, while on the fourth side was the Adoration of the Magi. The ornamentation on the font at Toft Trees was of a more flowing character, and the details were exceedingly beautiful. The nine-legged font at South Wootton was very grotesque. Views of the fonts at Castle Rising, Shernborne, Ingoldisthorpe and Hunstanton were also shown, in addition to photographs of the seven-sacrament fonts at Martham, Cley and Walsoken. The lecturer also illustrated his points by photographs taken by himself of some of the beautiful Norman work at Caen, both in the Museum and at the Abbey.

Dr. Bensly read a paper on a silver-gilt ewer and basin given by Archbishop Parker in 1569 to the city of Norwich. He said in the year 1894 the late Archbishop Benson preached in Norwich Cathedral, at a special service held there on the occasion of the reopening of the choir. At the luncheon given by Dean Lefroy, after the service, the Archbishop spoke of the handsome and substantial gift of silver plate to the city of Norwich made by the celebrated Archbishop Parker, consisting of a basin or salver and ewer of silver, double gilt, weighing 175 ozs. This led to inquiry and search being made for the plate, but it could not be traced. Blomefield described the gift as "one bason and ewer of silver, double gilt, weighing 175 ozs, to be used at the mayor's table, and to be delivered from mayor to mayor by indenture for ever. The city gave bond to Bennet College, never to alienate it without the consent of the two masters of the colleges of Trinity Hall and Corpus Christi." Blomefield added, "They are now (1742) used by the Mayor, and are adorned with his arms and name in a cypher." Happily, Mr. Walter Rye had discovered among his valuable MSS. an accurate drawing of the ewer and basin, carefully made upon parchment, together with a copy of the bond, dated June 8, in the eighteenth year of Queen Elizabeth, given or intended to be given by the mayor, sheriffs, citizens and commonalty of the city of Norwich "against the alienation of the ewer and bason given to them and their successors perpetually to remain within the said city, except it be of urgent causes of necessity as should be thought reasonable by the masters of the two colleges of Corpus Christi and Trinity Hall in the University of Cambridge for the time being, or that furthermore if fortune that the said bason and ewer be lost or stolen, then the said mayors, sheriffs, citizens and commonalty for the time being do make or cause to be made the same again at their own proper costs and charges in full restitution to remain in their custody, and to be of such like form, weight and fashion as is expressed in the drawing above mentioned" (The drawing was then shown upon the screen.) For the credit of the old city it was to be hoped that a replica of this long-lost treasure might be made in accordance with the generous donor's wishes, and added to



the fine collection of City Corporation plate now so well preserved and shown in the Guildhall.

Sir Peter Eade said the late Archbishop Benson took great interest in this matter, and instructed his secretary to search in his library for anything that would throw any light upon it. He met, however, with no success. He was afraid the plate had years ago been sent to the house of some mayor, who had forgotten to return it to the Corporation plate chamber. He hoped the original plate would be discovered.

Dr. Bensly said he understood the plate could be replaced for 200*l*.

Previous to the meeting afternoon tea was provided in one of the upper rooms by the kindness of Dr. Bensly.

### SELBY ABBEY.

THE following appeal has been issued by the Rev. A. G. Tweedie, vicar of Selby:—"It is now thirteen years ago that those responsible for the care of the abbey church of Selby were able, through the liberal response from all parts of the world to their appeal, to repair the injury caused by many years of neglect, and to restore to the building some of its former beauty. At the conclusion of that work they believed that all had been done that was necessary to insure the safety of the building for many years to come. Unfortunately the last few years have revealed a danger which threatens the destruction of a large part of the work that was carried out at the expense of so much time and money. The central tower which, ever since its erection 800 years ago, has been a cause of anxiety owing to the treacherous nature of the foundations, has lately shown signs of weakness which, unless attended to at once, must result in a catastrophe similar to that which occurred in 1690, when the greater part of the tower fell, destroying the south transept and a considerable part of the choir. At a public meeting held in Selby on January 21 last a representative committee was appointed to take immediate steps to insure the safety of the tower. This committee at once communicated with Mr. J. Oldrid Scott, who for many years has been the adviser to those in charge of the abbey, and, acting on his advice, it has been decided to take down so much of the modern upper storey of the tower as is at present a source of danger. By this means the weight on the great tower piers will be reduced by more than 500 tons. In addition to this it will be necessary to repair and strengthen the remaining part of the tower. The total cost will probably not be less than 1,600*l*., not, indeed, a large sum for so important a work, and yet one quite beyond the resources of the town. The committee therefore appeal to those who take an interest in the preservation of ancient buildings to come to their assistance. This is no work of 'restoration.' Nothing is to be added in the shape of new work, and nothing will be done beyond preserving what at present exists. The keeping up this great building is at all times a heavy burden on the people of Selby, and, although they are ready to do all in their power to further the present work, they feel that they have a claim on those who share with them an interest in the preservation of 'the only complete monastic church left in Yorkshire.' The matter is one of urgency, for should an accident occur it will be too late for regret when work that can never be replaced has been destroyed. Among the hundreds of visitors who every year pass through the abbey there must be many who will be willing to contribute to the preservation of this beautiful building. I need not say that their contributions, however small, will be very gratefully acknowledged."

### VICTORIA MEMORIAL, LIVERPOOL.

A MEETING of the general committee for the erection in Liverpool of a memorial to Queen Victoria was held at the Walker Art Gallery on the 6th inst., under the chairmanship of the Lord Mayor. The committee approved a recommendation of the executive committee that the design and specification submitted by Messrs. C. J. Allen, F. M. Simpson, W. E. Willink & P. C. Thicknesse, for a monument to the memory of Her late Majesty Queen Victoria be accepted, subject to an agreement to be drawn up by the town clerk. To enable the committee to carry out this work a further sum of 1,500*l*. will be required. The model will be on view in the Walker Art Gallery. A recommendation of the executive committee that an application be made to the Corporation for the allocation of the site of St. George's Church for the memorial was confirmed.

The decision of the committee in favour of the Liverpool competitors—Professor Simpson, and Messrs. Willink & Thicknesse, architects, and Mr. Charles J. Allen, sculptor—is, in every way most satisfactory. The design, says the *Liverpool Courier*, is an admirable one; sculptor and architect will be constantly on the spot during the erection of the monument, and this, as well as their thorough knowledge of and interest in our city, can scarcely fail to have a beneficial effect on the

work. That the statuary should be executed here is peculiarly satisfactory; not only does it offer a splendid opportunity to a Liverpool citizen, who is one of the most accomplished of younger sculptors, but it will provide local students with an opportunity of participating in practical work on a large scale—than which nothing else is so valuable for educational purposes. The model of the entire memorial prepared by Mr. Allen, as we have said, be placed on view at the Walker Art Gallery.

The design represents a lofty dome supported by groups of four columns, each group flanked by two pedestals. The dome is surmounted by a bronze statue 14 feet high, representing Victory, the head poised with outspread wings on a gilded globe. The figure will be 56 feet above level of the pavement. Under the dome, which will be encrusted with gold mosaic, will stand a colossal figure, clad in robes of state, of Queen Victoria, 14 feet high, also in bronze. Surrounding the whole there will be a circle of steps on each of the four sides up to a platform beyond which other steps will rise in a reverse curve to the pedestal of the central statue.

The architectural work will all be in Portland stone, the material best suited to structures of this monumental character. Elaborate decoration has not entered into the scheme of the designers, but some attractive artistic work has been introduced at the apex of the columns. The aim of the successful competitors has been to produce a design possessing a dignity which can only be secured by broad, simple treatment. The general outline will harmonise well with the existing buildings, the town hall and custom house, which form the extremities of the vista in the centre of which the monument is to stand, and the dimensions are such that it will not be dwarfed, even by the large buildings which surround St. George's Place.

This historic site, on which in the thirteenth century was erected the castle of Liverpool, the foundation of the prosperity of the community, is a fitting spot for a monument raised to commemorate the monarch whose glorious reign brought such eminence to the city, and there can be no doubt that all who see the model will agree that a better and nobler design can scarcely be hoped for, and that the structure when completed, will be fully worthy alike of the illustrious person honoured by it and the most important site available for the second city of the Empire.

### ARCHITECTURE IN SCOTLAND.

IN describing the exhibition of the Royal Scottish Academy, which was lately opened, the *Scotsman* says:—

The architects' drawings do not include those of any work now in progress, but among them are several of the most interesting churches. Competitive designs of the Carnegie Public Library at Hawick and the Carnegie Baths at Dunfermline are hung on the walls, and the committees of these institutions would seem to have apparently been fortunate in the choice submitted to them. One of the Gothic churches which arrests attention by the elegance of its façade and the graceful character of its tower and spire is that of Greyfriars, Aberdeen, by Mr. A. Marshall Mackenzie, which is designed as to harmonise with the adjacent buildings of Marischal College, in the carrying out of which the architect is busy up for himself a beautiful memorial in the granite city. Mackenzie also shows a design for Kingseat Asylum, Aberdeen, on the cottage or villa system, the same as has been arranged for the Edinburgh Lunatic Board at Bangour. Hippolyte J. Blanc, so that the principle seems to be spreading. Hippolyte J. Blanc there is a drawing for an elegant designed carved pulpit and graceful canopy for the Trinity Coats Memorial Church, Paisley, and drawing of the serviceable and ornamental, of the Carnegie Baths and Asylum, Dunfermline. Mr. J. James Burnet exhibits an excellent piece of street architecture in the telling competition design for the National Bank buildings, Glasgow; Messrs. Peddie & Washington Browne are represented by a picturesque like front to the new station buildings at Stirling, and decorative façades for insurance buildings at Leeds and Hull. Mr. David Robertson's design for a U.F. church at Inverland has many agreeable features, and should be an ornament to the locality in which it is placed. By Mr. W. Birnie Rhind, sculptor, and Mr. T. Duncan Rhind, architect, there is an admirable and imposing design lodged in the competition for the Liverpool Queen Victoria Memorial. Intended as the centre of a square, the memorial takes the form of a massive Classic column, with groups of sculpture round the base, including a statue of the Queen and a joyous group of children. The monument rises from a spacious platform with balustrade and steps, and altogether presents a well-balanced and dignified appearance. Domestic architecture of agreeable character is shown by Mr. J. McIntyre Henry, Mr. T. T. Paterson, and Mr. John Breingan.





ISLE OF WIGHT QUEEN VICTORIA MEMORIAL.

ACCEPTED DESIGN BY P. G. STONE, F.S.A.

The above illustration shows the accepted design for the Memorial of Queen Victoria to be erected in the Isle of Wight. Mr. STONE, the author, in his statement his idea has been to design what may appropriately be called a Victoria Cross. The figures at the base of the column represent the regal virtues of Dignity,

Fortitude and Sympathy upholding the Crown, and guarded by the lions of England. Materials: Portland for steps, Hopton Wood for superstructure. Over fifty sets were received containing many excellent and original designs. The design by Mr. ISAAC JONES was placed second, and that by Mr. A. MCGAREL HOGG obtained third place.



### NOTES AND COMMENTS.

THE City of Westminster will be the scene of the most important events of the Coronation. Its streets should therefore bear witness that it is at once young and old, and while mindful of the present, is not forgetful of its past history. The Council are acting in no narrow spirit in preparing for the decoration of the thoroughfares. They have announced their desire to secure the co-operation of representative citizens outside their body. There are a great many architects within the limits of the city, and we hope they will be duly represented on the committee of advice. Sir LAURENCE ALMA-TADEMA has already given some suggestions: one being the appointment of an officer who can be accepted as an authority on heraldry. What is desirable is that streets should be treated as a whole, not with uniformity of decoration, for it would become monotonous, but by a symmetrical decoration of parts, unless there are buildings or other objects in the street which compel the adoption of a different system. At present it must be regretfully acknowledged there seems to be no disposition on the part of authorities in the City of Westminster or elsewhere to rely on the counsel of architects. Sir L. ALMA-TADEMA, Sir E. J. POYNTER and Mr. WALTER CRANE, the authorities who have assumed predominance, have no doubt introduced buildings in their paintings and drawings. But there is a great distance between buildings on canvas or paper and real buildings. The scenes which those artists have depicted would never serve for models. They want spontaneity, and would no more express the loyalty of the people during the Coronation festivities than a painted ship upon a painted ocean would serve to suggest manœuvres for the review of the fleet at Portsmouth.

At the last meeting of the "Teutonia" in Constantinople, Dr. WYEGAND read a paper on the excavations in Miletus. The most important discovery related to the old Senate House. The building was adorned with thirty-six Doric columns, and there was a semicircular hall which could accommodate about 600 members. Before the portal of the building stood a large altar on which were reliefs in marble, figures of lions, heads of cattle, besides garlands. Over the doorway, which was in the Corinthian style, was a long frieze representing a variety of arms. The building was erected about three centuries before the Christian era. Drawings are being prepared by Herr KNACKFUSS, architect, who will endeavour to explain the character of the whole building. A large number of photographs illustrated Dr. WYEGAND's paper. The discoveries have aroused much interest among archaeologists, and it is therefore unfortunate that the state of the Turkish exchequer will not allow a resumption of the excavations.

THE report of the Cathedral Board of St. Patrick's, Dublin, states that the work of restoration of the choir, which the late Dean JELLET had much at heart, made steady progress during the year 1901. The Board again express their great obligations to Lord IVEAGH for the generous help which has enabled this work to be carried out; to the cathedral architect, Sir THOMAS DREW, whose knowledge has brought to light some beautiful features of the choir which had been overlaid for many years; and to Messrs. THOMPSON, of Peterborough, whose workmen have laboured with diligence and skill in the execution of their difficult task. It is hoped that the restoration of the choir and the erection of the new organ in the chamber over the north aisle will be completed before the month of June, 1902; and the Board believe that, although the work has taken longer to execute than they anticipated when they issued their report for 1900, it will be found that the time has been well used by the workmen, and that the result will be entirely satisfactory. The work of restoration of the fabric rendered it impossible for the daily services to be held during the past year. Services were held as usual on Sundays and holy days, but the inevitable discomfort consequent on building operations, and on the disturbance of the pipes for heating the

cathedral, has had its effect on the congregations, and have sensibly fallen off, although it is hoped that this diminution is only temporary.

THE delusion which belongs to international exhibitions as a source of profit to the exhibitors has been exemplified by the returns of the French Customs Department in relation to the results of the great show of 1900. Fifty countries forwarded goods of the value of 250,000,000 frs. but the sales amounted to only 7,500,000 frs. The United States sold to the value of 1,657,000 frs. out of 29,000,000 frs.; Germany, 1,510,000 frs. out of 23,000,000 frs.; land, 905,000 frs. out of 20,000,000 frs.; Italy, 389,000 frs. out of 26,000,000 frs.; Russia, 352,000 frs. out of 22,000,000 frs.; Belgium, 255,000 frs. out of 19,000,000 frs.; Austria, 188,000 frs. out of 23,000,000 frs.; and Hungary, 166,000 frs. out of 42,000,000 frs. Customs duty to the amount of 778,000 frs. had to be paid on these sales, nearly half of which consisted of machinery, artistic objects figuring for only 55,000 frs. Taking the general imports for the year 1900, the foreign merchandise at the Exhibition represented 4.18 per cent.; and the sales only .16 per cent.

A MONOGRAPH on the work in precious metals belongs to the Græco-Roman period in the museums of Cairo has been prepared by M. KARO. The Greek age is generally taken as commencing with the foundation of Alexandria, 332 B.C. On the death of CLEOPATRA, 30 B.C., the Roman epoch began. It is difficult in many cases to discriminate between the works of native artists and the imitations of them. The most valuable example is a golden diadem which the head of the MEDUSA is represented in. The surface is engraved with a feather pattern. From a chain was suspended a medallion which has lost its top. The paintings which have survived make it clear that the diadem was worn on the back of the head, and the medallion and medallion were placed on the forehead. There are a great number of armlets. Many are in the form of snakes with emeralds in the eyes. Some of them were doubled. The oldest ear-rings are concluded to be of crescent form. The most precious consisted of smooth rings which were arranged around a pyramid. Ear-rings with pearls and with heads of animals are also common. There are a variety of rings, some having seals, and it is evident that much importance was given to seals with inscriptions on certain ornaments. Pectorals or breast ornaments were worn by those who could afford them, but judging by the examples, it would appear they were required to be in the form of a chapel with little deities. That class of jewelry was especially costly. There were few processes of the jeweller's art which were unknown to the Egyptians. In repoussé, cloisonné and other enamelling, engraving, imitation of precious stones, were all familiar to them, and the flexibility of some of the chains is surprising.

HAVING attained its eighty-fifth edition, "Laws of the Price Book" may be considered as the patriarch of all compilations. Age does not make it show any tendency to inaccuracy or loss of its variety. It represents a collection of novelties which recent years have introduced, and is multifarious in its contents as the industries it records. From the systematic arrangement, all the items are referred to with ease, and the information is as trustworthy as the organisation of "Kelly's Directories, Ltd." The law cases are brought up to 1901, and are recorded in the metropolitan police courts under the Building Act as late as November.

### ILLUSTRATIONS.

TECHNICAL SCHOOLS, MANCHESTER.

THE NEW PATENT OFFICE, SOUTHAMPTON BUILDINGS, W.

NEW Y.M.C.A. BUILDINGS, ST. HELENS.

PARISH CHURCH, ABEROATH N.E.



## THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. W. H. Seth-Smith, president, in the Messrs. S. Leaning, E. G. Besant, R. O. Constant, Pittar and B. Procter were elected members.

Note of condolence was passed to the family of the late F. Bentley, to mark the appreciation of the Association courtesy and kindness in the past in allowing members his splendid new work at Westminster and in admiring his general work as an architect.

The following gifts to the New Premises Fund were received:—Mr. W. H. Seth-Smith (second donation) 50s., day school students 13s., Mr. Henry Muff 10s. 10s., Mr. David Scott 10s. 10s., Mr. G. Sherrin 10s. 10s., Mr. L. A. Muff 10s., Mr. W. Hilton Nash 5s., Mr. E. B. Muff 2s. 2s., Frank Green 2s. 2s.

A provisional promise from Mr. Rowland Plumbe of 100s. total sum to date of 3,923s. 15s. 6d.

Note of thanks was passed to the Pearse Portland Stone Company for presenting to the day school seven cubical blocks of different beds of Portland stone formation, and to Brumwell Thomas, through whose kind offices the same were obtained, and who had also presented some fossils. J. MILLER, of Glasgow, read his paper on

## Glasgow International Exhibition Buildings, 1901.

Dealing with this paper, before proceeding to describe the buildings in detail, I shall refer briefly to the purposes and objects of the undertaking, and also to the site and its surroundings.

The objects of the Glasgow Exhibition, as defined in the catalogue, were to exhibit the manufactures, products, and material resources of all nations, the machinery and appliances relating thereto, and to present a full illustration of progress in industry, science and art during the nineteenth century.

While the undertaking might be called international, inasmuch as most foreign countries were to some extent represented, it was not a national undertaking in the same sense as the Great World's Show at Chicago, or the various exhibitions which have been held in Paris. In its inception and development it was entirely local, and with the exception of the buildings erected by Russia, and the minor pavilions of Canada and several private exhibits, the whole of the buildings were erected by the local exhibition authorities, without any outside aid whatever.

With exhibition buildings, as with all buildings, the site is a most important factor in determining the arrangement and design of the scheme. For you can at once understand, when the area of ground is to be overlaid with a number of buildings, it is of the utmost importance that every advantage should be taken of the site and its natural surroundings, both towards the design and disposition of the buildings, in order to obtain the best result from a spectacular point of view, not of the building only, but of the whole, and at the same time to secure the most convenient and suitable arrangement for exhibition purposes.

In Chicago and the several Paris exhibitions which have preceded from time to time the symmetrical or axial plan has been adopted, and I think there can be no question that wherever it is possible to produce a plan on axial lines it is the best and grandest form. In Glasgow, however, the site at the disposal of the exhibition authorities was somewhat different from those to which I have referred. Kelvingrove Park consists of about 80 acres, at least that part of it which was available for exhibition purposes. Through its centre winds the river Clyde in serpentine curves, and on its north and north-east are ranges of high and steep slopes, crowned in the case by the University buildings designed by the late George Gilbert Scott, while the latter is surmounted by a series of terraces well designed and appropriate to their position. Viewed from the front of the main exhibition buildings these features formed a fine and, in fact, imposing background to the various temporary buildings scattered throughout the grounds.

The leading feature in determining the general arrangement of the buildings was the position of the new permanent art galleries, which have been erected on the south bank of the river directly facing the University buildings. The only large piece of ground in the park lay between the art galleries and the east boundary of the park at Gray Street, running parallel with Dumbarton Road, which formed its south boundary. The extent of this ground was about 800 feet long and 250 feet wide. There was no alternative but to place the most and most important building here, namely, the Industrial Hall, having its principal front facing the river.

Smaller open spaces were selected throughout the park for less important buildings, and an endeavour was made as far as possible to arrange these somewhat in the form of a semicircle, having for its base the front line of the Industrial Hall. No buildings were introduced within this semicircle,

the idea being to preserve this space as a large open area, to be used as a promenade from which uninterrupted views of the buildings might be obtained. It was my intention to have placed a great central feature here in the way of a monumental fountain 60 feet in diameter, surrounded by a row of columns 40 feet high, each column supporting a gilded winged figure. From the centre of the fountain rose a great circular illuminated tower 120 feet high. Such a feature would have formed a climax to the architectural scheme, repeating, as it were, the spirit of the main features of the Industrial Hall and forming a culminating point in the centre of the grounds. This feature I regret to say was never carried out. The park is studded with fine trees, but I might mention that not a single tree was sacrificed to make room for any of the buildings; we believed it better rather to sacrifice the architectural symmetry of the scheme, than to cut down these permanent embellishments of the park, remembering that the life of our exhibition was only to be six months.

I would here point out that many of the smaller buildings were introduced long after the original plans were matured; the growth of the exhibition was gradual, and its ultimate extent greatly exceeded the anticipations of the executive; in fact, as time went on, the number of the buildings increased to such an extent that it was with difficulty positions could be found for them. This explains in a measure the somewhat irregular arrangement in certain parts of the grounds. Had the full extent and scope of the scheme been approximately known at the beginning, more might have been made of it from an architectural point of view, but in any case the site was such as would not admit of anything of the nature of a symmetrical or axial arrangement of plan.

The buildings may be divided into five groups, namely, first, Industrial Hall; second, Machinery Hall; third, Grand Avenue; fourth, Concert Hall; fifth, the various restaurants, kiosks and minor exhibits throughout the grounds.

I ought to mention here that the fine arts were housed in the handsome new permanent art gallery, recently erected from the designs of Messrs. Simpson & Allen, of London. The design and arrangement of this building are, no doubt, already known to you; it is not my intention therefore to deal with it in this paper, but will confine my remarks to those structures designed by myself and carried out under my direction.

The Industrial Hall was 690 feet long by 327 feet in width; its chief features were the great dome, with its towers, peristyle and piazza. The building might be termed cruciform on plan, the dome being formed at the intersection of the main central avenue, with the two short cross avenues leading to the main street entrance in Sandyford Street and to the ceremonial entrance and piazza respectively. The dome had an internal diameter of 72 feet, and the height from the floor to the underside of the lantern was 131 feet, the extreme height from the ground line in front of the peristyle steps to the top of the flying figure on the summit of the lantern being 200 feet.

The dome rises from piers formed of timber and covered with fibrous plaster; between these spring the four arches under the dome forming the pendentives. These arches have a width of 49 feet, and are 44 feet 6 inches high to the crown. They are treated in a broad and simple manner, without any arch mouldings whatever, the pendentives being allowed simply to melt into the extrados of the arches, a form of treatment which suited the plastic material used in the construction, no attempt being made to represent or imitate a stone treatment. The interior of the dome was formed without ribs or divisions of any kind, thus forming an uninterrupted hemisphere. The effect produced by this treatment, to my mind, is to give a dome a feeling of mystery and lightness; it seems to hang or float in the air. Vertical ribs may tend to give apparent height, but with these the construction at once becomes apparent and the aerial mystery is lost.

The pendentives were enriched by large figure groups in high relief, symbolical of navigation. These groups filled the entire spandrels without any framing-in, the extreme size of the spandrels being 50 feet broad by 30 feet high. More variety and interest would have been given had the four spandrels been treated with different groups, but want of money and shortness of time prevented this being done.

The piers carrying the dome were constructed of wood up to the level of the external platform, 60 feet from the floor, the dome itself being formed of steel ribs placed at about 14 feet centres, connected at top with a braced steel ring of sufficient weight and strength to carry the flèche. Between each of the steel ribs were placed three ribs constructed of wood, 2 feet 6 inches deep, at about 4 feet 6-inch centres, with wood purlins connecting the same at exterior and interior, and cut to the curve of dome. The internal surface of the dome was covered with fibre plaster moulded to the curve, and nailed to 8-inch boarding fixed to the purlins, the fibre plates having a finishing coat of putty lime 1/2 inch thick, as on the external walls. On the outside was fixed 8-inch boarding, covered with a smooth surface floorcloth, this being the cheapest and most suitable



material we could find to take on the gilding with which the dome was covered, materials like copper or lead being considered too expensive for temporary work. As for the gilding with which the domes and turrets were covered, various materials were experimented with. Real gold leaf was beyond the purse of the committee, and various lacquers and imitation gold leaf were tried, but these soon became black in the chemically charged atmosphere of Glasgow. After various experiments we found the most satisfactory material to be aluminium leaf covered with a yellow lacquer, which gave an effect resembling real gold at about 1s. 10d. per square yard, but even this as a lasting material fell far short of the real article. The effect of aluminium leaf itself was exceedingly good; it gave a fine metallic lustre to the rounded shapes of the roofs and lasts well.

The four great towers surrounding the dome were constructed of wood. The corner posts were of pitch pine, 12 inches by 12 inches, rising from a framework formed on top of a solid bed of concrete to which it was securely bolted. The posts were scarfed at the joinings and bolted together; to each of the posts were bolted two 12-inch by 6-inch runners, the intermediate vertical pieces being 12 inches by 2½ inches. The whole framework was braced on the four outside faces by means of two layers of timber sheeting ¾ inch thick, placed close together diagonally, the outer layer being laid to the opposite angle from the one below. By this means perfect rigidity was given to the towers, and a solid surface formed on which to nail the fibre plaster boards. The four towers were in their turn bound together by the four walls forming the square enclosure out of which the dome rose. These side walls were constructed of wood, the uprights being 12 inches by 2½ inches, and the method of bracing was similar to that already described for the towers.

The outer walls of the main building were formed of 4-inch by 2-inch uprights at 2-foot centres, braced with 4-inch by 2-inch pieces. The whole of the outer surfaces of the walls as well as all the ornament were executed in fibrous plaster, which was cast in slabs 4 feet by 3 feet, and nailed direct to the timber framing. For temporary purposes fibre plaster has many advantages over wood. In the first place, it is practically fireproof, a matter of the highest importance in buildings where the structural work is mostly of wood, and which are filled to overflowing with combustible materials of all kinds. Where repetition of ornament is required it has no rival, and for colour and texture it leaves nothing to be desired. The fibre boards were all cast in the workshop and were ½ inch thick, the outside surface being left rough. They were fixed leaving a space of about ⅜ of an inch at the joinings, then the outside was entirely floated over with a finishing coat of stucco ¼ inch thick. This coating was squeezed through the joints left between the boards, and formed a key on the back similar to that formed by plaster on the back of lath. By this means the joints of the plasterwork are not so liable to show after being exposed to the weather, and a stronger and more uniform surface is obtained.

The main central avenue of the Industrial Hall had a roof of steel having a clear span of 92 feet 6 inches, or 102 feet 6 inches over the principals, and was carried through the whole length of the building, except where broken by the dome in the centre. There were seven principals on each side of the dome, spaced about 40 feet apart, connected by longitudinal purlins, on which rested the intermediate rafters. The arched principals were of box section, and formed of eight L's 4½ inches by 3½ inches by ⅝ inches with latticework between, and were designed on the three-hinged system, that is, the bases of the legs of the principals were hinged by pins 3½-inch diameter to bed-plates secured to concrete foundations, and the bed-plates were connected horizontally by a flat steel bar, 5 inches by ½ inch, to prevent the legs spreading. The principal at the apex was also joined by a hinged joint and a 4½-inch diameter pin. In its elements this type of truss is practically two girders standing on end and resting against each other at the top, where they are joined by a pin; the legs spread apart at the base, and are fixed by pins to a foundation, and prevented from spreading by the steel bar, which completes the triangle of forces.

Between the lower, or column, part of the principal along both sides of the avenue were open elliptical arched girders of steel with radiating flat bars.

Each of the principals was built in five parts, and erected by means of a steam crane with a 70-foot jib mounted on a staging 30 feet high running on wheels. There was another staging, also on wheels, behind to support the parts of the principal as they were erected.

The two bottom parts, or legs, were, of course, erected first, and kept upright by forks, one side of which was movable, connected to the back staging. The two intermediate pieces were then fitted to the legs, and finally the apex in one piece with pin in position was dropped in and the whole principal bolted up.

The side roofs were arranged in spans 42 feet wide at right

angles to the main avenue. The principals were composed of timber on the cantilever principle, and are exceptional in their scantlings, making a very cheap form of roof, are placed at 12-foot centres; the ties pass over the main bearing girders, are attached to the top of same, are continuous throughout their entire length. The side cantilever, formed of three 6½-inch by 2½-inch beams, rest on the bottom boom of the main girder, and are bolted to the ties at a distance of one-third the span from the main girder. The couples of the centre portion are simply 2½-inch single battens, the bottoms of which rest on the points of the cantilever. Immediately over the point cantilever there is a light lattice timber girder, which carries a ventilator, and also carries the ends of the astragals of the roof and supports the ends of the corrugated sheets on the portion of the roof.

The main girders which carry these principals were of timber with iron ties, and had top and bottom booms of three thicknesses of 9 inches by 4½ inches bolted to each other and having steel plates at the joinings. They were 6 inches deep, and were built continuous, their entire length being 113 feet. They were supported in the middle by a 10-inch by 10-inch solid post, so that the clear span on each side of this support was 56 feet. These girders were supported at their inner ends by the main principals of the avenue, and at the outer end by supports formed in the wall.

The astragals for these roofs were T-shaped steel plates, length, viz. 23 feet long from eave to eave, bent over the top and placed at 2 feet centres, the section being 1½ inch by 1½ inch by ¼ inch. The glass was rolled plate 3-16 inch. The glass was fixed with putty and having pins passing through the vertical members of the astragal.

The corrugated iron used was No. 24 B.W.G., not galvanised, but dipped in linseed oil, it being intended to be painted; but whether painted or not, my experience is that corrugated iron should be galvanised, even for temporary use, which is to be painted, for, if not galvanised, the thin iron will very soon corrode. Galvanising has also the advantage of increasing the strength of the sheet, making it equal to a thicker gauge in thickness; and, further, if the corrugated iron is galvanised, a better price can always be obtained for its use on a temporary building.

In designing these roofs the object kept in view was to use as few supports as possible, so as not to cut up the floor, thereby allowing the exhibits to be arranged in any way that might be found desirable.

An important point with exhibition buildings is the lighting. While windows were formed in the side walls of all the buildings, the chief source of lighting was from the roof, an area of glass in the roof should be sufficient to amply light the buildings, without reckoning on the windows, as the latter are as often as not covered up by exhibits or decorations. The area of glass in proportion to floor area in this and the other buildings was as 1 to 2; in other words, 50 superficial feet of glass to every 100 superficial feet of floor area, and the lighting, I may say, was satisfactory in every way.

When circumstances will permit I think a more even better diffused light is obtained when that part of the roof over the ridge is glazed, instead of having the roof-covering over the ridge and the glazing lower down. If the roof is a very wide second stretch of glazing may be introduced lower down the slope of the roof, but the largest section of glazing should be over the ridge.

It is important that glazing, i.e. putty glazing, should be done in dry weather. In frosty weather it is dangerous to have workmen engaged on the roofs, and in wet weather the putty does not adhere to the astragal, leakage will result, and nothing short of taking out the glass and reglazing will do a satisfactory job. For these reasons every opportunity should be taken in dry weather should be taken advantage of to get the roofs glazed.

For an exhibition, where as a rule time is limited, autumn preceding the exhibition year is perhaps the best time to get the glazing done. If it is not done before the winter sets in, and the weather becomes unsettled, it will be a difficult matter to find favourable opportunities to glaze the areas between that time and the opening in May—that was our experience; but, of course, the winter preceding our exhibition was an exceptionally severe one, with abnormally high rainfall.

In very warm weather it will be necessary to size coat the glass on all roofs facing the south, otherwise the heat will render the building very uncomfortable, especially if the roofs are inclined to be low.

In most of the exhibitions that have been held in this country the floors of the industrial section have usually been formed with battens 3 inches thick, laid with a space of 1 inch between the planks.

In the Glasgow exhibition, however, the floor of the Industrial Hall was laid with ordinary 1½-inch flooring tongue and grooved and laid close. These two methods each have



a central position near the dome were placed the principal premises, which consisted of a telling-room, manager's office, room, with cloakroom and lavatory, and strong-room. The office and post office, also exhibition manager and railway's office, with committee-room and rooms for the public and public office, were centrally situated and in positions where they could be readily seen by the public. The shipping and railway offices were also placed in prominent positions. These latter need not be large, but just sufficient to

(To be concluded.)

**Mr. J. Sulman**, architect, delivered an address at the Science Congress in Sydney, in which he said that in future houses would have to be built on different lines, so that the people could conveniently do their own work. The kitchen might be reformed, the cooking being done by gas or electricity. He described methods to be adopted in labour saving, and advocated a simpler style of furnishing. The washing-up difficulty after meals he proposed to get over by cleaning the plates and dishes with a chemical solution, and then drying by heat. An apparatus to do this work would be tried shortly in Sydney.



### THE WHITECHAPEL ART GALLERY.

THE annual report by Canon Barnett, which has just been issued, shows that the whole of the 16,000*l.* required for land and building has now been raised, though funds are much wanted for maintenance. The trustees are more than satisfied by their experience. Their aim has been to open to the people of East London a larger world than that in which they usually work, to draw them to a pleasure recreating to their minds and to stir in them a human curiosity. The people came in greater numbers than was expected; they came both to enjoy and to question, they bought catalogues by the thousand, they attended lectures and they welcomed guidance. There was always perfect order, and the donations of small coin have marked the general approval. The spring exhibition, opened by Lord Rosebery on March 12, 1901, was visited by 206,000 people, including large numbers of Board school children. The Chinese exhibition from July 25 to September 4 had 137,000 visitors, and in the first five weeks of the Scottish exhibition, which was still open when the report was written, the visitors numbered 90,000. The catalogues sold during the first two exhibitions numbered 38,200 and 21,000 respectively. It is not proposed to make a permanent collection at the gallery, but it is proposed that a library of books on art, a collection of lantern slides to illustrate lectures on pictures, sculpture and architecture, and a collection of photographs and process reproductions of pictures should be formed. These would be lent to people or institutions interested in studying art or in spreading interest in art in the East End. A lending picture gallery might also be established, from which the people might borrow pictures as they now borrowed books at free libraries. Gifts of sketches, photographs, engravings, books or slides for these purposes would be gladly welcomed by the director. A small beginning has already been made.

### THE GLASGOW ART GALLERY.

THE parks committee of Glasgow Corporation recommend that the new art galleries should be known as the Glasgow Art Gallery and Museum (Kelvingrove). The committee have approved generally of a memorandum as to organisation drawn up by Mr. James Paton, the superintendent. The upper floors are to be occupied with the Fine Art department, except the division of sculpture, to which a portion at least of the central hall must be devoted. The east wing of the ground-floor is to be given over to natural history, and the west wing for the technological and archaeological departments. Mr. Paton suggests that the classification of the works in the picture galleries should be:—Early pictures, modern works, water-colour drawings, special collections and drawings, prints, photographs and other reproductions. The balconies of the upper floor around the grand hall and over the north and south entrances afford space for the collections of Applied Art, which include carvings in ivory, wood and other media, metalwork, pottery, glass, textiles, and lace and embroidery, &c. Mr. Paton says that the sculpture at present owned by the Corporation is not sufficient to adequately occupy the spacious central hall, and a most unfavourable impression would be produced if that grand hall presented a bare, poverty-stricken appearance. Casts of statuary and of sculpture, however, of high artistic and historical value can always be obtained for comparatively moderate expenditure, and it is most desirable that a well selected series of such casts should be provided without delay. At the same time, it would be a mistake to crowd up the floor space of the hall, which will fall to be used as a reception hall on ceremonial occasions, and as a free promenade for the hearing of music when performances take place. The technological collections embrace—raw products of commerce, manufacturing processes and products and mechanical arts, such as engineering, shipbuilding and architectural works. For the archaeological collections accommodation should be provided in the west wing, as in that side the series of heavy casts of sculptured stones is already installed. These might be classified thus—general archaeology and local antiquities and memorials of Glasgow. It is highly desirable that the series of sculptured stones of Scotland should continue to be added to as opportunity occurs till casts of all the more important of these significant memorials of early life and civilisation are secured. Already a very valuable nucleus of such a series belongs to the institution, and the cost of adding to it would be very moderate. Casts of outstanding examples of similar works from foreign sources should also be obtained. The east wing, devoted to the natural history side of the institution, has to afford accommodation for zoology, ethnology, geology and palæontology, and mineralogy. The open court is the most convenient position for a mammalian collection. One saloon then would alone remain for the lower vertebrates and for all the invertebrates. A pavilion should be devoted to British and local natural history, leaving a

saloon for ethnography or the natural history of man, a saloon for geology and palæontology, with a pavilion for mineralogy. The institution is yet very deficient in collections of mammals, which, in all museums of natural history, are the most popular, if not the most instructive objects. The up the blanks in such a collection is a mere question of expenditure. Hitherto the entire absence of space for a mammalian collection has precluded any attempt at systematic development of such a series, and only specimens incidentally offered have been acquired. Thanks to gifts and purchases, the collections of fossils, rocks and minerals belonging to the museums are now extensive and of great value. Hitherto a portion of these only has been exhibited in the Green branch, but such collections are much too specialised to be of general usefulness in the People's Museum. It is therefore suggested that the collections should be transferred, and that a type of school collection of zoology be substituted for them. Such a collection would not only be much more popular and attractive than rocks and fossils, it would also be most valuable for the elementary instruction of school children, and for students of natural history generally. Having now a building in which treasures of all kinds can be exhibited with the utmost freedom from injury, Mr. Paton suggests that the committee should consider the propriety of resuscitating the scheme of special loan collections, which a period was carried out with marked success in the Corporation Galleries. The inauguration of the institution, he says, be an event of more than local importance, and it should be considered whether some special effort should not be made to give due éclat to the occasion. An appeal to owners of art treasures for their support and assistance towards making the initiatory stage of the institution a success would be likely to meet with a cordial response.

### LECTURES ON SCULPTURE.

IN the final lecture of his course, Mr. Alfred Gilbert remarked that he had left much unsaid, as his material had to be got into the smallest space, but he hoped the Art students could pick up the thought-threads in his brain as lenient to him if he failed. This lecture's title, "To a Good End," might be as enigmatical as the headings of the other lectures had been until he enlightened them; but it was also one which applied specially to himself, as it was the last lecture of the year. He wanted them to take these title words and apply them to their own lives as men and women, not only as do with sticks and clay. Their calling was the grandest profession of any save the one of healing; but they must remember the impulse which drew them to that particular mode of expression could equally well have been trained to painting, though, perhaps, not to architecture. Sculpture was, in fact, the most difficult of the arts, but it was personal, and an architect had to be something more than personal, and he created or achieved must be perfect, whatsoever he left it in, and he must likewise be the master of many crafts. A grand factor towards the proper end of the faculty of memory, the influence of this coming to a chance scent, sight, or sound, making strong impressions of originality. A peal of bells to one would be joyous to another sad, while to a third its retrospective action would be of happiness cloaked with sadness. The memory should only be unlocked to beautiful things, and students should question themselves as to why they considered a thing beautiful. Their works should be imbued and burdened with memory of all the finest they had seen; and if they accomplished this they would never make an ugly statue, and so would destroy it, for, unless they broke it, it would break their hearts. They must not eschew memory and tradition, or *vice versa*, but in making a memory piece must not forget what tradition had handed down of beauty, and with the heart's blood of their authors. He who was afraid of being upset by studying the works of others was in the character of a very poor jackal to a very large lion, who who copied the great was no more than a monkey. What inspiration was sometimes regarded as a sort of divine gift. It was true an artist must be born an artist, but he must have his trade just as a joiner or a plumber must. Their right hands must be well acquainted, for when the one does not know what the other was doing want of inspiration was the result. Fads and new fashions were to be left behind, for this cheap-jack means to spurious reputation. Life's ambition, he said, was the stirrup-cup which, if poisoned, would prevent completion of their journey; but, if sweet, would keep them long for the next stop that they might drink. Some might think life's ambition realised were they permitted to do a beautiful thing; but if tied to a clock, time, and bound by approval of a committee, they had no free hand, and should not submit to this, for if, as they gave their brains, they should not be told by



to use them, or that they were all wrong, by one who never did right. Stupid, inconsequent remarks he knew to be heart-breaking, though they did not kill; they must know themselves, and always strive after the best, for that was the love of the future, because it assured them more love than they could bear during existence. Not to be forgotten was difficult enough. He warned the students never to make things in sadness, but always to work with a joyous heart, and is they could not do if they were in doubt. They were to be determined to get right what they decided on, and if they tackled it in this spirit a brick wall would crumble into dust and make a way for others to enter. Such intensity of intention would probably equip them for riding that horse with irrup's strong and sweet cup that sent them on the journey to proper end.

## BRICKLAYING AT THE WESTINGHOUSE WORKS.

THE following letter from Mr. J. C. Stewart, the building manager, has appeared in the *Times*:—As doubt has been thrown in some quarters upon certain statements made by your engineering correspondent in his article on the construction of the British Westinghouse Electric and Manufacturing Company's works at Manchester in your issue of February 25, you may perhaps permit me to say that he rather understated than overstated the facts.

Your correspondent said:—

"A record is kept of the work done by each man per day, and I was allowed to see the records of the time-keepers. The sheets, taken at random and without selection, showed sometimes as much as 1,400 bricks laid per day by one man, and it was said that a total of 1,800 was hoped for, though I did not understand that had been reached. At any rate, 1,400 a day is a sufficiently good total compared to the 450 or less which is considered a fair standard in places. It must be remembered, however, in regard to this question that there is a great difference in the quality of bricklaying. What is good enough for rough work out of sight will not do for the fronts of high-class dwellings, not to speak of such refinements as rubbed bricks. Doubtless the higher totals would represent work that could not need much attention."

When your correspondent visited the works in the early part of November we had reached a regular average of 1,400 bricks per man per day, and on some days we had laid as many as 1,800 bricks per man. A little later we commenced work on the pattern shop, where there are fewer openings in the walls than in any of the other buildings. In the construction of the pattern shop our regular average was 1,800 bricks per man per day. This building, which is 578 feet in length by 90 feet in width, and is absolutely fireproof, was completed in the latter part of December.

It has been elsewhere publicly asked, "What is the thickness of the walls? Was mortar or cement used?"

I will say that in no instance are the walls less than 9 inches thick, and that in some instances they are 23 inches thick. Mortar was used.

All our walls are "piers." In the centre of each brick pier is a large "Z" bar steel column.

With one exception all the buildings are faced with what is known in the trade as Number 2 stock brick. The exception is the six-storey office building, 250 feet by 50 feet, which is faced with Number 1 stock brick. These facts will indicate to men who understand the business the high grade of work and the care it requires. The averages I have mentioned per man include face brickwork. On common work we reached an average of 2,250 bricks per man per day.

It will doubtless be regarded as a matter of public interest that our bricklaying at Manchester, which seems to us not unusual, but which has attracted so much attention in this country, was attained under the direction of our bricklayer superintendents, both of them Englishmen and members of the Bricklayers' Union. The head superintendent has never been in America, but his principal assistant spent five years there, returning here some five years ago, and has remained here ever since. The bricklaying has been directly under their supervision and under the general direction of my general superintendent and myself.

If further evidence be required of the number of bricks that English workmen are capable of laying in one day of 8 hours, when assisted by up-to-date methods of handling brick and mortar, I may call attention to the brick chimney stack which we are now erecting for the Mersey Tunnel power station at Birkenhead. This chimney is to be 250 feet high. Its base is 24 feet square, and its flue is 13 feet in diameter. It has an inside wall or ring separate from the outer walls, and consequently there are four faces to the stack. The first, 5 feet on the inside, is lined with fire-brick. Work was started on January 11. During the month of January, on account of the extra care required in lining the flue with fire-

brick, the construction of the flue openings, and the setting of the stone base and coping to the square base, our brick-laying average per day was only 1,533 and 1,600 per man per day of 8½ hours.

From February 1, however, we had plain sailing, and the average number of bricks laid per man per day was as follows:—February 1, 1,275 bricks (half day); 2, Sunday; 3, 1,393 (two hours lost, accident to brickhoist); 4, 1,894; 5, 1,968; 6 to 8, no work done on account of bad weather; 9, Sunday; 10, 2,022; 11 to 14, no work, snowing and cold; 15, 1,278 (half day); 16, Sunday; 17, 2,097; 18, 1,763; 19, 2,145; 20, 2,086; 21, 1,979; 22, no work, raining; 23, Sunday; 24, 857 (half day)—20,757 brick-average per man for 10½ days.

This shows an average per man, per day of, say, nine hours, of 1,976 bricks. The men worked 8½ hours per day up to and including February 11, and nine hours per day since that date.

This Birkenhead average has been made possible, partly, to quote the words of the bricklayers themselves, by "facilities which are unusual in this country."

Some features which seem to have attracted considerable attention at Birkenhead are the methods of outside scaffolding for building the brick stack, and the double platform lift, each platform holding two barrows of bricks; one ascending while the other descends. The time occupied in raising one platform from the ground to the height of the stack, which to-day is 150 feet, is only 15 seconds. Another feature which the men regard favourably as helping them to do rapid work is our method of making mortar. Our mortar is made much softer than that commonly used in England, and the bricks are laid by a light pressure of the hand and a light tap of the trowel, instead of by repeated hammering of the trowel to force the brick into place in stiff mortar. By the use of soft mortar we can lay enough mortar with one stretch of the trowel for half a dozen to a dozen bricks. With stiff mortar, such as masons use in this country, it is possible only to spread enough at one time for a much smaller number of bricks, as the stiff mortar leaves the trowel in a mass and will not spread freely.

I might add that at the height now reached by the Mersey stack we have gone beyond the point where it is practicable to continue with outside scaffolding. From this point upwards we will lay our bricks with greater economy by hoisting the brick on the inside of the stack and using inside scaffolding.

All the bricklayers, including the foreman, engaged on the construction of this stack are British workmen, and all of them are members of the Bricklayers' Union. The rate of wages paid to our bricklayers is 11½d. per hour. This is 1½d. per hour above the trade-union rate. The foreman is paid a special rate.

Each evening as the men stop work a mark is made on the stack, and the next evening measurements are made for ascertaining the number of feet and inches the stack has increased in height during the day. The calculation is based on fourteen bricks to the cubic foot, and the average number of bricks stated in this letter is the result of these calculations. The bricks used in the Manchester and Liverpool district are about 20 per cent. larger than those used in the London district.

My experience in connection with the successful handling of British workmen in Great Britain is:—

First, the men must satisfy themselves that they are to be paid good wages.

Second, the man who has general charge of the work must understand his business, and have his work done in his own way, in his own time and by his own methods.

It seems difficult, if not impossible, to learn what is really considered a day's work in British bricklaying. On one hand it is stated that on some constructions the figures are 330 bricks per man per day, on the other hand other contractors in the same district have in their employ men who lay 500 to 700 bricks.

In the United States a man's average per day is from 2,000 bricks on the best class work—say, private residences—and this includes face brick as well as common, to 2,500 and even 2,700, including face and common, on other structures.

It may seem strange to the people of this country, but it is a fact, that British bricklayers who go to America work side by side there with American bricklayers and equal their average.

It may be to the point if I add that, besides bricklaying, we have achieved results in the construction of the British Westinghouse Company's works at Manchester which are not less notable than those to which reference has been made.

For instance, results have been attained here by British carpenters just as quickly and cheaply as I have ever accomplished similar work in America.

To the unbiased man facts like these afford conclusive proof that British workmen, if they diligently apply themselves, do as much as the workmen of any other country.

Finally, I will say with regard to union men that, if our work has been rapidly executed, it has been greatly due to the interest that has been taken by the representatives of the unions in securing for us the best men that could be obtained.



At the meeting of the London County Council, Captain Swinton asked Lord Welby if, remembering that he felt himself justified in saying no more in his report than that 330 bricks per man per day is considerably below the number actually laid by the Council bricklayers, he had read the letter on bricklaying sent by Mr. J. C. Stewart, building manager of the British Westinghouse Electric Company, of Manchester, to the *Times*, and the leading article upon it; whether, remembering also that some members of this Council laughed to scorn the idea that it was possible to lay even 1,000 bricks a day, he had noted that Mr. Stewart made this statement, "This shows an average per man per day of, say, nine hours, of 1,976 bricks;" whether he would take steps to test the truth of this statement and also, in the interests of the works committee and the ratepayers, investigate the methods and those "facilities which are unusual in this country" which apparently enabled Mr. Stewart to carry out his work at this speed with British workmen, all of whom, including the foreman, were members of the Bricklayers' Union?

Mr. Taylor asked whether the chairman of the committee would be able to ascertain whether the work mentioned by Captain Swinton and Mr. Stewart was comparable to any work done by the County Council.

Lord Welby, in reply, said that Captain Swinton was putting his question to a moribund, if not a defunct body. The sub-committee of the finance committee on the works department was at the present moment expiring, and, if the sub-committee acted in the interval before the new works committee, it would be in the nature of a committee d'affaires. He therefore suggested that the question should be addressed to the incoming committee.

## THE BROTHERS CARSWELL OF GLASGOW.

A LETTER has appeared in the *Glasgow Herald* from Mr. J. F. S. Gordon, in which he says:—

Our several city museums and connoisseurs have preserved in paintings, water-colours and photographs houses and closes of historical and criminal interest which have been demolished. Albeit, a century's partial retrospect may be acceptable to your readers. Glasgow had then a population of about 60,000 when two brothers, William and James Carswell, born in the vicinity of Kilmarnock, commenced business as wrights and builders. They had to cut down the corn in that part of what is now George Street lying between High Street and Balmano Street. This clearing was done in order to erect their long well-known workshops. In 1790 the "fortalices" enumerated in the City Records, ably edited by Mr. R. Renwick, as existing at an early epoch in the Stockwell near the West Port, were estranged, and the field which now embraces George Street had a solitary footpath. The patricians of the city resided in their "splendid self-contained mansions" in Virginia Street, Miller Street, Charlotte Street and St Andrew's Square. Brilliant fortunes were made in the "Golden Acre" in dark and dingy booths, accessible by break-neck stairs, wherein a man of more than middle-sized altitude was in peril of bumping his head against the ceiling. The office-plenishing and office-bearers were correspondent. There were no steel pens; a considerable trade was done in swan and goose quills, still used in the Houses of Parliament. Dominion to a man were Protestant against the more universal adoption of a noble invention. Praiseworthy zeal is being exercised to improve human habitations in style and accommodation, but the twain Carswells are entitled to the credit of first uprooting dismal, confined hovels by the score. Not only so, but their attention was turned to dignify and elevate the abodes of the increasing industrious middle-class population. Marvellous advance has been made in the course of a century, and improvements, sanitary and otherwise, have gone far beyond the plans which the Carswells laid down, but they certainly carried out conveniences which were greatly appreciated. Almost the whole of the Candleriggs owes its existence to them, including Commercial Court, with its surrounding warehouses. Their model of architecture was that upon which so many courts have been built. For some of the ground in the neighbourhood of the Bazaar or Old Green Market they had the enterprise to pay 32l. per square yard. They were also the contractors of Albion Street, Albion Court and George Street on both sides from Montrose Street eastward. They purchased the old Merchants' Hall in the Briggate, and, removing it (with the exception of the fine steeple built in 1659) and the ruinous and wretched tenements adjacent, replaced them by Guildry Court, also recently improved. The Carswells built a portion of Cochran Street and a good part of Miller Street. They were so far-sighted and "Scotch canny" in their go-ahead operations in some localities as to plan, let and even sell the future buildings before the ground upon which they were to be erected was actually secured. They built the whole of Richmond Street, which was opined to be a unique model of "genteel snuggeries." The style of stairs was proverbial,

"because they will always have a peculiarly neat and compact aspect." Ingram Court, Queen Court and various buildings the north-east part of the city testify to their ingenious development in design. Besides their large building trade, the Carswells were in their day the most extensive contractors wrights in Glasgow. Many erections in the neighbourhood of the Royal Exchange, in London Street, High Street, &c., exemplify the substantial character of the work turned out by their hands. They were the first to introduce iron pillars in buildings, and also the first movers to get water from the City inside dwelling-houses. So much was this valued that the water company of an early day remitted to them the rate for their own individual dwelling-houses and warehouses. Sauchiehall Street and the West End then were not. Harlebyes then occupied the east of Sauchiehall Road, and the baths, named Bath Street. Within the last three years, wide changes have taken place from Bell o' the Brae downward through High Street and Saltmarket. Bailie Nicol Jarvie would indeed exclaim "my conscience" were he to take a stroll on the Green through the "Nether Barras" yet Glasgow has been bereaved of its ports, and has not even a market or city cross. "Rookeries" (your readers know who originated the appellation) immortalised in our picture galleries, but with the risk of fire, have timeously been eradicated, while the Glasgow and South-Western Railway is present covering former wynds and closes by the extension to St. Enoch Station. The Bridgegate Free Church, with its interdicted outside pristine stone pulpit and striking saddle-back towers, holds fast firmly as a "Protestant" landmark.

## MOGHUL ARCHITECTURE.

ANOTHER of the remarkable reports with which his name is associated has appeared from Mr. Edmund W. Smith, Government archaeological surveyor in the North-West Provinces and Oudh. After he had completed the survey of the Akbar's city at Fatehpur Sikri, the Indian Government instructed him to visit the Chini-ka-rouza, a tomb ascribed to Afzal Khan, a poet who died in Lahore over two and a half centuries ago. Mr. Smith describes it as one of the most interesting buildings in Agra, though it is little known. It is hardly to be wondered at, for the Taj eclipses all other buildings in that city, and the Chini-ka-rouza is lost by consequence of its proximity. But of its kind it is claimed that the mausoleum is unique, being about the only building in Northern India entirely ornamented exteriorly with enamelled tiles. For many years, it seems, the building was neglected and the zamindar cultivating the adjacent fields lived in it, and irreparably spoilt most of the painted decorations on the walls and ceilings by lighting fires in the rooms for cooking purposes. He has been evicted, and the local government has now taken charge of the tomb and repaired it sufficiently to prevent it falling into further decay. Mr. Smith's purpose was to point out the beauties of Moghul architecture and the color decoration employed in connection with it. To do this takes us also to the Kanch Mahal and Akbar's tomb. For hundreds of years of Moghul architecture produced two schools, so, but under Shah Jehan the Hindu element becomes less and less prominent till it gradually fades away. The Hindu bracket and flat architrave used over the apertures of doorways and windows makes way for the Mohammedan arch and the beautiful carved geometrical decoration in red sandstone found at Fatehpur Sikri, and the Jehangir Mahal in the fort. Agra gives place to mosaic.

Akbar's buildings are known to be not entirely devoid of colour ornamentation, and some of the Fatehpur Sikri buildings, towards the end of Akbar's rule, were richly decorated with frescoes. Marble mosaic was used in the Jumna Masjid. The Pathans used marble to enliven the severeness of the façades. But it was not until the reign of Shah Jehan that coloured inlaid ornamentation became a leading characteristic of the style. Besides marble mosaic and inlaying, the Moghuls are shown to have relied to some extent on enamelled tiles. Akbar used encaustic tiling. Fresco-painting was also extensively employed by the Moghuls for decorative purposes, and in many of their buildings, commencing with Akbar's time,



escos were used frequently upon the interior walls of their palaces and tombs. Few Moghul buildings were entirely covered with enamelled tiling, and about the only one in northern India is the Chini-ka-rouza. But its glory had almost departed when Mr. Smith went to see it. It once stood in a garden which is now a field. From top to bottom it is covered with mosaic tiling in a variety of colours, worked up into numerous patterns so as to form one unbroken flat surface. The interior is floated with stucco painted with rich and bright floral designs. The crypt of the building for years was used as a little shed, and the result is that very little is left of the dados which were of coloured tiling. The patterns were made up of thousands of small tiles. The decoration is found, contrary to the opinion of many, not to be all in one piece. It has been proved that the various patterns the tiles were to assume were first traced upon the plaster, when in a plastic state, after which the tiles were laid according to it. Mr. Smith will not definitely commit himself as to what substance the tiles are composed of, though it is evident that they are encaustic. The glazed surface is only the thickness of the blade of a knife, and the thing is sure, that they have certainly been subjected to heat and are not merely made of mortar or cement enamelled over, as has been asserted. The present beauty of the building is due to a great extent by the absence of tiling round the top and bottom of the façades, partly owing to natural causes, and partly to the fact that visitors have knocked out pieces and carried them away as relics.

Sir George Birdwood, in his "Industrial Arts of India," thinks that the enamelled pottery of Sindh and the Punjab is probably not older than the time of Genghiz Khan and in all the Imperial Moghul cities of India where it is practised, especially in Lahore and Delhi, the tradition is that it was introduced from China, through Persia, by the Afghan Mongols, through the influence of Tamerlane's Chinese wife. But in Persia, the ancient art of glazing earthenware came down in an almost unbroken line from the period of the greatness of Chaldaea and Assyria. However that may be, it is probable that the Chini-ka-rouza was decorated by artists of no mean order, and though most of it may have been done by the Indian workers, Mr. Smith thinks it is not impossible that Chinese decorators assisted in the work. Imad-ud-Dowla's tomb is decorated in a manner so similar to the Chini-ka-rouza that it may have been worked by the same artists. It is believed to have been begun by Akbar and finished by Jehangir. Imad was the father of Jehangir's wife, Nurjahan, and his tomb is so beautifully decorated that the Survey Department proposes to devote a separate volume to its treatment. The style of the architecture of the Kanch Mahal is supposed to belong to the early part of the seventeenth century, when the floridness which marks and is so characteristic of the later Moghul style commenced to be fashionable. It is believed that the place was erected by Jehangir as a country seat, where the emperor and his wife, Mumtaz Mahal, could retire from the court at Agra to enjoy the solitude of the country, and within view of the beautiful grounds surrounding the mausoleum he had erected to the memory of Akbar. Suraj Bhan-ka-bagh is a sister house to the Kanch Mahal, most elaborately ornamented, and Mr. Smith urges the preservation of the two as typical specimens of seventeenth-century Mohammedan architecture. In careful colouring he has reproduced the designs employed in the decoration of these buildings, enabling the reader to form, at least, an approximate idea of bygone days, and, we fear, bygone art, for the style of decoration to be found here was but transitory favour. Yet it is remarkable that in modern times the practice has not been perpetuated, for, as Sir George Birdwood says, the sight of wonder is when travelling over the ruins of Persia or India suddenly to come upon an encaustic tiled mosque. It is coloured all over in yellow, green, blue and other hues; and as a distant view of it is caught at sunrise its stately domes and glittering minarets seem made of the purest gold, like glass enamelled in azure and green, a fairy-like apparition of inexpressible grace and the most enchanting splendour.

#### SUSSEX ARCHÆOLOGICAL SOCIETY.

THE annual report of the Sussex Archaeological Society has been issued. The most important work carried on by the Society during the past year has been the excavations of the site of the great infirmary at Lewes Priory, which are now practically completed. In addition to the remains of the chapel which were uncovered in 1900 the great hall has been found. This building was 113 feet in length and 63 feet in breadth, and stood on the level platform south of the chapel and east of the great dormitory of the priory. It was divided into a central portion with two aisles, from which the former was separated by two rows of four arches, each springing from massive piers. To the east of the great hall the foundations of the kitchen and other domestic buildings attached to the hall

have also been uncovered. The result of these excavations has been the discovery of a perfect plan of a large Cluniac "farmery," and the Society is indebted to the owner, Mr. E. B. Blaker, and the lessee, Mr. F. G. Courthope, for the ready way in which they met the views of the Society. The Society has also derived most valuable assistance from Mr. St. John Hope, who spent a week at Lewes in December, and personally superintended the excavations during that period with Mr. Harold Brakspear, F.S.A., and the hon. secretary. With regard to our other abbeys and priories, it is noteworthy that, with the exception of the plan of Lewes Priory by Mr. St. John Hope, which appeared in Vol. XXXIV., there are no perfect plans in the "Collections" of any of the monastic remains in Sussex, and the Council hope in the future to remedy this deficiency by arranging for their measuring and planning. At the same time it is hoped that funds will allow of what excavations may be necessary to clear up doubtful points in the arrangements being undertaken.

The recent exhibition of Sussex ironwork is referred to, satisfaction recorded that representatives of the Barons of the Cinque Ports will attend the Coronation, and regret expressed at the death of Mr. J. L. André and other members of the Society. The number of visitors to the castle during the year was 5,854, against 5,744 in the previous year. Forty-eight new members were elected during the year, and the total number on December 31, 1901, was 648, compared with 631 in the previous year. The receipts during the year were 569*l.* 16*s.* 4*d.*, including 93*l.* 16*s.* 2*d.* balance in hand at the start, 296*l.* 17*s.* 6*d.* from subscriptions, and 146*l.* 7*s.* for admissions to the castle. The expenditure exceeded the income by 18*l.* 5*s.* 3*d.*, the balance in hand at the end of the year being 75*l.* 10*s.* 11*d.* The general expenses amounted to 100*l.* 8*s.* 4*d.*, and printing to 225*l.* 7*s.* 1*d.*, while the loss on the annual excursion was 9*l.* 10*s.*

#### TESSERÆ.

##### The Dome of the Paris Panthéon.

THE dome of the Panthéon at Paris, beneath which the centenary of Victor Hugo was celebrated, is constructed entirely of stone, and is placed in the centre of a Greek cross. It is supported by four triangular piers strengthened by engaged columns of the Corinthian order. The four piers with the lines of the intermediate arches form externally a large square, each side of which is 74 feet 9 inches. These four piers are pierced above with arched openings, and between the piers with the openings are large arches, the diameter of which is 44 feet 11½ inches, and the height 85 feet 5 inches. Between these arches rise the corbellings, which are gathered in to form the circular plan of the drum. The arches and the corbellings are crowned with a large entablature 13 feet 4 inches high. The upper part of the cornice of the entablature is raised 101 feet above the pavement of the nave. The diameter taken at the frieze is 66 feet. The internal drum which is constructed on this entablature is 55 feet 7½ inches in height to the springing of the internal dome. The interior of this drum is decorated with a continuous stylobate, which is the basement of a colonnade of sixteen Corinthian columns almost isolated from the wall. These columns are 35 feet 2½ inches in height. Between the columns are sixteen windows; four of which are false, and placed above the four piers of the dome. The colonnade is crowned with an entablature, above which is a large plinth which rises to the springing of the internal dome. The internal dome is 66 feet 8½ inches in diameter at the springing, and is decorated with octagonal caissons or sinkings with a rose in the centre of each. The eye at the top of the dome is 31 feet 3½ inches in diameter. Through this eye is seen the upper part of another or intermediate dome. The external dome is placed on a circular base 108 feet 7½ inches in diameter and square at the bottom. The angles are strengthened by flying buttresses. Above the corbellings a circular wall is constructed, forming an external continuous stylobate which supports an external colonnade. The external colonnade constructed on the stylobate forms a peristyle round the dome, and is composed of thirty-two isolated columns of the Corinthian order 36 feet 5½ inches high. This colonnade is divided into four parts by the solid constructions in masonry raised over the four piers. The external colonnade is surmounted with an entablature and balustrade above it. There is an attic constructed above the circular wall of the drum, set back 13 feet 10 inches, and pierced with sixteen windows, twelve of which light the space between the internal dome and the intermediate dome which bears the lantern. This attic is terminated with a cornice with a step or plinth above. The external dome, 77 feet 8½ inches in diameter, measured on the outside, is constructed with masonry; the height is 45 feet 9½ inches from the top of the attic to the underside of the finishing against which the curve terminates. The outside of the dome is covered with lead, and is equally divided vertically by sixteen projecting ribs. The intermediate dome, built for the purpose



of carrying the lantern, was intended to be decorated with subjects by the painter. The form of this dome resembles the small end of an egg; its springing commences at the base of the attic at the point where the internal dome begins to disengage itself. This dome is 50 feet  $\frac{3}{4}$  inch high, feet  $3\frac{1}{2}$  and 70 inches in diameter, and is pierced with four great openings at the lower part 37 feet 3 inches high and 30 feet  $10\frac{1}{2}$  inches wide at the base. On a circular platform above the summit of the dome are eight piers with arches, which support the finishing against which the external dome terminates. Above this is the lantern of the dome.

#### The Reform Club, Pall Mall.

The Reform Club-house, although far from perfect, is a very great advance upon previous essays in the Italian style, as illustrated by the painted compo-works of Nash in some structures for similar purposes erected in and about Waterloo Place; but yet if Barry had to design another from the same materials as that of the Reform he would make very considerable improvement upon it. It is generally admitted that one of the great secrets of architectural designing consists in the judicious distribution of plain and enriched surfaces, so that there may be no undue baldness in one portion nor an excess of enrichment or moulded work in another. In this peculiar quality Barry sometimes failed; he has done so in the present instance, for no one we think will doubt that there is too much plain wall-surface between the top of the first-floor windows and the string-course above, which serves as a continuous ornamented sill for the upper windows. Looked at, however, as a whole, this club-house is a truly noble pile, and it is a pleasant task to advert to some of its undoubted beauties. The range of windows at the first-floor level are most successfully treated, having Ionic columns projected from their jambs, with the usual entablature, and pediments above, underneath the corona of which are plain modillions, simple and highly effective. These windows have open balustrading at their sills with pedestals at either side, and continued panelled work between each. Underneath is an enriched string-course, with mouldings broken round the sills supported by moulded trusses. The entrance doorway is in the exact centre of the façade, and is admirably proportioned, with a highly judicious distribution of enrichment in its details; it is Ionic, with modillions in its cornice, which is supported at each end by elegant moulded trusses, across the faces of which are suspended swags of flowers from the pateræ on the centre of the volutes. The principal cornice at the eaves is very elaborate in its enrichments, but is somewhat too large in its proportions. The surfaces of the walls between the windows throughout the whole building are perfectly plain, no channellings or rustic-work being employed, except at the quoins, which are chamfered. The boundary wall next the foot pavement is very elegant in its composition, being composed of pillars with well-designed candelabra upon them. Between the pillars are square balusters and the usual coping.

#### GENERAL.

**The King** has been pleased to command Mr. W. H. St. John Hope, assistant secretary of the Society of Antiquaries, to undertake and complete the architectural history of Windsor Castle.

**Mr. W. G. Doolin, M.A.**, who was long known in Dublin as an architect, has died in that city, after two days' illness.

**A General Meeting** of the Royal Society of British Artists was held on Monday, when Miss Lucy Kemp-Welch and Mrs. Jopling were elected members, these being the first lady members admitted to the Society.

**A Service** to commemorate the complete restoration of Peterborough Cathedral is to be held in July. The works have been in progress eighteen years, and have cost over 80,000*l*.

**Mr Percy Fitzgerald, M.A.**, on Wednesday delivered a lecture in Leighton House, Kensington, on Robert Adam, the architect.

**The Bavarian Parliament** have made a grant of 6,000*l*. for carrying out the restoration of the tombs of the old German emperors in the cathedral at Speyer.

**The Brighton Town Council** have agreed to petition the House of Lords in order that the Bill for the Electric Railway may be considered regardless of the defects found in the plans.

**Blackpool Promenade** is to be widened with basaltic stone from German quarries, although suitable stone is to be found in Great Britain.

**The Late Mr. Bentley** has left drawings and designs and colour schemes for the decoration of the Westminster Cathedral in a very forward state of preparation. It is anticipated that no difficulties will be experienced on the part of those who were accustomed to work with him in giving complete expression to his ideas.

**Relics of a Roman Villa** have been discovered in a field near Winchester on the east side of main road to Southampton. Some gardeners in working the ground for gardening have disturbed the upper foundation-walls of big flints, fragmentary flanged tiles of the hypocaust, drain and roof tiles, pieces of stone, pottery and large tiles.

**The Engineering Students** at the Polytechnic Night School, Vienna, have decided not to attend any more lectures until the Government enlarges the classroom accommodation which is alleged to be altogether insufficient for present requirements.

**The London County Council** have decided:—“(a) That, in the absence of any undertaking from H.M. Commissioners of Woods and Forests to co-operate with the Council for securing, upon the expiration of the leases and at reasonable cost, the setting back of the buildings on the north side of Piccadilly, the widening of that thoroughfare to 80 feet between the Circus and Sackville Street be not undertaken by the Council; (b) that the foregoing decision be communicated to H.M. Commissioners of Woods and Forests and to the Council of the City of Westminster.”

**M. Emile Molinier** has resigned his appointment as conservator of the Objets d'Art Department at the Louvre and as member of the Commission on Historical Monuments. He has held the former post for the last nine years, having been attached to the Louvre for twenty-two years. He has published several valuable monographs and catalogues which are prized by experts.

**The Portsmouth Council** are about to make application to the Local Government Board for sanction to borrow 35,000*l*. for the erection of a new technical institute.

**The Town Council, Conway**, have decided to repair the Queen's Tower at Conway Castle as a memorial of the late Queen Victoria. The tower contains an “oriel” supposed to have been the private apartment of Queen Eleanor.

**Two Portraits** by David, which were painted in 1795, have been added to the collection of the Louvre. The subjects are his sister, Mme. Serizeat, and her husband. Although known as a painter of Greek and Roman scenes, David's best work is in portraiture.

**Mr. C. Y. O'Connor**, engineer-in-chief of Western Australia, has been found dead on the beach at Robb's Jetty, Fremantle. The harbour works at Fremantle were carried out by him. After filling many engineering posts in New Zealand, where he was Under-Secretary for Public Works from 1883 to 1890, he received the appointment of Engineer-in-Chief of Western Australia in 1891.

**Messrs. Farmer & Brindley** have executed twelve figures in alabaster, which have been placed in a large open arcade on either side of the reredos of Lichfield Cathedral.

**The Mikado's** presents to King Edward on the occasion of the Coronation include embroideries, lacquers, and notably a pair of silver vases 15 inches high and inlaid with gold representing seven years' work of thirty of the best Japanese artists.

**Mr. W. Dewey**, town clerk of Islington, has been elected president of the London Borough Officers' Association (an association consisting of the chief officers engaged in the metropolitan boroughs), in the place of Sir J. B. Monckton F.S.A., deceased.

**The Salon Exhibition** will be opened on May 1. The Ministers of Fine Arts and Finance have agreed to the proposals of the committee of the Society of French Artists relative to the refreshment rooms and other supplementary sources of income.

**A Committee** of the House of Lords have passed a Bill authorising the construction of a way across the Medway at Chatham to the Thames opposite East Tilbury for sailing barges. Ships in the canal would be propelled by electricity of the overhead trolley system.

**Eugène Alzein**, the French sculptor, died in Paris on the 5th inst. in his eighty-first year. The artist was a pupil of Ramey and of Daumont. His *Psyche* is in the Luxembourg Museum.

**The Housing Committee** of the London County Council ask the Council to approve the expenditure of 30,000*l*. on the purchase of a site about 50 acres in extent near Wormwood Scrubs prison, to be used for workmen's dwellings. The site is the property of the Ecclesiastical Commissioners. Under the prepared scheme of development accommodation would be provided for about 9,200 persons in 1,250 cottages of four different classes. According to the estimates of the cost of such a scheme it would appear that the cottages could be let at reasonable rents, and that with the outgoings at an average of 39*3*/<sub>8</sub> per cent, the net income would be sufficient to enable the Council to pay the price asked for the land and to comply with all financial requirements.



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THE NEW PATENT OFFICE, SOUTHAMPTON BUILDINGS, W.C.

SIR JOHN TAYLOR, K.C.B., F.R.I.B.A., Architect.



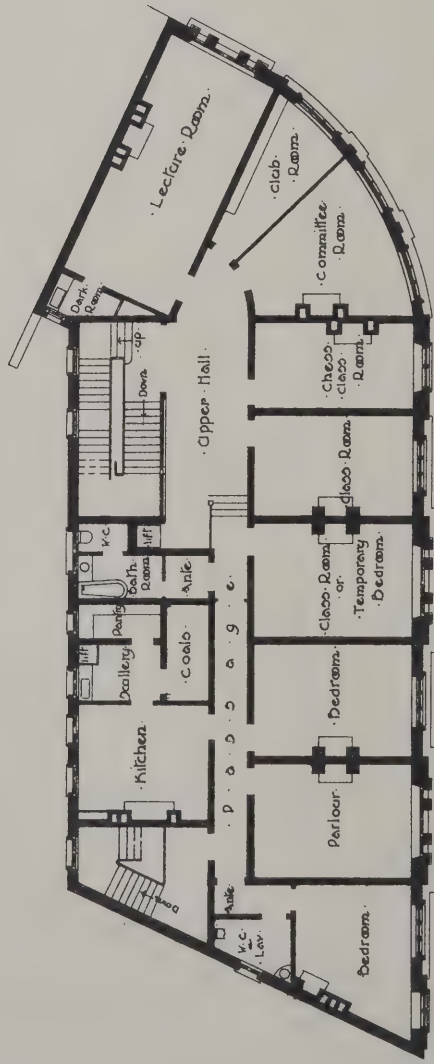
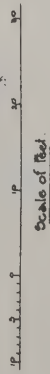
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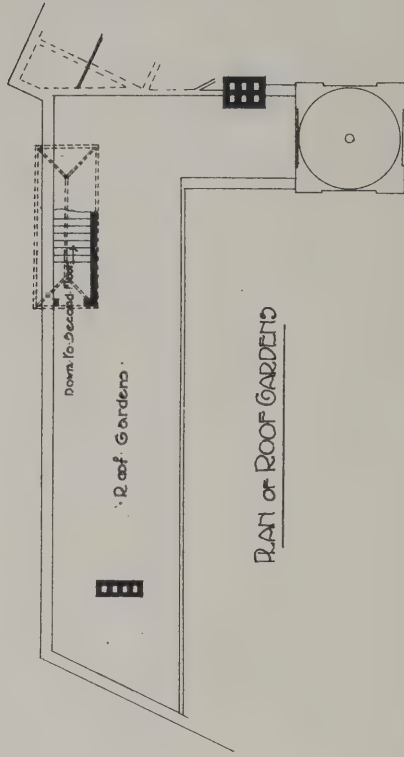
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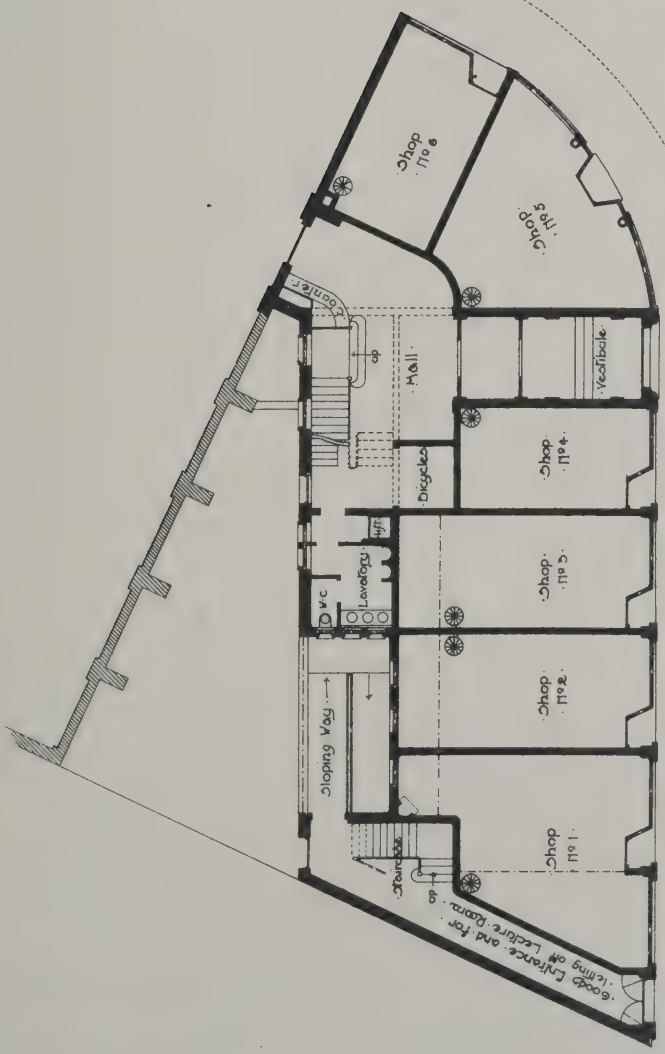


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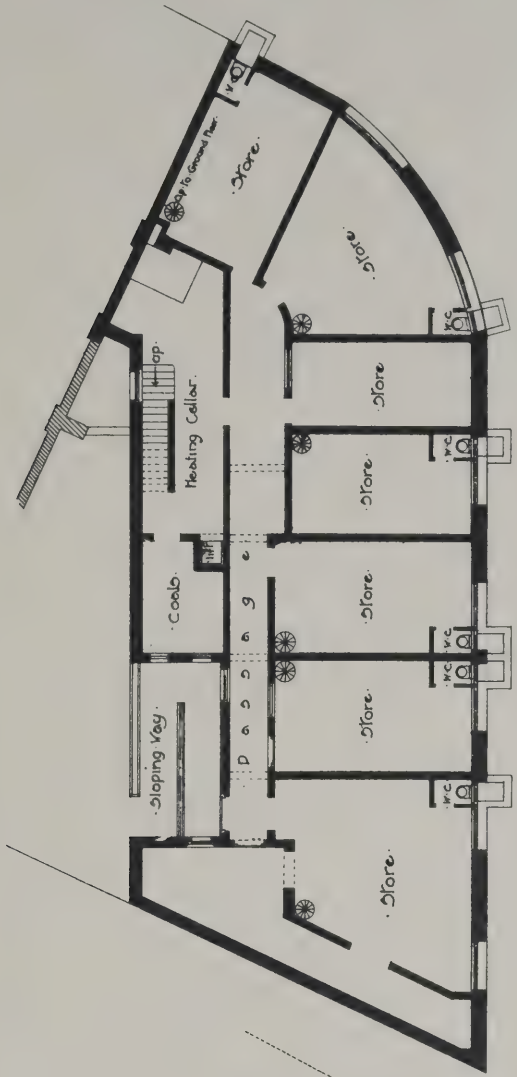


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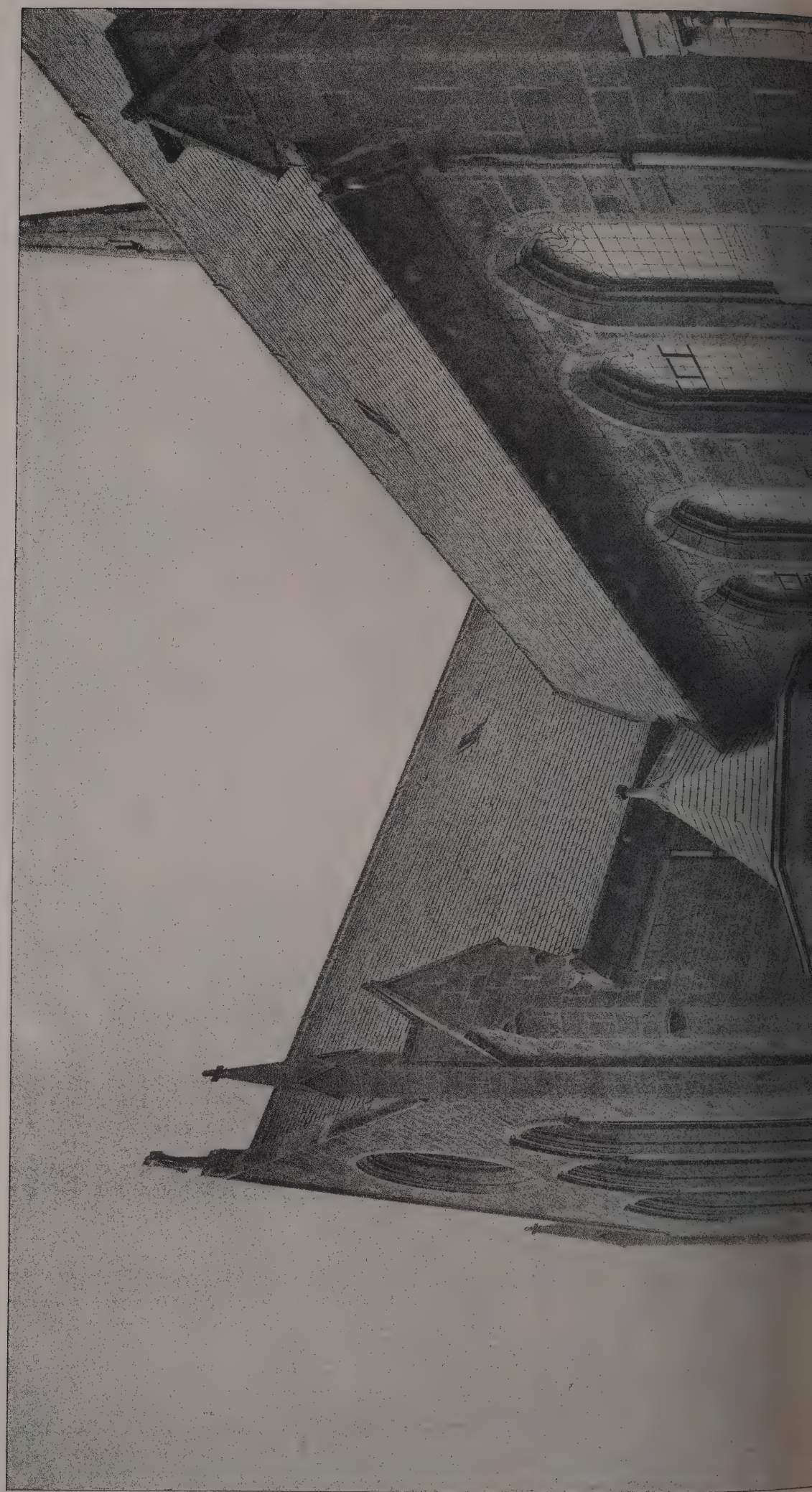
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The Architect, Mar 14<sup>th</sup> 1902.







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# THE Architect and Contract Reporter.

## EDITORIAL NOTICES.

of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our list of A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer the columns of this paper any questions relating to the complicated matters arising from the provisions of this Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

## TENDERS, ETC.

A great disappointment is frequently expressed at the non-observance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

ALDERSHOT.—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the town. Premiums of £100, £75 and £50 will be awarded for the first, second and third best plans. Mr. Nelson F. Dennis, Surveyor, Aldershot.

TRIALIA.—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West.

DUNSTABLE.—A premium of 5*l.* 5*s.* is offered for the most design for a six-bed infectious diseases hospital. Mr. Benning, town clerk, Dunstable.

LANCASHIRE.—April 21.—Prizes of 20*l.* and 10*l.* respectively awarded for the first and second schemes in order of merit for utilising to the best advantage a plot of ground offered by the Council for the erection of about twenty-five new houses in Coleraine. Mr. William Henry, clerk, Coleraine.

LANCASHIRE.—April 4.—Competitive drawings are invited for a school to be erected at Langho, near Blackburn, for the education of the epileptics, imbeciles and idiots at present

in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

MANCHESTER.—The Chorlton and Manchester Joint Asylums Board invite designs for the proposed colony for epileptics and imbeciles. Premiums of 200*l.*, 150*l.* and 100*l.* respectively are offered. Mr. H. Woodhouse, clerk to the Board.

MEXBOROUGH.—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25*l.* and 10*l.* are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

NEW SOUTH WALES.—March 31.—Designs are invited for a bridge across Sydney Harbour. Mr. H. Copeland, 9 Victoria Street, S.W.

OLDHAM.—April 8.—Competitive drawings are invited for erection of new market hall and shops in Albion Street and Henshaw Street. Premiums will be awarded to the authors of the three selected designs, viz. 50*l.* for the design placed first, 30*l.* for the design placed second, and 20*l.* for the design placed third. Mr. S. A. Pickering, borough surveyor, Oldham.

## CONTRACTS OPEN.

ALDERSHOT.—March 18.—For supply and erection of a pair of large gates, with wicket gate, at the isolation hospital, Cemetery Road. Mr. Nelson F. Denis, surveyor, 126 Victoria Road, Aldershot.

ALDERSHOT.—March 19.—For erection of the brickwork, &c., connected with two sewage filters to be constructed at the sewage works. Mr. Nelson F. Denis, surveyor, 126 Victoria Road, Aldershot.

ALNWICK.—March 20.—For erection of a coach-house and stable at Alnwick Castle. Mr. T. Pickard, Estates Office, Alnwick Castle.

AYLESBURY.—March 17.—For repairing the old upper school at Quainton. Mr. Fred. Taylor, architect, 26 Temple Street, Aylesbury.

AYLESBURY.—March 17.—For repairing the almshouses, cottages and farm buildings, and construction of a soft-water tank at the lower almshouses, with pump and penthouse over it, new privies and other sanitary work, and a new road to Gardeners' Leys allotments, with new gates and fences, &c. Mr. Fred Taylor, 26 Temple Street, Aylesbury.

BARNLEY.—March 19.—For erection of a villa residence, Sheffield Road, and two houses and outbuildings, Beech Street, Barnley. Messrs. Crawshaw & Willinson, architects, 13 Regent Street, Barnley.

BARROW-IN-FURNESS.—March 24.—For construction of lavatories, &c., at the old town hall. The Town Clerk, Town Hall, Barrow.

BATLEY.—March 20.—For erection of workrooms and other extensions to the tailoring department of the Batley Co-operative Society, Ltd., Commercial Street, Batley. Mr. Harry F. Buckley, architect, Batley.

BLACKPOOL.—March 17.—For alterations to four houses, Waterloo Road. Mr. John S. Brodie, borough engineer, Town Hall, Blackpool.

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**BLEWBURY.**—March 17.—For alteration and addition to the village schools, Blewbury, Berks. Mr. Saml. Johns, architect, Wallingford.

**BRADFORD.**—March 17.—For erection of a Board school at Wyke, Bradford. Messrs. Adkin & Hill, architects, Prudential Buildings, Bradford.

**BRADFORD.**—March 17.—For erection of a caretaker's house at Carlton Street school. Mr. Hargreaves, architect, Exchange Buildings, Bradford.

**BRADFORD.**—March 17.—For pulling-down and re-erection of the Dudley Hill Board school. Mr. Wilson Bailey, architect, Market Street, Bradford.

**BRADFORD.**—March 19.—For additions to store at Brownroyd. Messrs. Rycroft & Firth, architects, Bank Buildings, Manchester Road, Bradford.

**BRADFORD.**—March 20.—For erection of a terrace of eight houses in Killinghall Road, Undercliffe. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

**BRADFORD.**—March 20.—For additions to Rooks' Mount, Wyke. Messrs. Fairbank & Wall, architects, Craven Bank Chambers, Bradford.

**BRADFORD.**—March 24.—For erection of fifteen w.c.'s on property adjoining Wild Boar Street, Bolton Road, Bradford. Messrs. Barber, Hopkinson & Co., architects, Craven Bank Chambers, Keighley.

**BRIDGWATER.**—March 26.—For erection of chapel and school premises in Church Street, Bridgwater. Mr. R. M. Challice, architect, 14 Bedford Circus, Exeter.

**BROUGHTON MOOR.**—March 20.—For erection of three cottage houses at Standingstone, Broughton Moor, Cumberland. Mr. Bowman Eilbeck, Sunning Side, Craika Road, Dearham, Maryport.

**BURY.**—March 17.—For alterations and additions to laboratory and locomotive shed. Mr. John Haslam, town clerk, Corporation Offices, Bank Street, Bury, Lancs.

**CAMBORNE.**—March 22.—For reseating and renovating the Bible Christian chapel, Brea, near Camborne, Cornwall. Mr. Josiah Jewel, Brea.

**CANTERRURY.**—March 26.—For erection of eighteen cottages, &c., at the Kent County Lunatic Asylum, Chartham Downs. Mr. Francis R. Howlett, clerk to the Kent County Asylums committee, 9 King Street, Maidstone.

**CHELMSFORD.**—March 21.—For extension of building Moulsham Street. Messrs. C. & W. H. Pertwee, architects, Bank Chambers, Chelmsford.

**CHICHESTER.**—March 20.—For erection of business premises, South Street. Messrs. Shippam, architects, South Street.

**DARTFORD.**—March 24.—For erection of a pair of detached cottages at the sewage pumping station at Sla Green, near Erith. Messrs. Tait & Hobbs, architects, Lower Street, Dartford.

**DEVIZES.**—March 17.—For erection of a shed for a house at the Wilts County Pauper Lunatic Asylum, Devizes. Mr. C. S. Adye, county surveyor, County Offices, Trowbridge.

**DURHAM.**—March 17.—For erection of a cottage, outbuildings and storehouse, at Meadowfield, near Durham. Mr. W. Harding, secretary, District Waterworks Committee, Crown Street Chambers, Darlington.

**DURHAM.**—March 22.—For erection of a clergy house at Langley Park. Mr. Wm. Logan, Langley Park, Durham.

**EPSOM.**—March 24.—For additions, alterations and extensions at the isolation hospital at Hook Road, Epsom. Edward R. Capon, surveyor, Bromley Hurst, Church Street, Epsom.

**GLASTONBURY.**—March 17.—For construction of a site and by-pass to the main sewer near the railway station. Stanley Austin, town clerk, Glastonbury.

**GREAT HARWOOD.**—March 29.—For erection of pig slaughter-houses in Wood and Balfour Streets, Great Harwood. Mr. Alfred H. Dunkin, surveyor, Town Hall, Great Harwood.

**HALIFAX.**—For erection of the Macnaghten Vaudeville Circuit Palace Theatre, Halifax. Messrs. Richard Horsfall & Son, architects, Halifax.

**HALIFAX.**—March 17.—For erection of model bakery, shops and offices, and stabling in Horton Street. Messrs. Walsh & Nicholas, architects, Museum Chambers, Halifax.

**HALIFAX.**—March 27.—For erection of a bakery, stable, coach-house, &c. Messrs. Geo. Buckley & Son, architects, Tower Chambers, Halifax.

**HINDLEY.**—March 24.—For alterations and additions to the central premises of the Hindley Industrial Co-operative Society. Quantities, &c., may be obtained at the Society's office, 50 Market Street, Hindley.

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ADDRESSES: DARLINGTON, NEWCASTLE-ON-TYNE, SUNDERLAND, MIDDLESBRO' and NORTHAMPTON.



**HODDESDON.**—March 18.—For repairs to the superintendent's lodge at the burial-ground, Hoddesdon, Herts. Mr. R. Longmore, clerk to the burial committee, High Street, Hoddesdon.

**HULL.**—For erection of Baptist church in the Boulevard, Hull. Mr. T. Brownlow Thompson, architect, 15 Parliament Street, Hull.

**HULL.**—March 18.—For erection of a junior department at Stoneferry Road Board school, Kingston-upon-Hull. Messrs. Botterill, Son & Bilson, architects, 23 Parliament Street, Hull.

**KINGSTON-UPON-THAMES.**—March 27.—For construction of a concrete reservoir, of a capacity of 1,402,000 gallons, at Twickenham (about 1½ mile from Whatstandwell station). Mr. Wright Lissett, clerk to Water Board.

**RELAND.**—March 17.—For erection of a building for a dairy and sinking a well at Tulnaree, Carndonagh. Mr. Moore, jun., Workhouse, Carndonagh.

**RELAND.**—March 18.—For erection of a central creamery on at Bailieborough, co. Cavan. Mr. T. M. Farrelly, hon. secretary, Creamery, Cavan.

**RELAND.**—March 18.—For providing a gravitation water supply at the County Asylum, Antrim. Mr. J. Walker, clerk, County Asylum, Antrim.

**RELAND.**—March 24.—For renovation of the Mount Pleasant Presbyterian church, Belfast. Messrs. Graeme-Watt & Co., architects, 77A Victoria Street, Belfast.

**RELAND.**—March 24.—For erection of a villa at Hyde Park, Antrim. Mr. Thomas Houston, architect, Kingscourt, Antrim Place, Belfast.

**RELAND.**—March 28.—For erection of a residence at Antrim, co. Tyrone. Mr. John M. Robinson, architect, 7 East Street, Londonderry.

**SLEWORTH.**—April 1.—For additions to the Percy House, Isleworth. Mr. W. H. Ward, architect, Paradise Road, Birmingham.

**KEIGHLEY.**—March 18.—For erection of a residence, Thistle Road, Keighley. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

**KEIGHLEY.**—March 29.—For erection of a beer-bottling establishment and a residence, Lawkholme Lane. Messrs. R. Hopkinson & Co., architects, Craven Bank Chambers, Keighley.

**KINGSTON-UPON-THAMES.**—April 3.—For erection of the additional buildings for the technical schools, St. James's Road. Mr. Harold A. Winsor, town clerk, Kingston-upon-Thames.

**LAMBETH.**—March 20.—For erection of a disinfecting chamber, stabling, &c., at the Council premises, Wanless Road, Loughborough Junction. Mr. Henry Edwards, C.E., borough engineer, Lambeth Town Hall, Kennington Green, S.E.

**LEEDS.**—March 18.—For erection of entrance-gate pillars and boundary wall and alterations to lodge, building of new retaining wall to stable-yard, new closets, &c., at Bardon Hill, Westwood, near Leeds. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

**LIVERPOOL.**—March 17.—For erection at Highfield, Knotty Ash, near Liverpool, of a group of buildings intended to be an infirmary for the aged bedridden poor of the parish. Mr. Kirby and Mr. Willink, architects, 5 Cook Street, Liverpool.

**LIVERPOOL.**—March 17.—For repairs at the workhouse, Brownlow Hill, the industrial schools and other parochial buildings, from March 30, 1902, to March 28, 1903. Mr. H. J. Hagger, vestry clerk, Parish Offices, Brownlow Hill.

**LONDON.**—March 20.—For erection of a disinfecting chamber, stabling, &c., at the Lambeth Borough Council premises, Wanless Road, Loughborough Junction. Mr. Henry Edwards, engineer, Lambeth Town Hall, Kennington Green, S.E.

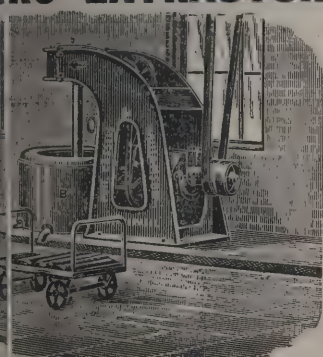
**LONDON.**—March 25.—For erection of Ottawa and Baffin Buildings, Preston's Road site, Poplar. Particulars at the Architect's Department, Housing Branch, 18 Pall Mall East, S.W.

**LONG EATON.**—March 25.—For erection of the following works in connection with the generating station, Long Eaton, i.e. Contract E, engine-room, boiler-house, offices, outbuildings and other works; Contract F, chimney-shaft, 120 feet in height, and foundations. Mr. Frank Worrall, district engineer, Council Offices, Long Eaton.

**MACCLESFIELD.**—March 22.—For preparation of the levelling of site and construction of foundations, and drainage of the new infirmary annexe at the Parkside Asylum. Mr. H. Beswick, county architect, Newgate Street, Chester.

**MAIDENHEAD.**—March 26.—For erection of an electric generating station near the Braywick Road, Maidenhead. Mr. Percy Johns, borough surveyor, Guildhall, Maidenhead.

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**NEW BARNET.**—For additions to Church of England schools, Potter's Road. Mr. F. Child, surveyor, 65-66 Chancery Lane, W.C.

**NEWMARKET.**—March 17.—For erection of a female infirmary, additions to male infirmary, nurses' home, maternity ward, administration buildings, laundry, porter's lodge, receiving wards, alterations to existing buildings, &c., at the workhouse. Messrs. Holland & Sons, architects, High Street, Newmarket.

**NORWICH.**—March 21.—For erection of the Silver Road school, Norwich. Mr. C. J. Brown, architect, Cathedral Offices, Norwich.

**PICKERING AND KIRBYMOORSIDE.**—March 31.—For laying six miles of 3½-inch and 3-inch cast-iron water-mains, the construction of impounding tanks and service reservoir and the supply of about 210 tons of cast-iron pipes and fittings for the joint water-supply of Spaunton, Lasingham and Appleton-le-Moors, Yorks. Mr. J. E. Parker, engineer, Post Office Chambers, Newcastle-on-Tyne.

**PONTEFRAC.**—March 17.—For ventilating, lighting, painting and decorating, and laying floors with cork carpet, at the Primitive Methodist chapel, Pontefract. Messrs. Tennant & Bagley, architects, Pontefract.

**PURSTON.**—For erection of a villa residence in Purston, Yorks. Mr. W. Hamilton Fearnley, architect, Station Lane, Featherstone.

**RAMSBOTTOM.**—March 18.—For erection of the Hazlehurst Board school, Ramsbottom. Mr. Thomas Bell, architect, 14 Grimshawe Street, Burnley.

**RAWDON.**—For erection of farm buildings at Billing farm, Rawdon, near Leeds. Messrs. Barber, Hopkinson & Co, architects, Craven Bank Chambers, Keighley.

**RIPON.**—For erection of a stable, barn, cartsheds, &c., at Grantley, near Ripon. Messrs. Bland & Bown, architects, North Park Road, Harrogate.

**ROMSEY.**—March 29.—For taking-down existing church at Sherfield English, near Romsey, Hants, and the erection of a new church on same site. Mr. Fred. Bath, architect, Crown Chambers, Salisbury.

**ROTHERSAY.**—For erection of power station buildings of corrugated iron on steel framing. Engineer, British Electric Traction Company, Ltd., 1 Adelphi Terrace, London, W.C.

**SANCREED.**—March 20.—For erection of a farm dwelling house at Rosevin Vean, near Newbridge, Sancreed, Cornwall. Mr. Henry Thomas, Botrea, Sancreed.

**SCOTLAND.**—March 17.—For introduction of a water supply to Prestonpans water district. Mr. J. D. Watson, county clerk, Haddington.

**SCOTLAND.**—March 19.—For erection of stables at Gord Arms hotel, Inverurie. Mr. George Gray, architect, Inverurie.

**SHEFFIELD.**—March 17.—For erection of a hospital at Aughton, near Sheffield. Mr. J. D. Webster, architect, Cathedral Chambers, 19 St. James Street, Sheffield.

**SHEFFIELD.**—March 21.—For erection of sale shops at premises at the corner of Castle Street and Haymarket. Messrs. Gibbs & Flockton, architects, 15 St. James's Road, Sheffield.

**SHIPLEY.**—March 20.—For alterations and repairs to old schoolroom and adjoining cottage at Shipley, Sussex. Trustees of Andrewes Charity, Shipley Vicarage, Horsham.

**SOUTH TOTTENHAM.**—March 26.—For erection of abutment 420 feet of fence wall at the North-Eastern Hospital, St. Ann's Road. Messrs. A. & C. Harston, architects, 15 Leadenhall Street, E.C.

**STOCKPORT.**—March 21.—For alterations and additions to the police offices in Warren Street. Mr. John Atkins, borough surveyor, St. Petersburg, Stockport.

**SUDBURY (SUFFOLK).**—For alterations and additions to Green Dragon hotel. Mr. A. Ainsworth Hunt, architect, Sudbury.

**SUTTON FORD.**—March 27.—For erection of a new brick at Sutton Ford, near Rochford. Mr. Percy J. Sheldon, surveyor, County Offices, Chelmsford.

**TONBRIDGE.**—March 20.—For erection on the workhouse grounds of a probation ward (eight beds). Mr. F. Willis Stone, clerk, 23 Church Street, Tunbridge Wells, Kent.

**TUTBURY.**—March 17.—For road material and carted broken granite, limestone and slag for the repair of the highway. Mr. C. F. Chamberlin, clerk to the Council, Council Offices, Union Offices, Burton-on-Trent.

**WALES.**—March 17.—For erection of twenty-six cottages, shop and a detached villa residence at Ebbw Vale. Mr. J. Jones, 28 Commercial Street, Ebbw Vale.

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VALES.—March 17.—For erection of a Congregational ch, Waunllwyd. Mr. J. Phillips, Cwm Road, Waunllwyd,

VALES.—March 17.—For erection of two houses at Cwm, Ebbw Vale. Mr. George Rosser, architect, 28 Risca, Newport.

VALES.—March 17.—For erection of business premises at Millery, Mon. Mr. Geo. C. Hillard, architect, Market bers, Abertillery.

VALES.—March 18.—For erection of a new farmhouse at onwen, near Talybont-on-Usk, Llanfeigan, Breconshire. ulars may be obtained from Mr. D. T. Isaac, Brecon.

VALES.—March 19.—For erection of a Forward Movement at Barry. Mr. George Thomas, architect, Queen's bers, Queen Street, Cardiff.

WESTCLIFF-ON-SEA.—For erection of residence and ng, &c., Westcliff-on-Sea, Essex. Messrs. Greenhalgh & ank, architects, Bank Chambers, Southend

EST HAM.—April 1.—For erection of a public library at way, Plaistow. Mr. S. B. Russell, architect, 11 Gray's square, W.C.

WILLINGTON.—March 17.—For additions to premises, for Willington (co. Durham) Co-operative and Industrial y, Ltd. Mr. Frank M. Collins, secretary.

ORK.—April 4.—For erection of the superstructure of the sed general offices at York for the North-Eastern Rail- company. Mr. William Bell, architect, York.

IE designs submitted by Messrs. G. & R. P. Baines, ment's Inn, Strand, W.C., for a Baptist church and s, Wellingborough, have been accepted. The accommo- in the church is 60r adults. The estimated cost of the ete scheme, including tower, is 4,923/.

IE Idler for March contains a brightly written and sting article on "Ventnor as a Health and Pleasure t," by John Eyre, a lively story of adventure called "The n in the Cañon," by Henry Wallace Phillips, a paper on "Ancestry of the Horse," by Frederic A. Lucas, and interesting contributions by Marion Hill, Jack Loudon, as Cameron, Harriet Osgood Clendenin, Aloysius Coll,

## TENDERS.

### BARNESLEY.

For construction of the masonry piers for the pipe bridges at and near Deepcar.

C. CHAMBERLAIN, Leicester (accepted) . . . £390 10 0

For supply and erection of a wrought-iron fence and gate to be built at St. Mary's disused burial ground and church field.

Mr. J. HENRY TAYLOR, borough surveyor.  
J. ELWELL, Birmingham (accepted) . . . £216 0 0

### BEDFORD.

For street works and extending the surface drain in Thornton Street. Mr. E. H. C. INSKIP, surveyor, Bedford Road, Kempston.

#### Contract No. 1.

G. A. Francis . . . . .	£293. 16 0
Ginn & Brace . . . . .	261 13 10
F. RAY, Bedford (accepted) . . . . .	259 18 8

#### Contract No. 2.

G. A. Francis . . . . .	19 12 4
Ginn & Brace . . . . .	19 5 10
F. RAY (accepted) . . . . .	19 19 6

### BISHOP AUCKLAND.

For laying about 127 yards of 12-inch and 852 yards of 9-inch sanitary pipe-sewers, with manholes, lampholes, &c., ventilators, and the construction of sewage-filters at Helmington Row. Mr. C. JOHNSTON, surveyor.

G. Hetherington . . . . .	£799 0 0
G. H. Bell . . . . .	710 15 6
P. Frater . . . . .	685 0 0
WALTON BROS., Crook (accepted) . . . . .	660 0 0

### BOGNOR.

For carrying-out the Bersted drainage scheme.

	Patent Jointed Pipes.	Ordinary Pipes.
E. H. King, Worthing . . . . .	£7,300	£6,000
Do. (alternative) . . . . .	6,460	6,180
J. Jackson, Plaistow . . . . .	6,648	6,295
G. Osenton, Westerham . . . . .	6,500	6,200
Tate Bros., Bognor . . . . .	5,869	5,244
GROUNDS & NEWTON, Bournemouth (ac- cepted) . . . . .	5,633	5,032

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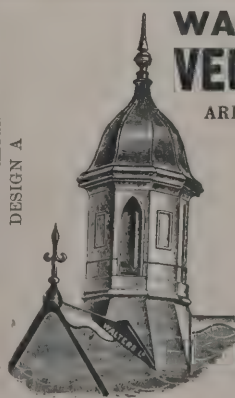
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Flat Roofs, Basement, and other Floors,  
&c.; or any other Asphalting Work.  
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**480 HARROW ROAD, PADDINGTON, W.**





**BRENTFORD.**

For road works in connection with the High Street improvements. Mr. NOWELL PARR, surveyor.  
G. WIMPEY & CO, The Grove, Hammersmith, W. (*accepted per schedule*).

**BRENTWOOD.**

For repairs to the Spread Eagle, Brentwood. Messrs. FOULSHAM & HERBERT RICHES, architects, 3 Crooked Lane, E.C., and Bromley-by-Bow, E.  
T. BRUTY (*accepted*) . . . . . £286 0 0

**CHARTHAM.**

For painting, repairs and other work to wards B and C of the Kent County Asylum. Mr. W. J. JENNINGS, architect, Canterbury.

A. H. INNS, 36 Camomile Street, London, E.C.  
(*accepted*) . . . . . £1,380 0 0

For drainage, filter tank and water mains at the Kent County Asylum. Mr. W. J. JENNINGS, architect, Canterbury.

A. H. INNS, 36 Camomile Street, London, E.C.  
(*accepted*) . . . . . £428 0 0

**CLEETHORPES.**

For street works in (Contract No. 23) Pelham Road, (24) Pelham Square, (25) road behind 19 to 51 Grimsby Road, (26) road behind 97 to 105 Grimsby Road, (27) Chapel Yard. Mr. EGBERT RUSHTON, surveyor.

*Accepted tenders.*

H. Holmes (Contract No. 23), Thrunscoe Road, Cleethorpes . . . . . £1,036 14 4  
G. W. Brown (24), Spring Houses, Cleethorpes . . . . . 140 13 0  
G. W. Brown (25) . . . . . 141 6 6  
W. Burkett (27), Victor Street, Holderness Road, Hull . . . . . 77 17 0  
G. W. Brown (26) . . . . . 50 5 3

**DONCASTER.**

For supply of a fuel economiser at the Corporation electric works.

J. Carter & Son . . . . . £362 10  
Goodbrand & Co. . . . . 361 0  
E. GREEN & SON, Economiser Works, Wakefield (*accepted*) . . . . . 360 16  
Clay Cross Co. . . . . 360 0  
A. Lowcock, Ltd. . . . . 350 0

**DOVER.**

For supply of 2,000 tons of broken Guernsey granite, 500 of Guernsey granite siftings, 500 feet of Guernsey granite kerb, 1,000 square yards of York paving.

*Accepted tenders.*

A. & F. Manuelle, 57 Gracechurch Street, E.C., broken Guernsey granite 10s. 5d. per ton, 1½-inch siftings 7s. 5d. 3-inch siftings 6s. 9d., kerb 1s. 8½d. per lineal foot.  
J. Brooks & Sons, Hipperholme, Halifax, York stone, 6s. 6d. per square yard.

**DUKINFIELD.**

For erection of a bowlhouse, shelters, &c. Mr. SAM'L HAGG, borough surveyor.

J. E. Briggs & Sons . . . . . £577 10  
W. Underwood & Bro. . . . . 560 0  
E. Holmes . . . . . 550 0  
Fitton & Bowness . . . . . 535 0  
Saxon Bros. . . . . 532 10  
J. Gibson & Sons . . . . . 500 0  
E. Marshall & Sons . . . . . 498 10  
T. Dean . . . . . 490 0  
J. Ridyard . . . . . 488 15  
Kirkby . . . . . 480 0  
ROBINSON, Ashton-under-Lyne (*accepted*) . . . . . 479 0

**GATESHEAD.**

For laying about 600 yards of 18-inch fireclay pipes. Mr. BOWER, borough engineer.

D. Young . . . . . £3,323 0  
J. Robson . . . . . 3,292 0  
G. Bell . . . . . 2,535 0  
I. Bewley . . . . . 2,405 0  
Brebner & Co. . . . . 2,315 0  
J. THOMPSON, Gosforth, Newcastle (*accepted*) . . . . . 2,144 0

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GRAYS.

road and sewer works at Grays, Essex.	Mr. G. W. COBHAM, engineer.
Soan . . . . .	£810 0 0
Adams . . . . .	768 0 0
Alson, Border & Co. . . . .	700 0 0
Jackson . . . . .	675 0 0
J. Trueman . . . . .	626 0 0
Gibbs & Co. . . . .	620 0 0
Sea Defence Syndicate, Ltd. ( <i>withdrawn</i> )	536 4 8
W. Marsh ( <i>withdrawn</i> ) . . . . .	348 18 5

GRIMSBY.

rection of houses, shops, restaurant, stabling and bakehouse at Cleethorpes.	
ION, Cleethorpes ( <i>accepted</i> ) . . . . .	£5,807 0 0

HALESOWEN.

reet works in Cakemore, Blackheath, as follows:—Green lane, about 330 yards in length; Station Lane, about 10 yards in length; part of Master's Lane, about 300 yards in length. Mr. WILLIAM WHITWORTH, surveyor, Public Offices, Great Cornbow, Halesowen.	
Lackay . . . . .	£2,187 0 0
Feeler & Thompson . . . . .	2,065 0 0
H. Jones . . . . .	2,030 0 0
Meredith . . . . .	1,962 0 0
all, Lewis & Martin . . . . .	1,929 0 0
es & Co. . . . .	1,862 0 0
Willetts . . . . .	1,751 0 0
ooper . . . . .	1,708 0 0
RUMPTON, Halesowen ( <i>accepted</i> ) . . . . .	1,445 0 0

HARPENDEN.

rection of a classroom at the Board school, Harpenden, erts.	
iers, Ltd. . . . .	£355 0 0
Vsparrow . . . . .	339 10 0
enman . . . . .	268 9 6
all . . . . .	316 17 0
V Dunham . . . . .	297 0 0
ELIPS & BLAKE, Harpenden ( <i>accepted</i> ) . . . . .	274 10 0

ILKLEY.

For erection of the Cowpasture Bridge over Backstone Beck.	
Kell Bros. . . . .	£2,564 0 0
J. Brown . . . . .	2,047 15 0
J. Forrest . . . . .	1,990 0 0
E. Kellett . . . . .	1,988 0 0
J. Murdock . . . . .	1,941 15 5
W. Barrand . . . . .	1,894 18 6
Horner & Maud . . . . .	1,825 0 0
T. Egan & Sons . . . . .	1,812 18 10
DEAN BROS., Ilkley ( <i>accepted</i> ) . . . . .	1,607 1 9

IRELAND.

For making granolithic footpaths and crossings (a) on certain main roads, and (b) at Agnew Street, for the Larne Urban District Council.

Main roads.

S. McFarlane . . . . .	£1,491 7 6
S. Walker & Son . . . . .	1,337 12 6
J. McNEILL, Larne ( <i>accepted</i> ) . . . . .	983 17 6

Agnew Street.

S. McFarlane . . . . .	235 13 0
S. Walker & Son . . . . .	217 16 6
J. McNEILL ( <i>accepted</i> ) . . . . .	129 19 0

For improvements to Imperial Hotel, Ballyshannon. Mr. F. W. LOCKWOOD, architect, Bundoran, co. Donegal.

J. Donnelly . . . . .	£513 0 0
D. Funston . . . . .	462 10 0
W. O'Kane . . . . .	460 0 0

\* Settled at £480 by addition of £20 for improvements to kitchen and cellar.

For supply and fitting-up of a steam-cooking and laundry apparatus in the workhouse, Mullingar.

Benham & Sons . . . . .	£1,195 0 0
R. MacDonald . . . . .	716 10 0
Hughes Bros. . . . .	657 5 6
Maguire & Gatchell . . . . .	556 0 0
W. Summerscales & Sons . . . . .	554 10 0
Ravenhill Ironworks, Ltd. . . . .	530 0 0
T. Reilly . . . . .	510 0 0
NOONEY & SON, Mullingar ( <i>accepted</i> ) . . . . .	493 10 0
R. Mullally . . . . .	490 0 0

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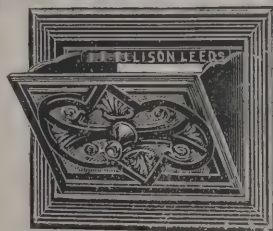
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## JARROW.

For alterations and additions at the higher grade school.			
S. Craig	£1,336	3	8
J. A. Henderson	1,270	19	0
J. BARROW, Jarrow (accepted)	1,048	9	6

## KINGSBURY.

For alterations and additions to schools at Dosthill. Mr. J. W. GODDERIDGE, architect, Tamworth.			
E. Williams	£1,006	0	0
B. Musson	997	0	0
S. WATTON & SONS, Tamworth (accepted)	979	15	3

## LANCHESTER.

For surface-water drainage works at Langley Park. Mr. W. CUMMING, surveyor.			
S. WALKER, Cockfield, Darlington (accepted)			

## LEEDS.

For supplying about 1,500 lineal yards of 6 feet wrought-iron or mild-steel unclimbable fencing, to be fixed at the Harehills Recreation Ground, and about 900 lineal yards of 5-feet 6-inch wrought-iron or mild-steel unclimbable fencing, to be fixed at Cross Flatts Park.			
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## Accepted tenders.

T. Green & Son, Ltd., Leeds, Harehills Recreation Ground	£791	0	0
J. & H. Smith, Ltd., New Briggate, Leeds, Cross Flatts Park	369	10	5

For painting at Seacroft hospital and Beckett Street hospital.

## Accepted tenders.

A. W. Richardson & Co., Boar Lane, Seacroft hospital	£325	18	8
Jenkins, Tollerton & Co., Merrion Street, Beckett Street hospital	143	18	0

For laying about 700 square yards of concrete flagging at Spa Street, Holbeck.

J. E. Binns & Sons	£248	0	0
T. & R. Dews	243	0	0
D. Speight & Sons	229	6	4
Towler & Speight	227	2	0
J. Speight	216	1	2
J. Dalton	211	19	6
J. FERGUSON, Victoria Road, Leeds (accepted)	209	5	6
Schofield, Sons & Co., Ltd.	206	15	0
Hard York Nonslip Stone Co.	205	19	6

## LEEK.

For erection of a poultry market, Leek, Staffs. Mr. J. MYATT, town surveyor.			
T. Grace	£1,124		
S. Salt	1,090		
H. P. Embrey & Co.	1,067		
J. Heath	1,055		
HEATH & LOWE, Leek (accepted)	940		

## LONDON.

For additions to stabling, Streatham Common, S.W. HERBERT RICHES, architect, 3 Crooked Lane, William Street, E.C.			
Courtney & Fairbairn	£549		
W. Mason	495		
J. Smith & Sons, Ltd.	489		
G. CANDLER & SONS (accepted)	469		

For internal decorations to house, Streatham Common, S.W. Mr. HERBERT RICHES, architect, 3 Crooked Lane, William Street, E.C.

J. Smith & Sons, Ltd.	£668		
G. Candler & Sons	647		
MAPLE & CO., LTD. (accepted)	565		

For erection of stabling, Wanstead, N.E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, E.C.

T. Osborn & Sons	£729		
W. Mundy	702		
C. J. Sherwood	691		
BATTLE, SON & HOLNESS (accepted)	635		

For repairs, &c., to the Joiners' Arms, Stratford, E. Messrs. FOULSHAM & HERBERT RICHES, architects, 3 Crooked Lane, E.C., and Bromley-by-Bow, E.

E. F. & T. J. Walker	£258		
A. W. Derby	239		
S. SALT (accepted)	207		

For repairs at the Albion, Stratford, E. Messrs. FOULSHAM & HERBERT RICHES, architects, 3 Crooked Lane, E.C., and Bromley-by-Bow, E.

A. Webb	£345		
T. Osborn & Sons	327		
J. T. Robey	295		
E. F. & T. J. WALKER (accepted)	287		

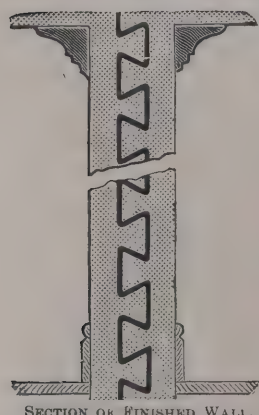
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LONDON, E.C.

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## LONDON—continued.

extension of carriage factory, Chiswick, W. Mr. T. WILSON, architect, 34 New Bridge Street, E.C.  
L. LEEDER & Co. (accepted) . . . £1,397 0 0

## LOWESTOFT.

erection of a small-pox isolation hospital.  
owell & Co. . . . . £347 0 0  
umpreys & Co. . . . . 310 0 0  
ULTON & PAUL, Norwich (accepted) . . . 255 0 0

## MALDON.

street works, &c., Victoria Road, Maldon, Essex. Mr. T. R. SWALES, borough surveyor.  
B. Knight . . . . . £556 9 0  
Wilding & Son . . . . . 412 10 0  
OUCH VALLEY BRICK & TILE CO., Hull  
Bridge Road, Woodham Ferris, Chelmsford,  
(accepted) . . . . . 345 0 0

## MARYPORT.

erection of the proposed cottage hospital.  
*Accepted tenders.*  
Marshall, mason . . . . . £568 9 0  
Kendall, joiner . . . . . 290 0 0  
Kirk, plasterer . . . . . 115 11 9  
Thompson, plumber . . . . . 114 11 9  
Clark, slater . . . . . 88 0 0  
McKay, painter and glazier . . . . . 26 19 9  
Total, £1,202 10s. 9d.

## NORTHOWRAM.

erection of two blocks of semi-detached houses at Upper Gear, Northowram, Halifax. Messrs. J. F. WALSH & GRAHAM NICHOLAS, architects, Museum Chambers, Halifax.  
*Accepted tenders.*  
N. Hauson, Stone Chair, Halifax, mason.  
W. Ratcliffe & Son, Claremount, Halifax, joiner.  
L. Summerscales, Parkinson Lane, Halifax, plumber.  
E. Fozzard, Burnley Road, Halifax, slater and plasterer.

## NEW MILLS.

For supply of a horizontal water-cooled condenser to pass 200,000 cubic feet per 24 hours, with a by-pass complete; rotary scrubber-washer, with engine complete, without by-pass connections, to pass 200,000 cubic feet per 24 hours, and four 10 feet by 4 feet 6 inches square purifiers, in line, with single valves, connections, covers and lifting crane complete (Green's patent).

*Accepted tenders.*

Clapham Bros., Ltd., Keighley, purifiers . . . £442 0 0  
Clapham Bros., Ltd., Keighley, washer scrubber 160 10 0  
R & J. Dempster, Ltd, Newton Heath, condenser 150 0 0

For supply of a new Lancashire boiler, 5 feet diameter, 14 feet long, single-flue, fitted with Meldrum's or other forced-draught furnace.

T. OLDHAM, Heaton Norris (accepted) . . . £125 0 0

## OLDBURY.

For construction of manholes and lamp-holes, also inverting and other works in connection with about 134 existing manholes. Mr. J. T. EAYRS, engineer, Clarence Chambers, 39 Corporation Street, Birmingham.

E. BOORE, Bearwood Road, Smethwick, Birmingham  
(accepted), £376 4s. 8d.

## PEAR TREE GREEN.

For erection of a boys' school, High Street, Pear Tree Green, Hants. Messrs. W. H. MITCHELL, SON & GUTTERIDGE, architects, 9 Portland Street, Southampton.

Hinton Bros. . . . . £6,500 0 0  
Witt Bros. . . . . 6,475 0 0  
H. Cawte . . . . . 6,178 0 0  
T. Rashley . . . . . 6,083 0 0  
Jenkins & Sons, Ltd. . . . . 5,985 0 0  
STEVENS & Co., Northam, Southampton (accepted) . . . . . 5,860 0 0

## PONTEFRAC.

For work in connection with the carrying-out of the Brotherton drainage scheme.

SUTCLIFFE & Co., Luddendenfoot (accepted) . £4,000 0 0

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*Generating plant.*

Maxim Electrical Co., Ltd.	£19,673	0	0
British Thomson-Houston Co., Ltd.	18,550	0	0
Crompton & Co., Ltd.	18,210	0	0
British Westinghouse Co., Ltd.	18,082	0	0
Blackwell & Co., Ltd.	17,674	0	0
Brush Electrical Engineering Co.	17,673	0	0
British Schuckert Electric Co., Ltd.	17,313	0	0
Allgemeine Electric Co.	16,005	0	0

*Rolling-stock.*

British Schuckert Electric Co., Ltd.	21,256	0	0
British Thomson-Houston Co., Ltd.	19,234	0	0
British Westinghouse Co., Ltd.	18,879	0	0
Crompton & Co., Ltd.	18,275	0	0
Maxim Electrical Co., Ltd.	18,158	0	0
Hurst, Nelson & Co.	17,695	0	0
Dick, Kerr & Co., Ltd.	17,322	0	0
Blackwell & Co., Ltd.	17,269	0	0
Brush Electrical Engineering Co.	17,081	0	0
Witting Bros., Ltd.	16,815	0	0
Allgemeine Electric Co.	16,238	0	0

## ROCHDALE.

For street works in Canal Street, Church Street, James Street, Eliot Street and George Street, Castleton Moor. Mr. S. S. PLATT, borough surveyor.

T. TURNER, Siddall Moor, Manchester Road, Heywood (accepted).

For supply of about 11,000 lineal yards of 4 in. diameter agricultural drain tiles.

ENTWISLE & CO., Kearsley Brickworks, Stoneclough, near Manchester (accepted).

## SANDBACH HEATH.

For erection of Wesleyan chapel and school at Sandbach Heath. Mr. ALFRED PRICE, architect, Sandbach.

G. Wright & Sons	£1,600	0	0
S. Manley	1,275	0	0
W. Street	1,150	0	0
J. Stringer	1,119	0	0
A. E. Lee	1,110	0	0
E. & W. Birchall Bros.	899	0	0
T. Jackson	864	0	0

## SCOTLAND.

For laying new double line in Rosemount Viaduct and new single tram line in South Mount Street and Rosemount Place, Aberdeen; also for strengthening rail joints and equipping for electric traction existing lines in Rosemount Place, Beachgrove Terrace and Fountainhall Road. Mr. WM. DYACK, burgh surveyor.

P. TAWSE, Aberdeen (accepted) £3,918 11

For erection of a cooking-room at Rothies school. Messrs. A. & W. REID & WITTET, architects, Elgin.

*Accepted tenders.*

J. Fraser, Rothies, builder.  
J. & A. Robb, Rothies, carpenter.  
J. Wilson, Lossiemouth, slater.  
J. A. Russell, Elgin, plumber.  
G. Hume, Dufftown, plasterer.  
J. Stewart, Rothies, painter.

For erection of buildings in James Street, Lossiemouth. Messrs. A. & W. REID & WITTET, architects, Elgin.

*Accepted tenders.*

J. Young, Elgin, builder.  
A. K. Garrow, Dufftown, carpenter.  
J. Sutherland, Dufftown, plasterer.  
K. MacGillivray, Lossiemouth, painter.

For erection of a house in Stotfield Road, Lossiemouth. Messrs. A. & W. REID & WITTET, architects, Elgin.

*Accepted tenders.*

D. Forsyth, Elgin, builder.  
W. Ritchie & Sons, Lossiemouth, carpenter.  
Thomson & Frazer, Elgin, slater.  
W. Lyon & Son, Elgin, plumber.  
A. MacIver, Elgin, plasterer.  
J. Kintrea & Son, Elgin, painter.  
J. Shand, Lossiemouth, blacksmith.

## SOWERBY BRIDGE.

For street sewerage works in the following streets:—Edward Street, East Parade, Grove Street, back road between Grove Street and Park Crescent, back road between Oxford Street and Derby Street.

*Accepted tenders.*

Bellfield & Barnes, Lord Street, for Edward Street, East Parade, and back Oxford Street.  
J. Riley, Gratrix Lane, for Grove Street and back Grove Street.

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### SEASCALE.

ection of a dwelling-house at Seascale, Cumberland.  
N. GEORGE BOYD, architect, 33 Queen Street, White-  
hen.

#### Accepted tenders.

erguson, builder	£691	0	0
ilburn & Son, carpenter and joiner	220	0	0
irns & Co., plumber and glazier	71	0	0
Whitfield, slater	45	0	0
Conn, painter	13	0	0

### STANLEY.

stet works required at Stanley, Durham, in the formation  
of (1) Albert Street, Anthony Street and Back Beamish  
Street, Stanley; (2) new road, including footways, from  
Front Street, Stanley, to Shield Row Brewery. Mr.  
JOSEPH ROUTLEDGE, surveyor.

V White	£2,268	15	6
Manners	2,029	9	0
ung	1,885	15	6
Simpson	1,718	17	6
arnett	1,559	17	6
utledge	1,529	11	3
JOHNSON, Stanley (accepted)	1,476	0	9

### STYAL.

ention of additional cottage homes for 120 children at  
Sal, Cheshire. Mr. JAMES B. BROADBENT, architect,  
Cooper Street, Manchester.

MGARITY & Co, Manchester (accepted) . £10,540 0 0

### THORNHILL.

For additions to cottage in Overthorpe Road, Thornhill,  
Yorks. Mr. S. W. PARKER, surveyor.

#### Accepted tenders.

E. P. Sheard, mason	£104	10	0
Wilson Bros., joiner	39	0	0
G. Hargreaves, slater	16	10	0
F. Mitchell, plumber	13	14	0
A. Booth, plasterer	10	15	6
B. Smith, painter	2	5	0

### WALES.

For erection of an isolation hospital at Llantwit Fardre, near  
Pontypridd. Mr. E. REES, surveyor.

W. Thomas & Co.	£8,094	16	0
Williams & James	7,118	0	0
Morris & Thomas	6,983	5	6
G. Rutter	6,902	14	0
W. E. Willis	6,772	3	4
Price Bros.	6,667	0	0
W. DAVIES, Pontypridd (accepted)	6,397	0	0

For street and sewerage works at Llantwit Fardre. Mr. G. S.  
MORGAN, surveyor.

#### Road improvement at Rhydyrhelig, Llantwit Fardre.

Barnes, Chaplin & Co.	£446	11	8
T. Williams	422	7	8
Morris & Thomas	418	13	2
W. Rowlands	406	13	6
Davies & Williams	343	13	6
T. Davies	333	11	6
J. Thomas	323	19	0
J. B. MUNDY, Mardy, Glam (accepted)	309	9	0

#### Tonyrefail sewers.

W. D. Rowlands	159	0	4
J. B. Mundy	150	19	5
A. G. Collins & Co	147	14	6
Barnes, Chaplin & Co.	144	19	10
MORGAN, Pontyclun (accepted)	142	8	10

### WALMER.

For road and sewer works at Walmer. Mr. CHAS. BARKER  
engineer, Bromley.

CASE SEA DEFENCE SYNDICATE, LTD. (ac-  
cepted) . £805 15 6

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## TRADE NOTES.

WE are asked to mention that the mosaic in the Corn Exchange now being erected in Manchester, under the supervision of Messrs. Potts, Son & Henning, was laid by Messrs. Diespeker & Co., of Holborn Viaduct.

THE Berkefeld Filter Company, Ltd., of 121 Oxford Street, W., who in the beginning of this year placed upon the market an improved germproof filtering cylinder, to which they have given the distinguishing name "Tubor," have been favoured with another contract from His Majesty's Government to supply filters for the use of the troops in South Africa.

A VERY large clock and chimes has just been erected in the tower, Beverley Minster. The chimes play upon ten bells in the north-west tower, and the hours are struck upon a new bell (Great John), which weighs 7 tons, in the south-west tower. The whole of the work has been carried out by John Smith & Sons, Midland Clock Works, Derby, to the designs of Lord Grimthorpe.

## VARIETIES.

THE Plumbers' Registration Bill has passed the Lords, and is now before the Commons.

THERE are fifty market crosses in the West Riding. That at Sharow has been handed over to the National Trust.

BRIGHOUSE Bridge, carrying the Huddersfield and Bradford main road over the Calder, is to be widened from 30 feet to 42 feet.

A NEW Wesleyan church and schools were opened at Sunderland on Wednesday afternoon. They are a portion of a scheme of extension on the part of the Wesleyan circuit, over which about 28,000*l.* is to be expended.

ON Saturday afternoon a new workmen's home at Craigneuk, Wishaw, was formally opened by Provost Stalker. The home has been erected by the Craigneuk Workmen's Homes Company, Ltd., at a cost of 5,000*l.*, and will give accommodation for 160 lodgers.

A NEW post office has been erected and formally opened in Buccleuch Street, Melrose, the contractors being Messrs. Herbertson, Galashiels. The building is a handsome and commodious one, consisting of the public office, a large sorting

hall with all the latest furnishings, and rooms for the graphists, postmaster, male and female clerks, postmen and messengers.

THE publishing and general offices of *Le Mois Scientifique et Industrielle* have been removed to 23 Boulevard des Capucines, Paris, the editorial department remaining, as before, at 33 Boulevard des Batignolles. This publication, many of our readers are doubtless aware, published distinguished scientific patronage, and appeals in an interesting fashion to engineers and manufacturers in general.

IN excavating at the extreme east end of Westminster Cathedral preparatory to carrying out a portion of the extensions, the workmen have discovered a section of the foundation of the original edifice, erected about the time of William the Conqueror. Near it, alongside what appeared to have been a limekiln, was a block of stone, forming part of the abacus of a Norman capital, with diaper carving, and in an excellent state of preservation.

ST. MARY'S R.C. church, Dundee, was formally opened on Sunday, after extensive alterations and the introduction of a new peal of bells. The church, which is one of the largest in Dundee, has been improved by the addition of a façade by a couple of fine towers, in which have been placed the new chimes. The interior has been redecorated in a tasteful style, and the improvements include the introduction of eight new windows, a mosaic floor in the sanctuary, a new marble altar and a new marble pulpit. The seating has been rearranged, and accommodation provided for 2,000 persons.

AT a meeting of the Edinburgh Architectural Association held at 117 George Street, Mr. J. A. Arnott occupied the chair in the absence, through indisposition, of Mr. J. Stewart, and a paper was read by Mr. George Whittet on "A View of the Architectural Features of its Colleges and other Buildings." A discussion followed. On Saturday afternoon some fifty members of the Association had an opportunity of inspecting the new gas works at Granton. On arrival the party, after having a general view of the huge undertaking from the bridge at the south corner of the site, were conducted over the entire works by Mr. W. R. Herring, the chief engineer, who suitably explained the leading features and purposes of the various building and machinery and its uses and generally the methods that had been adopted in gas production, &c., on the completion of the scheme.

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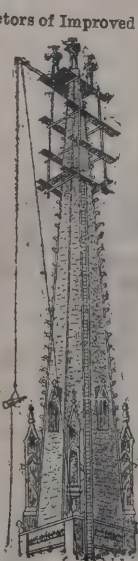
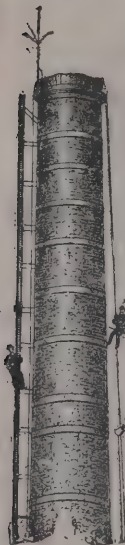
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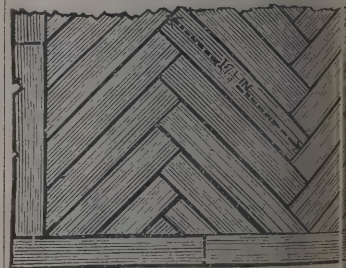
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creation of Greater New York by the annexation of the boroughs of Bronx, Queen's and Richmond into existence a city somewhat comparable to Greater New York, so far as area and population are concerned. The area of Greater New York is 306 square miles, and the population may be taken in 1900 as 3,500,000; in 1900 it was 3,437,000. In 1900 the population of London was 4,803,000, but that of Greater London—the area of 688 square miles included within 15 miles from Charing Cross—cannot be much less than 6,000,000. Assuming the figures given above to be approximately accurate, the ratio of London population to that of New York is as 1 to .530, and the areas are as 1 to .467. On the assumption the density of population per square mile in London is 9,600, and that in New York is 11,470. New York is therefore more closely inhabited than London in the ratio of 1.20 to 1.

## BUILDING AND BUILDERS.

The North-Eastern Railway Company have decided to expend £100,000 on Hartlepool docks.

The West Pier at Whitby has been damaged by recent gales and repairs were ordered on Monday.

The foundation-stones of two new Board schools were laid on Monday by Canon Lambert and Councillor Milner respectively.

MAS MEHAN, bricklayer's labourer, fell from a scaffold while he was working at Middlesbrough on the 5th inst., fracturing his back. He died a few hours after in the Infirmary. Plans have been passed for a new church which is to be the Mission of the Good Shepherd, Small Heath, Birmingham, and the foundation-stone will be laid on the 22nd inst. The new building will be a large and handsome one, providing free accommodation for 1,000 worshippers, at a cost of £8,000.

At a meeting of the executive committee of the Swansea Harbour Trust on the 6th inst. a proposal was considered for improving the South Dock, which is being brought up-to-date. It is proposed to throw out a wall at a point near Pockett's Wharf to a point near the new dock which will have the effect of dockising the old dock and considerably enlarging the basin. It is calculated

that an additional 760 feet of wharfage will thus be obtained at a cost of £12,000.

THE picturesque old wooden bridge spanning the Thames, and connecting Pangbourne with Whitchurch, is in process of demolition, having been considered unsafe for some time past. Preparations are in progress for the erection of an iron structure by a Darlington firm. It is hoped that the new bridge may be completed about the end of the year.

THE Blackpool Corporation have now completed arrangements for commencing the huge work of widening the promenade. The contract for an extensive supply of basaltic stone from the Rhine quarries has been arranged, and word has been received at Fleetwood to prepare for the discharge of two large steamers from Rotterdam laden with nearly three thousand tons of stone, the vessels being expected early next week. Blackpool people may now reasonably anticipate that this long-deferred scheme will be pushed on and so provide work for those unemployed in the district.

AT Islington Dr. Danford Thomas held an inquest on Saturday on the body of Mr. Peter Murray, aged eighty, a retired builder, late of 8 Moranda Road, Upper Holloway. On Friday evening deceased left his home to attend early evening service at the chapel of St. Joseph's Retreat, Highgate Hill, and while in the attitude of prayer was found by a Mr. Marchant to be ill. Assistance was at once summoned, but death had ensued before the arrival of a doctor. Dr. E. Horsford said that the cause of death was syncope, and a verdict to that effect was returned.

THIRTY master and operative plumbers applying for registration under the National Registration of Plumbers attended at King's College on Saturday for examination by the Worshipful Company of Plumbers. The candidates were from various parts of London, and also from Dover, Eastbourne, Hailsham (Sussex), Ramsgate, Redhill, St. Albans, St. Leonards-on-Sea and Sutton (Surrey). The practical test included lead bossing and the making of plumbers' joints, &c. The examination questions included the subjects of contamination of drinking water from faulty connections, roof covering, arrangement of bath, sink and closet wastes, drainage of town houses, and disconnection with sewers. The examiners were Mr. Charles Hudson, master plumber, chairman of the board of examiners, Mr. J. Knight, master plumber, and Messrs. J. T. Martin and G. W. Stacey, representing the United Operative Plumbers' Association of Great Britain and Ireland.

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THE building surveyor for the Corporation of Liverpool reports that in 1901 the new houses built within the city of Liverpool were 1,963, an increase over 1900 of 390. It also exceeds the average of the past six years by 175. He states that "there is nothing specially remarkable in these figures, as they simply denote a natural increase of new houses." Of the total number only 316 were in the old city, and 277 of those were tenement houses built by the Corporation, each separate dwelling being counted as a house. West Derby heads the list of new houses with 584. There were 100 houses built with rentals of 35*l.* and upwards, 441 of 25*l.* to 35*l.*, 633 18*l.* to 25*l.*, 558 12*l.* to 18*l.* and 222 under 12*l.*, the last class being exclusively built by the Corporation for labourers' dwellings. During the year 461 dwelling-houses, 11 workshops, &c., and 6 manufactories, &c., were taken down.

REPRESENTATIONS having been made to the Bishop of Lincoln as to the need of extension and rearrangement of the ecclesiastical districts of Great Grimsby, his lordship appointed a commission of inquiry, including Earl Yarborough, Lord Heneage, Archdeacon Bond and other gentlemen to inquire into the spiritual needs of the borough, and the report of the commission shows that the population of the neighbourhood has increased in eighty years from 4,000 to more than 80,000. The commission recommends the formation of four new district parishes, the building of five new churches and the provision of six parsonage houses. It is pointed out that the effort will necessitate the creation of a new fund which should not be less than 70,000*l.* if the entire scheme is to be carried out.

MR R. H. BICKNELL held a Local Government Board inquiry recently into the application of the Middleton Corporation to borrow sums of 12,166*l.* and 23,100*l.* in respect of the sewage works and sewers. The town clerk stated that the first sum comprised amounts overspent on the sewers in the original scheme, and had to be spent in consequence of the bad nature of the land they came in contact with. The second amount was for extensions at the sewage works, and for the setting-up of new works for the treatment of the sewage at Birch, Bowlee and Slattocks. Mr. H. S. Batey, on behalf of Colonel Hopwood, owner of the Hopwood estate, opposed the last application on the grounds that all the sewage ought to go down to the main outfall works, and not to be treated as separate works. It would be exceedingly disagreeable, and

would have an effect on the building operations on the estate. The Corporation proposed to put the new works on the estate, but he was instructed to state that Colonel Hopwood would not sell them the land until he was compelled to. The inspector said the Board were certainly opposed to dual works, and was demonstrated to him that the sewage of these outfalls could at a reasonable cost be conveyed to the outfall works, and should certainly recommend the Board to refuse this application, but he had to hear the other side. The borough surveyor (Mr. W. Welburn) said the Corporation did not record the scheme propounded by Mr. Batey, because it was too expensive, and the town clerk said the additional cost would be 2,000*l.* The inspector said he would make a note of the objection, and the inquiry closed.

MR. S. W. WHEATON, M.D., an inspector of the Local Government Board, held a public inquiry at Hanley on the 6th inst. with respect to a proposal to amend the Hanley, Stoke and Fenton Joint Hospital Orders 1880 and 1896 to provide that the purposes of the joint hospital board should no longer include the provision of hospital accommodation for smallpox cases; and an application for the issue of a provisional order forming the boroughs of Hanley, Burntwood, Longton, Newcastle-under-Lyme and Stoke-on-Trent and the urban districts of Audley, Fenton, Kidsgrove, Leek and Stoke, and the rural districts of Cheadle, Newcastle-under-Lyme, Stoke-on-Trent and Wolstanton, into a united district for the purpose of the provision of hospital accommodation for the reception of cases of smallpox, and such provisional order also to provide for the constitution of a joint board, to be the governing body of the united district. Mr. A. Chubb, clerk to the Joint Hospital Board, in explaining the nature of the application, said it was that of fourteen local authorities whose districts embraced an area of 111,348 acres, with a population of 335,382. The proposal was to form a joint board representative of these authorities for the purpose of erecting and maintaining a smallpox hospital, upon a site at Burntwood purchased by the Hanley, Stoke and Fenton Joint Hospital Board. The site consisted of over seven acres of freehold land and cost 339*l.* 17*s.* 10*d.*, and would be let to the authority. Dr. G. Reid, county medical officer, supported the application, remarking that the scheme was an economic and efficient method of getting out of the difficulty. There was no opposition to the application. The Mayor of Hanley moved a vote of thanks to the inspector, and in seconding

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expressed a hope that the provisional order would issued so that the work—the pressing work—of the hospital might be taken in hand. The inquiry ed.

### ELECTRIC NOTES.

Meeting of the Grimsby Corporation finance com-  
miserman Wright, chairman, explained that the Cor-  
would shortly require loans for 108,000*l.* in connection  
ic works, including 17,000*l.* for electric light extension.  
Bath City Council, sitting as an electric-lighting com-  
scussed at great length the recommendations made  
y the inquiry sub-committee as to the electric-lighting  
ng. They recommended an expenditure of 13,000*l.*  
he works in a condition to face next winter's load,  
l that they might be authorised to receive and con-  
tenders for the leasing or sale of the works which  
sent to them. After some discussion Mr. Isaacs  
amendment that the proposal to receive tenders be  
On a division the amendment was rejected, but only  
tes to 11, the attendance having dwindled. The  
also included three gas company shareholders, who at  
ot vote consequent upon a threat to bring the matter  
notice of the Local Government Board. The Clerk,  
ruled subsequently that they were entitled to vote,  
ree voted in favour of the reception of tenders. The  
s adopted.

EL DURNFORD, R.E., Local Government Board  
held an inquiry at the Southport town hall into an  
n by the Southport Corporation for sanction to  
2,000*l.* for the purposes of electric lighting. It was  
t the expenditure already made or contemplated was  
e necessary, in view of the growth of the demand for  
ht and power. Of the sum applied for 9,000*l.* had  
ally spent on condensing plant, pumps, the erection

of a transformer, the strengthening of the foundations of  
the boiler and engine-house, a sub-station in London  
Square, and in connecting up with customers along  
the route of the distributing mains over and above  
the amounts previously estimated for and sanctioned by  
the Local Government Board. It had been found that the  
high tension cables from the works at Crowlands to the town  
had been overloaded, and to the six cables already laid they  
proposed to add four more at a cost of 5,880*l.* Of the remain-  
ing items the chief were 1,000*l.* for a new sub-station, and  
12,000*l.* for a two years' supply of meters, cut-outs, service and  
joints and distributing mains, with 2,090*l.* for contingencies.  
There was a prospective demand for power to work the pier  
tramway, additional lines of street tramways and the lighting  
of the L. and Y. Railway Company's station at Chapel Street.  
There was no opposition.

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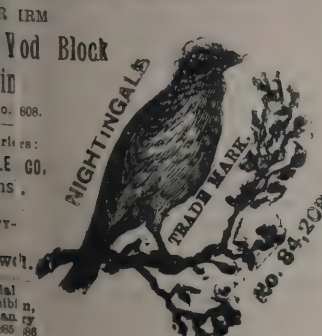
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tatives of the firm as it was of their predecessors to maintain  
at all costs. Messrs. Earle & Co. are also manufacturers of  
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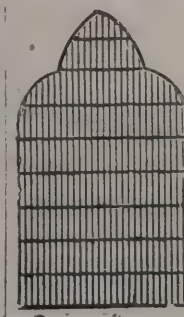
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## A LADY CONTRACTOR.

FOR the first time in his life David Doak, a contractor of Philadelphia, wishes he was a woman. Mr. Doak, says the *Baltimore Architects' Journal*, began to realise the advantages of belonging to the opposite sex when Mrs. Hugh Brady got the job of clearing out the debris after the Hunt-Wilkinson fire away from him, and he had to content himself with obtaining the contract to pull down the walls.

In the beginning Mr. Doak watched from afar with resentful, sceptical eyes as he saw a woman in a golf cape arrive with six men and dump-carts. "But say," said Mr. Doak in tones of unqualified admiration; "she's all right. She knows her business. While she was at the building I had to go away back and sit down. Nobody looked at me, nobody listened to me. My own men wouldn't pay any attention to me. She was the whole thing. They came from the papers and wanted to take her picture, but she wouldn't have it. I said 'Take me,' but nit. They told me to go away before I cracked their lenses. The reporters wanted to interview her, and she wouldn't have that either. I told them I would talk, but they said they didn't want to hear me. Is she smart? You bet she is. She makes me feel like thirty cents. Is she young? Is she good-looking? She's everything I am not," said Mr. Doak humbly. "She can get her men to fill the carts by giving them one good sharp look. I couldn't get them to do it with a club. I used to pity women just on principle; but never again," he said, "never again. I envy 'em." And he started after a man who put three shovelful of dirt in his cart and called it a load.

Mrs. Hugh Brady is the only woman contractor in Philadelphia. She kept on with her husband's business when he died. She has made a success of it, and is known as a shrewd business woman. She takes contracts to haul ashes, clear away the debris after fires, or anything, in fact, that other contractors in the same line of work are in the habit of doing.

## ELECTRIC LIGHTING OF NEWCASTLE, STAFFS.

A LOCAL GOVERNMENT BOARD inquiry was held at the Town Hall, Newcastle, Staffs, on the 4th inst., by Mr. A. A. G. Malet, M.Inst.C.E., respecting an application by the Corporation for sanction to the borrowing of 8,615*l.* for purposes of

electric lighting. Mr. S. Watson (solicitor) represented the Corporation, together with the assistant town-clerk, Mr. Bentley, and Mr. S. V. Clirehugh (Messrs. Lacey, Clirehugh & Sillar, London and Manchester), electrical engineer and author of the scheme. There were also present Mr. R. B. Mellard (ex-mayor) and T. P. Heath, Councillor, Elliott (chairman of the electric-lighting committee), T. H. Nicholls (borough treasurer), R. Fenton (accountant), &c. Evidence was given of the population, the value and outstanding loans of the borough, and witnesses testified to the demand for electric light. It was stated that since the provisional order was obtained a considerable amount of business had been made to the Corporation for the supply by the principal tradesmen in the compulsory area, which consisted of Brook Lane, Penkhull Street, High Street, R. Square, Bridge Street, Ironmarket, Nelson Square and R. Street. Mr. Clirehugh described the scheme. It was proposed to put down two 100 horse-power gas-engines, which would drive two 60-kilowatt dynamos, by means of coupling direct. It was considered reasonable to assume that within a very short time after the opening of the works there would be 4,000 eight candle-power lamps connected to the system. One of the proposed dynamos would supply this demand to insure continuity of the supply in case of breakdown, the other necessary to provide duplicate plant. The Corporation proposed to supply gas from the gasworks at 2*s.* 6*d.* per therm, which was rather a high price for gas for power purposes, as he supposed 150*l.* of that at least would be clear profit. He hoped the Corporation would see fit to reduce that price later. The proposed site of the works was land adjoining the gasworks and in the possession of the Corporation, for which they had no other use. A battery of accumulators would be supplied sufficient to maintain 350 8 c-p. lamps for eight hours. Then there would be the other necessary machinery for suitable buildings. The system proposed was the three-phase system at pressure of 440 volts, giving a supply to the Corporation for electrical lighting purposes of 220 volts and for other purposes 440 volts. The estimates only allowed for the cost of the mains in the compulsory area. The whole system was designed so that, without wasting any work or expenditure, the mains could be extended over the rest of the area of the borough. The feeders were of sufficient capacity to carry any reasonable demand, and branched off in any directions. But the committee did not anticipate that there would be any demand for extension beyond the compulsory area.

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at least for some years. In a small station the costs necessarily high, and it was very desirable to make the expenditure as low as possible. The estimate was as follows:—Two 100 h.p. gas-engines, 1,200*l*.; two 60 k.w. belt-dynamos, 600*l*.; belting, water-vessels, pipe connections, 50*l*.; balancing transformer and booster, 300*l*.; switch-boards and connections, 300*l*.; accumulators, 775*l*.; travelling-cars, 50*l*.; buildings, &c., 2,000*l*.; underground mains, 1,980*l*.; 605*l*. It was necessary to add 10 per cent. for contingencies, fees, &c., and one or two other small items made the estimated cost 8,615*l*. The interest and sinking fund amounted to absorb 544*l* and the working costs to amount to making a total expenditure of 1,381*l*. The revenue from 8 c.-p. lamps, each consuming 15 units per annum (was a low estimate) at 6*d*. a unit (which was equivalent to 3*s*. 6*d*. per 1,000) amounted to 1,500*l*. a year, showing a surplus of 119*l*. No provision was made for street lighting, as no opposition to the scheme. Thanks were accorded to the committee at the close of the inquiry.

## ST. LOUIS EXHIBITION.

The world's Fair planned to be held at St. Louis next year is now officially as the Louisiana Purchase Exposition. To celebrate the centennial of the acquisition from France by Jefferson of the territory of Louisiana, out of which have been made the twelve States of Missouri, Arkansas, Illinois, Minnesota, Kansas, Nebraska, Louisiana, Colorado, Montana, North Dakota, South Dakota, and the Territory of Oklahoma. The area included was 14,000 square miles, and the price paid was 15,000,000 dols. The population of the States at the census of 1900 was 14,000,000, the taxable value of property was 6,616,642,829 dols., and the annual value of all the products was about 10,000,000 dols. The actual work of construction is progressing rapidly even during the winter months, as St. Louis, on account of its mild climate, lends itself to this. The plans for the principal buildings have been accepted and many have been let. The Fair authorities have decided to occupy the new grounds of Washington Park, comprising 110 acres, which connect with the Forest Park. Upon these important grounds are either finished or in course of erection. With this location the site chosen will cover over 1,000 acres.

It is easy of access, the various street railway systems, of which the city has about 500 miles, converging at the different gates and entrances; all the twenty-four railways entering St. Louis will be connected directly with the site, while electric lines will be constructed to carry passengers from one department to another within the grounds. Of the invitations extended to foreign countries twelve or fifteen have been accepted, of which Japan and France are the principal. The exhibits of each nation will be preserved in their entirety, and not scattered according to their classifications. While the exposition will be both national and international, it will also illustrate, as completely as possible, the history and resources of the States and territories made from the Purchase. The Fair is to be held under the auspices of the Louisiana Purchase Exposition Company, whose management is confided to ninety-three directors—the leading business and professional men of St. Louis—its president being the Hon. David R. Francis, formerly Governor of Missouri and Secretary of the Interior in the Cabinet of President Cleveland.

## THE HOUSING QUESTION.

THE "rehousing of the people" will, it is quite clear, soon become a question of practical politics, says a writer in the *Spectator*, and as no one disputes the existence of overcrowding or its injurious effects upon morality, health and happiness, the subject of dispute is narrowed down to the methods of providing a remedy. There are just three which are possible, and until we have settled which of the three we intend to adopt, all arguments, proposals and speeches must remain more or less sterile. We must, whether we like it or not, either leave the matter to private enterprise, or compel the municipalities to supply gaps out of the rates, or assist builders from public funds to erect the necessary and wanting rooms. If we should talk ourselves deaf we shall find no other plans, and it is round them that the battle in Parliament and in the constituencies must necessarily rage. We will try, therefore, to state very briefly their inevitable recommendations and objections.

1. There can be no doubt that private enterprise in building houses and flats is preferable to any other plan if it will only work. The private builder knows where houses or rooms are wanted, he knows the kind of house or flat that will be in demand, and he can meet individual or class requirements

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without dislocating his machinery. His resources are limitless while profit is in sight, and he need waste no time over argument, but can set to work six hours after he "sees his way." It is a lighter argument, but still a strong one, that he, and he only, of all potential rebuilders, is in accordance with our habits, will not derange industry or wages, and will not out of his work acquire political power. The conservative builder may become a great man, but so will the radical builder, and they neutralise one another. Unfortunately, private enterprise fails to do the work. The builder does not "see" before him the profit which is his impelling power. Just at the moment when, owing to the increase of population—which is of course the ultimate root of the whole matter—the need for houses and rooms has increased to the point when men get angry, the wages of the building trade have risen, the cost of materials has risen, and the demands of a healthily fastidious opinion have risen till, though rooms can be provided by the million, they cannot be provided cheap. Even the skilled workmen are embarrassed by the rents required to give the builder a stimulating profit, and the unskilled workmen, speaking broadly, cannot pay them, and are forced to crowd together in a way which modern civilisation, whether sanitary or moral, wishes to forbid. We need not go into figures, and so bring on ourselves shoals of letters, because we can bring the broad fact home to our readers in an easier way. When, seventy years ago, the Reform Bill was drawn up, the governing power of the country was vested in the 10*l.* householder. He was considered, and he was, a humble aristocrat, a respectable person with a stake in the country and a reason for being orderly. Ten pounds a year, however, is less than 4*s.* a week, and where is the builder who in the country, if there are no exceptional circumstances to help him, will supply and keep in repair a good sound cottage of four rooms, or in London three rooms in a flat, to be let at that rate? He asks 6*s.* at least, more usually 7*s.* for the cottage, and in London at lowest 3*s.* a room, and the poor, by which word in this article we mean the men earning less than 1*l.* a week, cannot, if married, pay it. They must either crowd into smaller tenements or take lodgers, in either case producing the very evil which all reformers want to avoid. The skilled workman has met the difficulty by paying about twice as much in proportion to his income as the professional or the business man does; but the unskilled workman is powerless, and very apt to regard too much interference on the subject as an oppression. Parliament cannot alter this state of things—cannot, that is, compel the builder to build

without profit, or fix the price of bricks, or order mass content with lower wages. Something may be done in the country, as we have always argued, by allowing wood; but that device would possibly send up the durable timber, which is limited in quantity, and in case, of no use in great towns. Our hope in private enterprise at any rate in the towns, unless, indeed, the population is very limited.

2. We come, therefore, to rates—the "municipal house-building" in which so many people fanatically believe, but the hope there is not vivid. The plan does not work in the country case at all, and in great towns the burden is too heavy. If the town councils take on the work, they must do the whole work, for private builders cannot and cannot compete with them, and the whole of the full needs of the existing population, and the growing population, will, we fear, prove too heavy. They will never build as cheaply as the builders—it is the nature of things, for their workmen are voters, will be robbed in contracts—and if the builders cannot profit, how can their fettered rivals? They will, we lose money to such an extent that the ratepayers, who are no means as humanitarian as writers in the *Daily News*, either rebel and refuse to continue the undertaking, or rents so increased by rates that they will be forced to join the ranks of the overcrowded. This means an imaginary danger. We venture to say that if the London County Council, instead of trying petty experiments—petty, we mean, in proportion to the necessity—take the whole work earnestly in hand, it would in twenty years be abolished as an intolerable burden on the prosperous great city. Its better rooms would attract new workmen from the country, its worse rooms would not. The total result would not improbably be a vast debt, but all other forms of progress, and a system of crowding, less injurious because it would be partially concealed.

3. It is quite possible, though no one will admit it, that the problem is insoluble, and that one condition of the ancient and of all Oriental city civilisation is crowding; but we think there is hope in the thing. This is to extend the provisions of the existing Act for the promotion of cottage building so that private builders under prudent and carefully considered conditions of contract from the Treasury at, say, 2½ per cent., repayable in full

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re an incurable belief in private energy when urged by  
tion of profit, and one great obstacle in the builder's  
the rate he is compelled to pay for capital. The mere  
y that he could get it upon fixed and known conditions  
empt him into enterprise, and there is much more result  
terprise than from civic benevolence. It would greatly  
cause if eviction for non-payment of rent were made  
as it is in France, and if "fitting" were regarded as a  
offence; but it is quite useless in the present state of  
to press for any change of the kind. The public will  
eve as Miss Octavia Hill, for instance, does, that an  
le rent is more readily paid than one casually  
nd to argue with the uninstructed conscience when its  
ce seems benevolence is a hopeless waste of time. But  
ne to believe that cheap capital employed by private  
ight solve the problem without driving private enter-  
of the market, and without placing an army of opera-  
the disposal of the majority in any town council. At  
its, the experiment could be tried without either the  
the municipality incurring indefinite pecuniary risks,  
ning landlord of masses of tenants who if aggrieved can  
ut of power. To give to tenants the right to dismiss  
adlord does not seem to us to tend towards either  
tual payment of rent or zeal in the erection of new

hall on the west, and also from the first floor of that part of the  
older building which contains the senate room. There remains  
one more entrance, namely, that under the wide and con-  
spicuous archway which serves to link the new buildings to the  
tower block. This archway will in itself constitute a great  
boon to the College, for the present entrance to the quadrangle,  
which is situated under the tower, is, to say the least, inade-  
quate, and is not without its dangers when used for vehicular  
traffic. From the new archway access is gained into the old  
building on the right, and on the left into the entrance-hall of  
the new building, from which a wide corridor leads to the  
staircase hall at the south end. On either side of this corridor  
are ranged a group of rooms, which occupy the whole of the  
ground-floor of the building. These rooms are intended for  
various purposes. Some of them will be set apart for examina-  
tion purposes, while others will be allotted to the University  
authorities as offices. There are also a large kitchen and  
service-rooms to be used when dinners are given in the large  
hall above. The staircase hall is a feature of some architectural  
interest. The stairs themselves, which ascend to right and  
left, are screened from the hall by an arcade, and there are also  
arches which cut off the public entrance at the east and west  
ends of the hall. Ascending the stairs, one comes first to the  
general level of the floor of the hall, from which a good view  
is obtained of the proportions of the whole room. It is 50 feet  
wide and 60 feet high from the floor to the apex. The length  
is about 130 feet, but the whole of this is not visible, for the  
north end wall is partly concealed by platform and galleries  
and by the central and crowning feature—the front of the noble  
organ.

### OWENS COLLEGE, MANCHESTER.

nce and Princess of Wales were accorded an enthu-  
selcome in Manchester on Wednesday, when they paid  
to Cottonopolis, for the purpose of opening the new  
rth Hall at Owens College, which latter, by the way,  
ed its jubilee on the same day. This celebration  
however, but for the national mourning, have taken  
elve months earlier, the College, which was founded by  
wens, having been opened to students on March 12,  
for the following description of the new building we  
bted to the *Manchester Guardian* :—

hall stands at the angle formed by the junction of  
Street and Burlington Street, and, together with the  
Library, occupies the south-east corner of the College  
ple. The means of access and egress are especially  
ious. Not only are there street entrances for the  
Oxford Road and Burlington Street, but there are  
approach from the Christie Library, which adjoins the

This organ, which, as was recently announced, is the gift  
of Mrs. Rylands, is one of the masterpieces of Messrs. Willis  
& Sons, and deserves a few words of description. The case is  
of oak, in Gothic design, and the front pipes are burnished  
metal. The organ has four complete manuals, with a manual  
compass from C C to C—61 notes. The pedals are from C C  
to G—32 notes. The great organ has twelve registers, the  
swell thirteen, the choir ten, the solo eight, the pedal ten, and  
there are eleven couplers and accessories. The organ is  
controlled by twenty pneumatic pistons, and five composition  
pedals. None of these, however, are in at present. The whole  
action is tubular pneumatic, and the solo organ is enclosed in  
a box like the swell, being therefore expressive. There are  
fifty-three speaking registers. Of these, two are of 32-feet  
calibre, and 2,339 pipes. There are considerable variations of

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wind-pressures from the different registers. The organ, of course, is far from being complete, but at the request of the College authorities Dr. Kendrick Pyne consented to play on Wednesday and Thursday.

Perhaps the most noteworthy feature of the hall is the roof, which is of a particularly rich description. The visible portions are entirely of oak, and the principals, which are a modification of the well-known "hammer-beam" construction, are in the form of large pointed arches. Their lower extremities rest at each end upon granite columns, which seem, as it were, to carry the roof from the floor. Between the columns come the windows, the hall being lighted on both sides. The side windows, like the great window at the south end, are filled with coloured glass. In the case of the south window the interest is increased by the insertion of a number of coats-of-arms, among them being those of the University, the College, the county and the city. Many of the benefactors of the College are commemorated in the same way. In prominent positions are the arms of John Owens, the founder of the College; his friend George Faulkner, who is said to have persuaded Owens to leave his money for the foundation of the College rather than to bestow it upon himself; the Duke of Devonshire, Mr. C. F. Beyer, Sir Joseph Whitworth, Mr. R. C. Christie, Mr. Thomas Ashton, and the families of Fielden and Rylands. For illumination at night the hall has been provided with pendant electroliers, two of which hang from each of the roof principals. The seating accommodation is not on the floor space alone. There are raised stages at the south end, which are accessible from the staircase, and at the higher level the staircase also leads to various galleries.

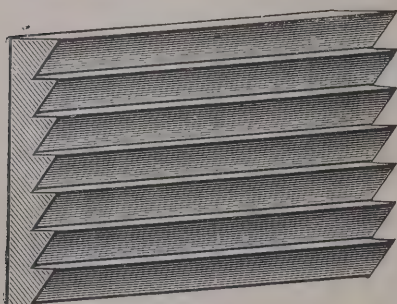
The Whitworth Hall, like most of the College buildings, has been designed by Mr. Alfred Waterhouse, R.A., and the external material is a stone similar to that used elsewhere at the College. The style, though in some parts richer than that of the adjoining buildings, is for the most part of the same character. To give special point to the design two towers have been introduced at the south end, flanking the great gable which contains the traceried window; but in order that these should not vie unpleasantly with the tall tower—so familiar a feature of the College—they have been kept down to a considerably lower height, being, in fact, only 100 feet high from the pavement. The street front is pleasantly broken up by the buttresses, which counteract the thrust of the roof, and is further diversified at the south end by the public entrance and

at the north end by the carriage archway already mentioned. The roof over the archway, being lower than the general level of the hall, serves to dissociate the new buildings from the old ones and to prevent an undue sense of crowding which have been produced if the hall had closely adjoined the old buildings.

The foundations of the new building were commenced in February 1898. Its cost is about 50,000/.

### THE AUCTIONEERS' INSTITUTE.

At the fourth sessional meeting of the Auctioneers' Institute of the United Kingdom, held on the 5th inst. at the Medical Examination Hall, Victoria Embankment, Bennett Rogers, the president, being in the chair, Mr. Soper, barrister-at-law, read a paper on "The Liabilities of Landlord and Tenant for Improvements under the Sanitary Acts." He said the subject was one which should be taken into consideration in every contract of letting for a term of years, and the Law Commission showed how the question raised might be a source of friction and a source of difficulty if not properly provided for in the contract of tenancy. He summarised the law as it was possessed by local authorities to compel the execution of improvements in private property, and quoted a number of cases with a view to show that in certain circumstances a tenant had been held liable under covenant for carrying out the requirements of the local authority. He mentioned other leading cases which were decided in favour of the tenant, and said that if the covenant were to pay all charges upon the landlord, it would be sufficient to rid him of the burden, but if it were to pay charges imposed upon the premises it would not be sufficient, as these duties under the Sanitary Acts were imposed upon the landlord personally, and not upon the premises. It would save much confusion to the law if the covenant to include all charges payable by the owner under the Public Health and any other Sanitary Acts for the time being in force and applicable to the premises suggested rules and principles which might be of service in the property, which were not apparent to the tenant at the commencement of the holding, the cost of remedying the property, in common fairness, to fall upon the landlord; on the other hand, they were caused by neglect or mismanagement of property on the part of the tenant, he should be the person



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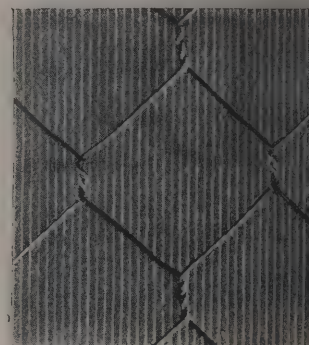
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the expense of putting things right again. The landlord not to escape, through the ingenuity of the draughtsman prepared the lease, from burdens which he should in no way bear, and, on the other hand, the tenant ought not to be troubled through any faulty wording of his covenants when it was his intention that he should bear these expenses.

## DEVELOPMENT OF EASTBOURNE.

DEVELOPMENT of much importance to the future of Eastbourne has just been commenced, says the *Sussex Daily News*, the opening-up of the Ratton Park Estate for building purposes. The undertaking may, in fact, be regarded as the commencement of a new epoch in the history of the town, for it will this development afford opportunities for the building of many moderate-sized private houses, of a type in great demand, but it will add much to the attractiveness of Eastbourne's surroundings. By next May one reproach to Eastbourne will have been removed by the completion of a new low-level drive to Hampden Park and thence to the sea. With the exception of the Duke's Drive to the Head, there are at present only two ways out of the town over Ocklynge Hill, the summit of which is no fewer than 100 feet above high-water mark—a narrow and inconvenient road—while the other is that rather dreary way out by the Downs to Pevensey. Hemmed in as Eastbourne is on the north-west, occupied mainly by the estate of Mr. F. G. Cooke, M.P. This estate has lately been laid out by F. G. Cooke, A.M.I.C.E., architect, of Eastbourne, and it makes it quite clear that a development of the highest importance is imminent.

It has been written about Hampden Park and its surroundings, but it is the intention of this article to deal with the general laying out of the estate. The part now being developed mainly lies between Hampden Park and the Downs, running from the south up to Old Eastbourne. A glance at the map shows that nearly all the roads being constructed, and to be constructed, radiate at various points from the low-level drive, much as the branches of a tree radiate from its trunk. It all appears to be designed with due regard to the convenience of the public, as well as to the advantage of the estate. This bold scheme is rendered the more easy by the

happy fact that there are no varying ownerships in the way, and therefore no conflicting interests to study, as happens so often in the vicinity of many towns. The width of the low-level drive until it reaches the Ratton estate boundary will be 50 feet over all, in itself a very broad drive; but on reaching this point it will be at once widened out to about 100 feet over all, with turf and trees on either side. Nearly all the other roads are to be similar, and as they will eventually extend for several miles, the effect cannot fail to be pleasant to a degree. In many cases where roads meet there are to be wide open spaces treated as commons, three and four acres in extent, all dealt with in such a way as to make rapid transit at junctions of roads easy and safe, so that the motorist and the cyclist alike, both now and in the future, will have nothing to complain of. In fact, there are few localities where their interests have been so carefully studied.

This, of course, has been done strictly with an eye to business, for it is now universally recognised that the motor-car, more especially, has come to stay, and that the locality that caters best for the comfort of those who use these rapid-running vehicles will surely in the long run benefit most. There is hardly a straight road on the estate, nearly all being laid out in flowing curves and with easy gradients. As opportunity offers, the existing Willingdon Road will be widened, and the picturesque old village will soon have two broad new approaches, one close to the church and the other at the east end near Hydney House, converting Church Street, now practically a *cul de sac*, into a pleasant thoroughfare. While all the new roads will be planted on either side with trees, it is not intended to put them too close, nor to have them just at the junction of roads. It is quite possible to have too many trees, beautiful as they are; indeed, complaints are now made in Eastbourne that the trees are too thick in several of the roads.

Mr. Cooke, who has specially visited many of the best health-resorts in Germany, Italy, France, Belgium, Denmark, and in this country has made a special study of tree-planting in towns, and considers that the heedless crowding of roads with tall forest trees is a mistake, both from picturesque and hygienic points of view. He lays it down that roads with houses on either side should only be sparsely planted with trees. There is a happy medium in all things. Houses should be surrounded with glowing light, brilliant sunshine and general dryness, and this is not possible where tall trees exist close by, unduly obstructing the free passage of light and air. So the Ratton estate is to have trees enough, but not in such numbers

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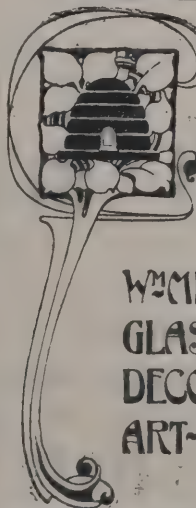
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as to detract from the brightness and dryness of the residences, and the "open spaces" are to be numerous and attractive. To begin with, there are the grounds attached to Mr. Freeman-Thomas's mansion-house, which bulk largely on the plan; then there is Hampden Park, some 82 acres in extent, including 50 acres of wood, and adjoining which there is to be a recreation-ground some 20 acres in area, in addition, bringing the open spaces of the Park practically right up to the Willingdon station. At intervals more or less all over the estate there will be playing fields for the use of such private schools as may be built on the estate, and last but not least, close under the Downs, there is the wide undulating space now occupied by the Willingdon Golf Links. At present there are only nine holes to the course, but space has been allotted for its extension at an early date into a complete eighteen-hole course. The present links are succeeding admirably, and form no mean attraction, not only to the Ratton estate, but to Eastbourne itself, for it is well known that the existing Eastbourne links are crowded, especially in the season, and that there is plenty of room for another full course. Willingdon links lately have been greatly improved. There is a scheme now on foot to erect a new club house on the latest model, quite close to the Victoria drive and of easy access from the new low-level drive. From the foregoing it will be seen that no efforts have been spared to make the Ratton estate not only a charming place in itself, but worthy of its close proximity to Eastbourne.

By a fortunate geological accident the estate stands in the main on chalk and high ground, and to show this last more clearly the levels above high-water mark are figured liberally all over the plan. These levels range from about 8 feet near Willingdon station to 221 above high-water mark, and even higher. The average height of the low-level drive is about 40 feet above high-water mark, and that of Hampden Park about 25 feet; in fact, the highest ground anywhere in the vicinity is in this favoured estate. Willingdon Hill, which towers over the village, is nearly 100 feet higher than Beachy Head itself, so that those who may desire to perch themselves on high ground will have plenty of opportunity of so doing. The views to be obtained are magnificent, especially from the Willingdon links and around them. From here one may see that glorious stretch of country ranging from Crowborough past Heathfield to Battle and Hastings, Herstmonceux and Pevensey in the nearer foreground, and, far-spreading to the right, the broad expanse of the English Channel, all forming a

magnificent panoramic view which the greatest British landscape painter, J. M. W. Turner, thought not unworthy his attention, for did he not sketch the Vale of Hailsham including in his sketch Willingdon Hill and all the surrounding country, even showing Eastbourne as it was then dominated by Martello towers on the beach, with the sea beyond. The estate has its own special drainage system, designed by late Mr. G. A. Wallis, C.E., shortly to be extended to meet requirements; and, if need be, at any time in the future the drainage can be taken into the Eastbourne main sewer, the water-mains from the Eastbourne Waterworks extending through the estate, and the electric-light main nearly to the village. The telephone is also available, so it will be seen that the estate is up-to-date in every respect.

A good deal of land has lately changed hands, and a large number of houses are already being erected. It is intended that practically all houses shall be detached, standing on large plots of land. No slate roofs will be permitted, and no stucco frontages. Slightly brick boundary walls are discouraged. Similar conditions to those obtaining on the adjoining estates are to be enforced, so as to insure the whole estate being of a homogeneous nature. Provision has, of course, been made for cottages, but in no case will rows of unsightly dwellings be allowed. Groups of cottages on the model-village system are intended, at once more healthy and pleasant to the eye than the massing of blocks of houses jammed into small areas. Land will be let on long leases, with option of taking the freehold at any time within ten years of the date of the lease. A peppercorn rent only is required for the first five years of the term; in short, the terms are the same liberal ones which apply to the adjoining estates. All plans and elevations are to be submitted to the agent to the estate, but they must meet with the approval of the agent to the estate, but they may, or purchasers may, of course, employ their own architects. Eastbourne largely owes its present high prosperity to the fact that, in the past, as in the present, to the restrictions imposed on the two large estates on which it stands, and to the fact that example will be followed and in some respects improved. Mr. F. G. Cooke, agent to the estate, was concerned for many years under Mr. G. A. Wallis, C.E., in the development of the Duke of Devonshire's estate in Eastbourne, so his training and local knowledge ought to stand him in good stead in the responsible position as agent to a great estate which requires good management to prove a model of its kind. The solicitors to the estate are Messrs. Hunt, Currey & Noyes, of Lewes.

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# The Architect.

## THE WEEK.

several years Mr. NICHOLAS CHEVALIER, who died on day, was a welcome visitor in English studios. As he travelled round the world and was acquainted not only many countries and cities, but with the men, councils and governments who lived in them, his conversation was as entertaining. He was an artist himself, but as the arts he chose were generally views in distant lands he was not to be looked upon as a rival. Then he was the representative of the Sydney authorities for the purchase of pictures, and that office increased the welcome which he received. Owing to his good judgment the Sydney authorities possess sufficient works to enable a visitor to appreciate the varieties of modern English painting. Although naturalised in England, Mr. CHEVALIER was a Frenchman by birth. After his training in Munich and Rome he emigrated to Australia. He was connected with the colonial illustrated paper, and with various other enterprises. Then he went to New Zealand, where he found an abundance of subjects for representation. He accompanied the late Duke of EDINBURGH in his tour round the world, and produced 130 water-colours as a record. He settled in London in 1870 at Porchester Terrace, Park, and during the next twenty years produced a large amount of work, both in oil and water-colour, exhibited regularly at the Royal Academy. Her late Majesty sent him to St. Petersburg to paint the marriage ceremony of the Duke of EDINBURGH.

The new National Physical Laboratory, for which the House has been utilised, can render aid not only to science but also to industrialism in various forms. But the State must make a larger allowance for its upkeep than for a year. Not one of the public laboratories on the Continent or in America is kept going for so small a sum. It is no doubt that manufacturers have been able at a low cost to supply the place of such establishments. Wrought-iron, without receiving a penny from the country, has been used by EDWIN HODGKINSON for years to conduct experiments into the strength of cast-iron beams and rivets, and the results have been accepted throughout the world. The North-Western Railway Company were enabled to establish conclusions for wrought-iron rivets were no less important. Nor is it to be supposed that any official establishment will accomplish more worthy work than that of WHITWORTH and several other Manchester firms. What the new laboratory can do, however, will be as an intermediary between official scientists and men who can claim to be specialists. There is, for example, a great many edicts of the Board of Trade which add enormously to the expense of engineering works in any way increasing their strength and efficiency. It might go so far as to say they have a reverse effect, for an excess of steel is employed in a bridge, it may add to the strains by the extra weight. It is to be hoped, however, that the officials of the new laboratory will be communicative about their discoveries. They should understand that their investigations are intended for the benefit and are not to be entombed in the proceedings of societies for the edification of a few students and foreign institutions. Unless care is taken, it will be necessary to seek in French and German periodicals for information which would be deemed vulgarised if it were placed in the first place to the English public.

JUDGMENT was given on Saturday by Mr. Justice KILL in HOWARTH v. GARDNER. The action was brought by Mr. HERBERT HOWARTH, architect, of Morecambe, against the proprietors of the Alhambra Palace in order to recover 379 $\frac{1}{2}$ l. balance due to him for fees in connection with the building. The defendants denied their liability, and counterclaimed damages for alleged negligence. From the evidence which was given when the case was tried at the Lancaster Assizes it appeared that in the year of 1899 the defendants acquired the West End

Market at Morecambe for the purpose of erecting a music-hall above a market. In the course of the erection various alterations were made, and the building, when completed, was a theatre instead of a music-hall. The total cost of the building was 25,779 $\frac{1}{2}$ l., including 1,579 $\frac{1}{2}$ l. for electric plant, 1,050 $\frac{1}{2}$ l. for furniture, &c., and 2,585 $\frac{1}{2}$ l. odd for plastic decorations. Mr. Justice BUCKNILL deferred judgment. On Saturday his Lordship said that having carefully considered the evidence given at the trial he had come to the conclusion that the plaintiff was entitled to receive from the defendants 1,312 $\frac{1}{2}$ l., less 1,160 $\frac{1}{2}$ l., which had been paid on account. He also was of opinion that the defendants had failed on their counterclaim, and therefore he gave judgment for the plaintiff on the claims for 152 $\frac{1}{2}$ l., and also on the counterclaim with costs.

THE rating of machinery is one of those subjects which, on account of their vagueness, cause much annoyance between local authorities and factory owners. The fact is, although there is hesitation in stating it, machinery is not rated by itself. In a legal sense it is considered to resemble sculptured chimneypieces, inlaid doors and other important fixtures which increase the value of a building. If there was a clear understanding in manufacturing towns on the question there would be much less heartburning and less waste of money on litigation than at present. A case which was heard in the King's Bench Division on Tuesday reveals the uncertainty which prevails. A boot manufactory in Northampton was rated at 825 $\frac{1}{2}$ l. gross and 550 $\frac{1}{2}$ l. as net annual value. The occupiers appealed on the ground that the valuation was made on principles contrary to law. There was machinery on the premises, part of which was to be dealt with as fixtures and part that was removable. The valuation was altered, but the Recorder adopted the following basis:—Land, 31 $\frac{1}{2}$ l.; fixture machinery, 39 $\frac{1}{2}$ l.; buildings, 202 $\frac{1}{2}$ l.; patent machinery, 127 $\frac{1}{2}$ l. The valuation thus became 592 $\frac{1}{2}$ l. gross and 399 $\frac{1}{2}$ l. rateable. The occupiers appealed. The Lord Chief Justice said he thought that it was now settled that, if there was machinery in a building, making that building fit for a particular trade or manufacture, and if that machinery was intended to remain there permanently, then it was a question of fact whether the presence of that machinery enhanced the rateable value of the building. In the case of the Tyne Boiler Works Company v. LONGBENTON it was held that machinery and plant were to be taken into account as advancing the value of the hereditaments. But, as the Lord Chief Justice stated, it was evident that machinery which would last a short time was in a very different position so far as making the premises fit for the particular trade was concerned, as compared with machinery of a large and heavy description which could not be replaced except with considerable derangement of the premises. The case was therefore sent back to the Recorder of Northampton in order to amend the valuation by stating what part of the machinery belonging to and repaired by the occupiers was to be taken into consideration as enhancing the value of the premises.

THE town of Creil stands on the Oise, and in the river is a little island containing the remains of a castle and of a church that was dedicated to St. Evremond. The name recalls a writer who was a friend of CHARLES II. and WILLIAM III., and who lived long in England. DICKENS gave the name to one of the characters in "The Tale of Two Cities." The church on the island at Creil dates, it is believed, from the twelfth century. Buildings of that time are rare in France, and at Creil a part of the edifice was altered to suit the Gothic style. In the early part of the nineteenth century the church was included among the national monuments, but more interesting subjects were afterwards found, and eventually it was sold and became a warehouse for pottery. More recently it was purchased by the municipality of Creil for 30,000 francs, and it is now proposed to remove the remains and to utilise the site for the Hotel de Ville. At the present time churches, whether old or new, are not in favour with the French authorities, but, as an example of art, some more consideration should be shown for this church, which has come to us from so remote a period.



## THE MUSES IN ART.

ONE of the pictures in the Royal Academy exhibition of 1784 was *The Tragic Muse*, by the President. It was a portrait of Mrs. SIDDONS. Either through satisfaction with his work, or as a compliment to the subject, REYNOLDS inscribed his name on the border of the robe. Mrs. SIDDONS imagined the writing to be embroidery, and, examining it more closely, she condescended to smile at the flattery, and the artist said, "I could not lose the honour which this opportunity offered me of transmitting my name to posterity on the hem of your garment." The

represented a popular actress as one of the muses. even Madame SARAH BERNHARDT appears as one of the Parnassian beings in any of her numerous portraits. in REYNOLDS'S time the muses had not entirely vanished from earth. They were part of the stock-in-trade, the inspirers, of every rhymster; they were produced by sculptors and painters, and they were made familiar to all who gazed in shop windows. The muses had become so identified with whatever was intellectual in Britain they had ceased to be recognised as the daughters of ZEUS and MNEMOSYNE. The great and orthodox MILTON was so often befriended by them, he was do-



MELPOMENE.



POLYHYMNIA (JULIA PIA).

chair in which the actress sat, and which was not especially made for the occasion, for it was used by other sitters, was afterwards given to BARRY, who with true Celtic enthusiasm spoke of it as "The very chair that is immortalised in Mrs. SIDDONS'S *Tragic Muse*, will have as much celebrity as the chair of PINDAR, which for so many ages was shown in the porch at Olympia!—this chair of Sir JOSHUA REYNOLDS may rest well satisfied with the reputation it has gained."

A portrait-painter in our time would hesitate before he

whether his muse would be considered as having any of paganism about her, and in one of his invocations he pleaded ignorance as an excuse to the righteous who objected to his meddling with mythology:—

Descend from heav'n, Urania, by that name  
If rightly thou art called, whose voice divine  
Following, above th' Olympian hill I soar,  
Above the flight of Pegasean wing,  
The meaning, not the name, I call.

It long seemed to be impossible for the humblest



the Belles-Lettres to be completed without the intervention of the muse. If a writer were in doubt she came to aid, as for example, in a battle scene—

But O, my muse! what numbers wilt thou find  
To sing the furious troops in battle joined?

If he wished to celebrate his ladylove, the highest she could give her was to say she was "the crowned muse's noblest theme," and what patron could resist the use of being informed that he served instead of a muse, as boldly done by the Rev. Mr. YOUNG, the sacred poet in "Night Thoughts"?—

With invocations some their hearts inflame;  
I need no muse, a Walpole is my theme.

If REYNOLDS were asked why he selected such a mode of representation, he would have been able to refer to a very ancient practice. Everybody likes to be exalted, if it were only on canvas. The Renaissance painters were accustomed to depict the people who gave them commissions as saints or as Greeks and Romans. In TITIAN'S *Supper at Emmaus*, out of the five figures four are portraits, viz. CHARLES V.; his son PHILIP, a cardinal, and the Emperor's confessor, all of whom affect to be peasants. Men and women were so often desirous to be idealised and immortalised in that way, it is now an entrancing pursuit by connoisseurs to identify the originals and to make paintings become aids to history or biography.



URANIA.



EUTERPE (LIVIA).

REYNOLDS was therefore in keeping with his time when he introduced a lady as a muse. In our realistic age it is not gained much by the attempts. His *Mrs. Norton* was lately exhibited in the Royal Academy, and in its pose everyone who looked on it must have acknowledged that in spite of its imperial bearing it was not as dignified as the portrait by GAINSBOROUGH, in which we see the actress in out-of-doors costume as unaffected as if she had dropped into a friend's house.

How far the practice was adopted by Greek or Roman artists it is not always easy to determine. There is no doubt that at one time in Greece it was thought to be a crime for an individual to allow himself to be represented as a divine being, or associated with an Olympian. One of the charges in the indictment against PERICLES arose out of the supposition that a figure resembling him was to be found in a group on the shield of ATHENE. On the other hand, there are many traditions which support the view that



as well-known people were used as models, more or less fidelity to their traits was permitted, and to the initiated, at least, the portraiture was evident. It is possible, moreover, that in an age when posing as a god or goddess was rigorously interdicted, it was allowable to appear in the guise of some of the other varieties of figures which constituted Grecian mythology. For women there could be no irreverence if they were painted or modelled as muses.

In every age there has been vagueness not only in the descriptions but in the enumerations of the muses. In the centenary celebration of VICTOR HUGO, in Paris, there were only eight women appearing as muses on the triumphal car. The number possibly was owing to the difficulty of symmetrically arranging nine figures, or from the belief that on such occasion the poet's bust served instead of a muse. There is, however, ancient authority for that number of muses forming the celestial octave of the music of the spheres. But even in antiquity there was uncertainty about them. Besides the ordinary nine, CICERO speaks of two other families of muses. HOMER is not precise in his reference to them, for before describing the Grecian troops he invoked the muses as follows:—

Tell me (for ye are heavenly, and beheld  
A scene, whereof the faint report alone  
Hath reached our ears, remote and ill-informed),  
Tell me, ye muses, under whom, beneath  
What chiefs of royal or of humbler note  
Stood forth the embattled Greeks.

The weight of such evidence as has survived is in favour of the legend recorded by HESIOD, who mentions nine muses, whose names were CALLIOPE, CLIO, MELPOMENE, THALIA, EUTERPE, TERPSICHORE, ERATO, POLYHYMNIA and URANIA. It has been suggested that the belief in the muses was derived from Macedon. At a later time the Greeks ignored the foreign origin, and they concluded that as APOLLO had a musical contest with MARSYAS their muses conquered an equal number of Macedonian singers. To the Greek mind the muses appeared as the tuneful choir around the altar of the gods. CALLIOPE signifies one with a beautiful voice, and is pre-eminently the muse of epic poetry; CLIO is the muse of history; MELPOMENE of tragedy and mournful songs; THALIA of comedy; EUTERPE of the flute and lyric poetry; TERPSICHORE of choric dancing; ERATO of love poetry; POLYHYMNIA of odes and hymns; URANIA, the heavenly one, of astronomy. They were all musical; URANIA especially was honoured by those who held that not the smallest orb "but in his motion like an angel sings."

The Romans would not be so hampered as the Greeks in dealing with the muses. It was good taste to admire them. It is known that in the porticus of OCTAVIA there was a series of statues of the nine muses. In the excavations on the site of what was thought to be the Villa Cassius figures were found which were judged to be also part of a similar assemblage. They would suggest that the Romans were pleased in having so much variety, and at the same time some correspondence between the figures. With them it may be assumed there was a representation of APOLLO as Musagetes or musical director, and he presented a different appearance from the god with the silver bow, of which one version, the Belvedere, is among the most admired of ancient statues.

The statue of MELPOMENE, which we illustrate, may have formed one of a series, or it may have been the representative of Tragedy in POMPEY'S theatre at Rome. The figure carries a mask resembling HERCULES, whose fate was essentially tragic. The muse wears the costume that was familiar on the stage in the theatres, and is one of those grave-gowned beings that would be suited to the severities of the antique drama. But it is much less demonstrative than REYNOLDS'S *Tragic Muse*, which is expressive of a more neurotic age.

If we suppose MELPOMENE to be an ideal representation, the figure of JULIA PIA is considered by VISCONTI and other archæologists to be a portrait statue in the guise of one of the muses. It bears a strong resemblance to the portraits of the wife of SEPTIMIUS SEVERUS which are found on coins. She wears the palla or mantle, which covers her head as a veil and which was in use by Roman matrons. Figures of POLYHYMNIA and of MNEMOSYNE have been met

with which are similarly clad, but although it is the empress was portrayed as a muse, there can be no decision as to which of the nine is the subject, for their symbols were not always employed. The dress is admirable, and the position is worthy of a woman not only the wife but the mother of an emperor, and like some noble Roman matrons, was not afraid to live rather than witness the misfortunes of her family.

The statue of URANIA owes the head and the face to FRANÇOIS GIRARDON, a sculptor who was in France in the reign of LOUIS XIV. He had several assistants, and it is not certain that the operations were carried out by him. The figure was traditionally known as URANIA, and on account GIRARDON introduced a diadem of stars to the head. It is held by some archæologists that the figure of the left arm in raising a part of the robe corresponds with a figure of Hope that is often seen on Roman statues, but instead of a scroll the right hand holds a flower.

The statue which is presumed to represent the wife of the Emperor AUGUSTUS, is an example of a mode of treatment which is not unknown to the art of ancient sculpture. LIVIA was the mother of TIBERIUS prior to her marriage with AUGUSTUS, and she was obliged to conceal the death of her husband until she was arranged for the succession of her son. In this case, the face and head may resemble the crafty LIVIA, though the statue belongs to some unknown model. It would appear that in Rome there were certain figures which were much admired, and which generally bore the attributes of other of the muses. On one of those draped bodies which was placed which would be a portrait of some lady, a statue was expeditiously created. In that way the peculiar figures resembled the tombstones awaiting inscriptions which we see with monumental masons, and are analogous to children's books which were popular at the beginning of the last century, in which there were figures with an empty hole instead of a head, and the artist was to fill the space with a portrait. Bodies of this kind, we may assume, were common enough in the workshop of the Roman master-sculptors. In those days it was possible to utilise machinery in their production, but it was not difficult to obtain Greek slaves who were compelled to make repetitions of the finest drapery, and then the hands might occasionally carve the head which, in the case of the LIVIA, often suggests commonplace treatment.

The muses might have passed away with much more belonging to antiquity if they had not been utilised in the early Christian Church. The Psalms referred to the music of the spheres, and the sun and stars were said to utter the praises of their Creator with joy. It consequently was not that the Pagans had a glimmering of the truth, but that the muses signified the planets. The World was personified as Mercury, CALLIOPE; Venus, TERPSICHORE; the Moon, MELPOMENE; Mars, ERATO; Jupiter, EUTERPE; Saturn, POLYHYMNIA; and fixed stars became URANIA. There was no place for THALIA. By association the theory of the music of the spheres became established. It was not until during the Middle Ages, and the revival of learning confirmed the theory, because it was found that many of the writers were upholders of it. In the Elizabethan age there were poets to whom it was like a necessary truth. SHAKESPEARE was among them, and the doctrine was never so beautifully expressed than in the immortal passage "Merchant of Venice," and which, according to MR. O'BRIEN, the late LORD RUSSELL of Killowen prize all others in the play:—

Look how the floor of heaven  
Is thick inlaid with patines of bright gold:  
There's not the smallest orb which thou beholdest  
But in his motion like an angel sings,  
Still quiring to the young-eyed cherubins;  
Such harmony is in immortal souls;  
But whilst this muddy vesture of decay  
Doth grossly close it in, we cannot hear it.

That may be regarded as the fullest development of the idea of which the muses were early, if not the best, representatives. Art has produced nothing which can be compared with the words of SHAKESPEARE. Illuminators and painters have endeavoured to suggest the harmony of the stars, but in such a case words are superior.



trait figures like those by Roman sculptors, or such things as the *Mrs. Siddons* of REYNOLDS, only materialise in an insufficient form. Worst of all is the captured Bath of Apollo at Versailles, where the divine seems appear as the attendants of LOUIS XIV. Perhaps it is in account of the risk of lowering what was noble the gods are in modern times avoided as subjects. That is, however, to be regretted, for a belief that is so ancient, and at the same time so exalted in its relations, should not be entirely ignored by men. Nor should it be supplemented by additions to correspond with modern notions and the diffusion of knowledge. "Astronomy and poetry, terrible muses," as TENNYSON says, do not personify "with the great sphere-music of stars and constellations."

### AMERICAN PRACTICE.

THE title of the United States is in itself an incentive to co-operation. FRANKLIN'S hint to his countrymen when the Revolution was impending, that if they did hang together they would hang separately is still remembered. In no country are companies, associations or societies more easily organised than in America. In accordance with the principle, foreigners are allowed to take part with the citizens by contributing towards the cost of enterprises of all kinds. The most characteristic of American buildings is also typical of union, for it is a town or one roof, in which the various dwellings are accessible by common lifts.

But how does the principle affect the practice of architecture? There are partnerships between architects in America as in other countries, but in the States, as in Europe, it is a general rule to avoid them. Owing to the large distances between towns in America, it may not be possible for an individual in Boston or New York to visit buildings in remote States. But, in spite of the difficulties, it appears to be the case that many successful architects have contrived to dispense with partners. Union and co-operation occasionally asserts itself among architects regardless of all obstacles, and it exercised no small influence at the last Convention of the American Institute of Architects, of which the official report has reached us.

What, for instance, is the Tarsney Act, about which so much has been said during several years, but a measure allowing architects in private practice to co-operate in officialdom in the designing of the public buildings of the United States? For a time the monopolists were able to keep outsiders at bay. But during nine years it has been possible for the Secretary of the Treasury to obtain designs for a Government building by competition among not more than five architects, and to pay for architects' services out of public funds. In its operation the Act is declared to be eminently successful, and it is an auxiliary to unity. There is one great impediment which prevents the Act from being perfect, and that is the difficulty of compelling architects to co-operate with the architects to the extent desired by the latter. There is a second and inferior difficulty, although it may cause more inconvenience, viz. the conduct of the superintendents of construction, who correspond with clerks of works in this country.

It is well known that there is no more efficacious method of creating republicans than by sharing public money among men. Architects, builders and superintendents engaged on public works in that way become equals. But American architects wish to retain privileges which can be traced back to the days of monarchs, when freedom was supposed to be unknown. That superiority is not shared by the superintendents and builders to be in keeping with a free country. Dr. JOHNSON said that while in most people were glad to have levelling down in public affairs, few cared to have levelling up. The Tarsney Act does not create equality, and has the effect of increasing the antagonism between professional and non-professional classes engaged in building.

The architect who succeeds in obtaining a commission for Government building is naturally anxious to prove himself worthy of this responsibility. We are told that when he prepares designs "in his imagination there exists a beautiful well-finished structure; he writes the specification

describing the construction, which to him represents perfection in solidity, form, texture and finish, and describes in unmistakable terms his ideal." The builder, unhappily, is indifferent to the imaginative, and at once prepares to translate it into prose. He reads the specification and "checks it off line for line to discover how he can build to come just under the exact wording of the specification and yet omit the necessary expense incident to carrying it out in the spirit in which it was conceived, and submits a proposal accordingly," for in America "bidders for Government work usually base their figures upon the execution of such work as will pass inspection and be accepted, and not upon the character of work which is ideal." The ideal is generally presumed to be something which is not palpable or manifest, and, considering the difficulty of attainment, it seems to us rather hard upon American builders that they should be expected to give in definite prices for anything which is indefinite in its nature. Who can tell how many operations may have to be gone through before the ideal can be presented to view on paper? But it is not fair to expect a contractor to execute and destroy work over and over again because it has not reached the perfection of an architect's vision. It is possible the American builder will endeavour to interpret drawings and specifications in a very free, economical and lax way, and steps should be taken to compel him to carry out his agreement. But that is different to punishing him because he may not have succeeded in realising ideals which, if seen in dreams, the architect may have been unable to express.

According to one of the speakers, the only remedy "is to take the work away from the unreliable builder and award it to a better one at a higher price, taking the difference in price from the bondsmen of the first builder." That would be an effectual means to put a stop to low-priced tenders and to increase an architect's fees. The American Government, in theory at least, possess already efficient measures for dealing with contractors who are acting unfairly, but they are so expensive and destructive they are rarely put in force. By merely giving an eight-day notice the Government can obtain possession of the works, with all plant and materials, and complete the contract at the cost of the contractor and his sureties. As a less severe remedy, it was proposed at the Convention that the architect should have the power to proceed with any work that was not being executed to his satisfaction, and to meet such contingencies about 10 per cent. on all payments should be retained.

It will be asked, If bad work is possible what is the use of the superintendent of construction? He, in fact, is another example of what follows in America when union is not respected. He is appointed by the Government, and he may already have filled humble public offices. He looks upon himself as an independent authority, and after the manner of officials regards the civilian architect as an inferior. He feels there is no claim on him to be loyal to the architect, and he is allowed to send his reports to the authorities, by whom they are treated as confidential. The superintendent is not likely to have so exalted an ideal as the architect, and would no doubt pass work which the architect would have preferred to reject. The Secretary of the Treasury, who is responsible in the eyes of the country for the acts of all subordinates, cannot be satisfied when he knows that in every public building there is a possibility of an embroglio owing to the rival interests of the architect, the superintendent and the builder. To escape from the dilemma it was suggested to purchase the plans and specifications from the architect and to leave the carrying out of the works to Government officials. But the architects have not approved of the arrangement, and hence we must conclude that, in spite of all that is said to the contrary, architectural commissions under the Tarsney Act have their peculiar consolations. It is also known that the architects who have already obtained Government commissions are eager to be again concerned in public buildings, which is further evidence that although architectural ideals may not always be realised and superintendents and builders give trouble, yet profitable business is accomplished.

As the Convention was held at Buffalo, which was the scene of a large exhibition or Pan-American fair, the subject of co-operation was again treated, but under a



## NOTES AND COMMENTS.

EVERY visitor to Paris has admired RUDE's *Departure of the Volunteers in 1792*, which adorns one of the piers of the triumphal arch at the end of the Champs-Élysées. The superiority of the group over those by CORTOT and ETEX on the other piers is remarkable. It is now stated by M. LABADIE-LAGRAVE that originally RUDE was commissioned to produce the four groups, but, unfortunately for French art, was prevented performing the work mainly by apprehensions of THIERS. One of the contemplated groups was the Retreat from Moscow, but it was portrayed with so much realism, the Minister was afraid of the effect it would produce on the population of Paris. ETEX in consequence was able to obtain two groups and CORTOT one. The summit of the arch was, according to RUDE's design, to be crowned by figures representing the apotheosis of NAPOLEON, eagles being introduced with outspread wings. LOUIS PHILIPPE did not approve of the arrangement. Then RUDE offered to substitute a figure of France seated on a globe and with figures of four great Powers of Europe, subjected by NAPOLEON, shown as kneeling. THIERS believed the sculpture was likely to offend other nations, and consequently the scheme was not executed. The arch still remains incomplete.

THE alterations which have taken place in the Piccadilly Galleries will be advantageous to the exhibitors of oil-paintings rather than of water-colours. For drawings the old room in Pall Mall has not been surpassed. It is to be regretted, however, that the collection which is now to be seen in the Institute galleries is not more important if taken as a whole. Visitors have become so accustomed to average shows they are desirous of seeing one which can be taken as proof of progress in the art. As we are now publishing views of the building, we may be allowed to consider the *Ripon Cathedral* of Mr. HARRY HINE as one of the most interesting of the drawings. Ripon was so often made a battlefield in contests against northern rovers, the artist was justified in representing it on a gloomy day. Mr. FULLEYLOVE shows us the Ionic temple of Nike-Apteros in Athens. But a little more local colour in the surroundings would be an advantage. Mr. D. T. CAMERON has a view of Venice which will not satisfy either admirers of the narrow watery ways or of the palaces. Signor FORMILI evinces his versatility in the head of a girl, but he is more skilled in decorative work with many sinuous figures. *Rydal Water* is another example of Mr. BERNARD EVANS's strong painting, in which he expresses what he feels in a downright fashion. Mr. BYAM SHAW's *Before Dead Henry's Corse* cannot be accepted as historically correct. There is no record that HENRY V. was buried in the way that is represented, nor was HENRY VI. But the scene, apart from the title, would have served for many English kings. Mr. ARTHUR SEVERN usually does not particularise his subjects, and it was courageous of him to attempt *Fog Clearing, Billingsgate*. It is enough to suggest that Thames scenes are not exhausted. It would be interesting to have Mr. WHISTLER's opinion on the drawing. Mr. DUDLEY HARDY, in his *Fishwives, Boulogne*, shows a contrast between youth and age which all can comprehend. Mr. AUMONIER, in *Flowery May*, has introduced white flowers in a meadow with much effect, and his *Sussex Garden* is rich in vegetation, among which a little girl is introduced, with a man at a cottage door.

THE late ERNEST RENAN, being a Breton, was not without a sense of humour. He never wrote a book which could be regarded as humorous throughout, but there are a great many passages which, although under the guise of seriousness, can hardly be taken except as amusing. When he was in the ecclesiastical seminary preparing for the priesthood he was well grounded in the classics. He was probably more attracted by Latin writers than by Greek. He was acquainted also with some of the works produced by inferior Greek authors in Rome, such as PHILOSTRATUS, who was an art critic, and who wrote a book on pictures which existed at Naples. M. RENAN visited Athens, and he took care to have the world informed that he ventured

to say a prayer upon the Acropolis. He had always a feminine weakness for prayer, although latterly he belonged to no religion, and it was one of his strange wishes that he might be converted into a *paroissien* for the use of a lady who would wear fine kid gloves. So morbid an inclination was no doubt inspired by RENAN's peculiar humour. As he was one of the professors of the Collège de France, the Sorbonne authorities have desired to have a memorial of him on canvas. Instead of acquiring a portrait which gave rise to so much laughter when shown in the Salon, they have commissioned M. ANDRÉ BROU to represent him as praying on the Acropolis. So this is an incident corresponds with much that is known of RENAN's life, but it would have been preferable if some other event had been selected.

GALLIMARD, the French painter, was during his life subjected to very sharp criticism by many of his British artists. His works were supposed to be meretricious in character, and it cannot be said that posterity has reversed the verdict passed on them by his contemporaries. His name will long be known, if not as a painter, yet as a benefactor to young French painters. His property has descended to his daughter, and that lady having died, it has passed to the Association of Artists. Besides a country house, there will be nearly 1,000*l.* a year available. Mdlle. GALLIMARD proposed that the villa should be used as a residence by young ladies who appear to have artistic abilities, but who are too poor to wait for the development of their talents. The money will be applied to make allowance to them while they are learning at Montigny Corniers. If the State cannot approve of the arrangement, the funds can be employed for any philanthropic purpose that is desired. The legacy will be distributed through the agency of Baron TAYLOR's foundation, but the Société Française des Artistes have also had a bequest from another lady, Madame RUDEL DU MIRAL — of which the interest is applied to the benefit of painters who are poor, aged, or infirm.

## ILLUSTRATIONS.

SOUTH TRANSEPT, SELBY ABBEY.

WE published last week the appeal of the Vicar of Selby for aid towards the works which have become necessary to insure the safety of the tower of the Abbey church. About 1,600*l.* will be required, and this sum is not obtainable in the town. The old church was one of those founded by WILLIAM THE CONQUEROR, until the time of HENRY VIII. the Benedictine abbey was one of the most important in England. Selby was the birthplace of HENRY I., or BEAUCLERC. He was the son of WILLIAM who could claim to be an Englishman, in consequence was derided by Norman princes and nobles. The Norman church was rebuilt from time to time, nearly all the periods of Gothic are represented in the building. At the end of the seventeenth century the tower fell down, and it is evident the foundations must be weak, for it will be unavoidable to diminish the height of the present tower in order to remove the possibility of danger. Selby has been described as the only complete monastic church in Yorkshire, and, as the Vicar says, "among the hundreds of visitors who every year pass through the abbey there must be many who will be willing to contribute to the preservation of this beautiful building." The works of preservation will be carried out under the direction of Mr. J. OLDRID SCOTT, F.S.A.

GOSPEL OAK CHAPEL.

LISCARD CHURCH, CHESHIRE.

BRIARDENE, NEW BRIGHTON: ENTRANCE FRONT-GARDEN FRONT.

BROOKLANDS, NEAR MANCHESTER.

FOUR OAKS, WARWICKSHIRE.



# THE GLASGOW INTERNATIONAL EXHIBITION BUILDINGS, 1901.\*

(Concluded from last week.)

## Machinery Hall.

S building, as the name implies, was for the purpose of displaying all kinds of machinery, motive power, electricity, power-saving appliances in motion. It was situated on the same ground, and was separated from Kelvingrove Park by Dumbarton Road, over which a bridge was thrown to connect this portion of the exhibition with the other buildings and grounds. Its dimensions were 500 feet long by 320 feet wide, and it was roofed by five longitudinal spans, the centre one being 100 feet, with a span of 92 feet 2 inches. The trusses of the roof were of wood, having spans of 52 feet 8 inches. The roof had principals placed 13 feet 10 inches apart, and supported on timber standards placed at the face walls of the building and by the main principal of the steel centre span, intermediate supports being formed by open braced steel girders having spans of 41 feet 6 inches, these in their turn supported on tapered lattice columns. These columns, in addition to carrying the roof, were designed to carry the motive power to the machinery.

The roofs were covered with corrugated iron and glass, the glass being about in the same proportion to the floor in the Industrial Hall. On the lower parts of the steel forming the centre span were fixed cantilevers of steel, and a promenade gallery 15 feet broad and 12 feet above floor level. On the outer ends of these cantilevers girders were carried which served the double purpose of supporting the floor of the gallery and forming the parapet or balustrade. These girders were 4 feet 3 inches deep, and had a span of 41 feet 6 inches. The floor of the gallery was formed of joists and decking resting on the bottom flange of the girders. This gallery extended along both sides of the main floor, and across the ends, so that visitors were enabled to walk round the building without requiring to go up or down the stairs leading to the main floor level. At the end of the hall three flights of stairs descended to the lower level from the level of bridge crossing Dumbarton Road. These were formed of timber and having an easy rise, the treads being 14 inches and the risers 5 inches. The treads were finished with 7-inch by 2-inch timbers. The floor of the Machinery Hall must necessarily be of great strength in order to withstand the heavy weights of most exhibits.

The floor should rest on the solid earth after this has been levelled and consolidated. The floor used here was 9-inch by 12-inch battens laid close together over the entire area, and supported by cross runners 11 inches by 3 inches laid flat at 4-feet intervals, forming a strong and solid floor.

Channels are required under the floor for conducting water pipes to the various exhibits. These should be of ample size, measuring about 3 feet 6 inches wide and 5 feet 6 inches deep, so as to allow space for a man to crawl along and make the various connections or repairs to the pipes. The flooring should be made movable at convenient intervals to give access to the ducts. For temporary exhibitions, such as an exhibition, the side walls of the ducts can be made of wood sheeting, with wallings and struts.

In arranging the exhibits, which, of course, is the work of the engineer in charge of this section, it is better to confine all exhibits to one section of the building, and the lengths of ducts being thereby reduced to a minimum.

The side walls of the Machinery Hall were formed similar to those of the Industrial Hall, that is, with wood-framing and finished with fibre plaster.

Ventilation of a machinery hall is of great importance. Summer sun streaming through the glass roofs, combined with the heat arising from the network of hot pipes in the building, renders the interior at times almost unbearable. Nothing short of mechanical ventilation is of any use. A system of exhaust fans sufficient to change the air in the building every fifteen or twenty minutes should be provided to make the building at all comfortable in hot weather.

The pipes running over the ducts containing the hot pipes should be insulated with some non-conducting material, as the pipes become so hot as to make them uncomfortable to touch.

Along the Machinery Hall was the boiler-house, a building 104 feet long by 70 feet wide. Here were placed the boilers for supplying power to the various machinery in the building. The floor of this building was 10 feet above floor-level of the Machinery Hall, but was surrounded

with a gallery or promenade 10 feet wide, running on a level with the Machinery Hall floor, so that visitors were enabled to obtain a better view of the plant than they would standing on the floor of the boiler-house itself, another advantage of the gallery being that it left the entire floor of the boiler-house free for stoking purposes. Both ends of the gallery communicated with the main hall, visitors entering at the one end and going out at the other, thereby circulating the traffic and avoiding congestion.

The boiler-house should be a lofty building and well ventilated at the roof, with doors opening to the outside at floor-level, thereby causing a sufficient current of air to carry off the heat generated by so many large boilers. The height of the present building to the wallhead was 30 feet.

The best material for the roof of the boiler-house is corrugated iron, and this material might also be used with advantage for the walls, providing the building is not conspicuous and an ornamental front unnecessary.

The floor, of course, should be of granolithic. As a preventive against fire, the mutual wall between the boiler-house and main hall should be of brick, carried up 3 feet or 4 feet above the wall head. Where it is at all possible it is of great advantage to have a railway siding alongside the boiler-house and Machinery Hall, both, as a convenient means of getting a supply of coal and also for facilitating the delivery and removal of all heavy machinery and exhibits.

Near to the boiler-house was placed the dynamo-house containing the various engines and dynamos for the supply of motive power and current for the electric lighting of the entire buildings and grounds.

At one or two convenient places throughout the Machinery Hall lavatory accommodation for the public was provided, but in addition to this it is essential to provide a sufficient number of staff lavatories for the use of workmen. In the Machinery Hall several hundreds of workmen were daily employed during the run of the exhibition, and in the majority of cases their work was of such a nature that the frequent use of the wash-basin is necessary in order that the workmen might present a tidy and smart appearance; and if the lavatories are provided at places easily accessible to the workmen, it will tend to induce the men to make use of them more frequently than if they were placed in out-of-the-way and inconvenient positions.

In connection with the Machinery Hall there should be provided an engineer's office, including private room, drawing office and room for clerks or public office, with private lavatory accommodation.

## Grand Avenue.

The Grand Avenue connected the Industrial Hall with the Machinery Hall, and also was connected with the Art Galleries by a short cross corridor, so that the whole of the main buildings might be termed as being under one roof.

The Grand Avenue was 1,000 feet long and 75 feet broad, and had a centre span of 55 feet broad by 30 feet high, with an additional 10 feet projecting from each side for placing exhibits. The roof was of wood and formed of laminated arch principals placed 14 feet 6 inches apart, connected by 8-inch by 2-inch purlins, the arch consisting of three thicknesses of 7-inch by 1-inch pieces, with 6-inch by 1-inch wood spears or radiating latticework, connecting arch to rafters, which were formed of two 7-inch by 1½-inch with 1 inch space between. The upright sides of principals were made of two 7-inch by 2-inch battens, with a 3-inch space to allow the arch to run down between and be bolted to sides of same. At the centre was a large louvred ventilator running the whole length of the building. The lighting was principally from the roof and the covering was corrugated iron and glass. The laminated arched roof is one that is particularly useful for exhibition purposes because of the effect gained at little cost. This form of principal requires to be very carefully constructed. The material used is so light in scantling that the downward thrust of the weight on the roof must be kept rigidly in a vertical plane, for if the arch buckles, which it has a tendency to do if not carefully made and put in position, it becomes an extremely weak truss, and will gradually go from bad to worse.

The principals should be constructed on perfectly level ground, or preferably on a platform; the joints of the laminations should be cut true and joined tightly. Special care should be taken when erecting to keep the trusses flat by poles bound from side to side. The extreme west end of the Grand Avenue connected with the bridge which spanned Dumbarton Road, and the levels were so arranged that the west end of the avenue and the gallery round Machinery Hall were practically on the same level, and by giving a slight camber to the bridge connecting the two, sufficient headroom was got for the roadway below the bridge. By this arrangement all steps were avoided, and visitors could pass along the Industrial Hall through the Grand Avenue, over the bridge and round the gallery of Machinery Hall without requiring to make use of a single step.



The Grand Avenue had one entrance from and an exit to Dumbarton Road near its centre, in addition to large exits at either end leading into the park.

#### *Concert Hall.*

The Concert Hall was a circular building, this form being adopted chiefly on account of the accommodation required and the shape of the site available.

The building was 140 feet in diameter, exclusive of the outside surrounding corridor, with a gallery all round except at the portion occupied by the chorus, orchestra and organ. In the original design for this building an organ recess was formed behind the chorus and four additional rows of seats were provided in the gallery with two additional staircases, giving seating accommodation for about 5,000 persons.

The plan, however, was curtailed and modified, the organ recess being dispensed with and the width of gallery reduced, so that the building as executed could seat about 4,000 persons.

Surrounding the building ran a corridor 10 feet wide, formed as a lean-to against the main building, the various doors opening into the corridor allowing ample provision for exit.

The structural work of the Concert Hall was of steel. The steel principals were placed at 18 feet 6 inches centres, at the outer circumference of the circle, and were supported on two circular rows of steel columns, the inner and outer rows being 12 feet 6 inches apart. These columns rested on concrete foundations to which they were bolted, and were connected at the top and also at the gallery floor level with braced girders. They were also braced at these levels longitudinally, this bracing extending round the entire building, binding it together.

The roof was saucer-shaped, and rose to the height of 62 feet above the floor level at the centre. A cupola surrounded the crown, which served as a ventilator. Wood battens were bolted to the steelwork of walls, roof and ceiling, and to these the fibre plaster was nailed.

The hall was lighted from the centre of the roof, and also by side windows. The latter were provided with opaque blinds which were drawn over the windows when biograph or such like entertainments were being given. The roof externally was covered with McIlwraith's canvas decking, a material having a smooth surface somewhat like linoleum, forming a very suitable surface for paint, and keeping longer clean in a smoke-laden atmosphere than canvases or felts of a rougher texture, which have a tendency to gather dirt more quickly than the smoother material. The jointing of the canvas on a round roof must, of course, be vertical, tapering towards the apex. The cover should be ample, not less than 3 inches, and well bedded with red lead in the laps. It should be nailed with copper tacks placed about  $1\frac{1}{2}$  inch apart; ordinary tacks, even for a temporary purpose, should be avoided, as after an exposure to the weather for a month or two they begin to rust and break away, causing leaks and discolouring the roof.

In laying the canvas, care should be taken that the joints of the various strips are properly radiated from the centre to the circumference, otherwise a twisted effect will be given to the roof, and when a cheap material like this is being used, the workmen are apt to overlook this, their main object being simply to get the roof covered. When properly laid, these lines assist the perspective by accentuating the curved form of the roof.

The Concert Hall was the only building in which a system of heating was introduced. This, however, was found an advantage, making the hall more comfortable in the cold weather in the beginning of May and in the latter end of October and November. As in most round buildings, there was a tendency to echo in the Concert Hall when the building was poorly filled. A system of festooning hung from the ceiling was adopted, which to a great extent obviated the defect. For an orchestra or organ recital with a full house, however, its acoustical properties left nothing to be desired. I might mention that the interval of the echo increased as the centre of the building was approached by the speaker, the longest interval being when the speaker was immediately under the apex of the roof—a position, of course, which was never occupied in practice.

The restaurant adjoining the Concert Hall was chiefly constructed of wood, with fibre plaster as a covering on the outside walls. There is nothing in particular to describe about its construction or design. The chief point in restaurants of this kind is to see that ample accommodation is provided as regards the kitchen, its offices and stores. Large staffs are employed in order to cope with the inrush of visitors on particular days, and unless the accommodation is sufficient the staff as a consequence are much handicapped and visitors disappointed. Although these buildings are temporary, the business which is done in them is very erratic, doing practically nothing at times, while on other occasions they are taxed to their utmost capacity, and the kitchen accommodation provided

should be equal to the greatest demand. The kitchen service-rooms should be situated as centrally as possible, the former should have a concrete floor, and walls of brick, and up, say, about 3 feet above the roof, as a protection against fire.

In addition to the usual kitchen offices and stores, beer and wine cellars were provided in the basement, separate goods entrance should be provided in some place not too prominent, with direct access to the stores and outside.

In addition to the large dining-room and buffets, desirable to provide two or three smaller rooms for the private or small dinner parties.

Ladies' and gentlemen's lavatories should be provided in these restaurants, with separate male and female lavatories, and accommodation for the kitchen staff.

Electricity is the only illuminant which should be used in the inside lighting of exhibition buildings. This may be done either with arc lamps or incandescent lights. As to the decorative superiority of incandescent lighting over the arc lamp, there can be no question. The architectural effect of the curved principals of the roofs, the lines of pilasters, cornices, can be picked out, thereby assisting the architect in the effect of the interior and giving a warmth of colour to the whole. All these advantages are wanting in the cold and uninteresting effect produced by the arc lamp. Of course, to produce the same illuminating power the incandescent requires much more current than the arc lamp, and is consequently more costly; but in most of the large exhibitions a considerable amount of the lighting plant is supplied gratis by the exhibiting firms. In the case of the Glasgow exhibition, steam boilers, engines and dynamos were supplied practically free of cost to the executive, and had this power been sufficiently augmented by the exhibition authorities, the whole interior of the Industrial Hall at least might have been formed from the cold and unsympathetic effect which is sent with the arc-lamp system to the brilliant jewel-like effect which was so much admired when the exterior of the building was illuminated.

The electric lighting of the buildings was divided into distinct sections, namely, Industrial Hall, Grand Avenue, Machinery Hall, and each section was still further divided into several circuits, so that as little inconvenience as possible might be caused in the event of a breakdown.

The Industrial Hall was lighted by means of 345 10-ampere arc lamps suspended from the roofs. The Machinery Hall had 250 10-ampere arc lamps, and the Grand Avenue had 10-ampere arc lamps. It is necessary to distribute incandescent lamps over the buildings to act as pilot lamps when the arc lamps are turned off at night.

The Concert Hall was lighted by 330 16 c.p. and 32 c.p. incandescent lamps. For this building, however, was not enough. Even although the ceiling was painted white and acted as a strong reflector, an extra 100 16 c.p. would have given a more satisfactory result.

When large buildings are lighted by the arc lamps as a rule, are placed too low, and have a blinding effect, obscure the view. When kept well up they give a better more diffused light without dazzling the eyes, while at the same time they give an apparent increase to the height of the interior.

Wherever it is possible it is desirable to have dual systems of electric lighting, and if a supply of current can be obtained from a corporation or some other independent source, it should be connected to the exhibition system, and used as a stand-by in the event of any breakdown taking place with the exhibition plant.

Throughout the grounds several systems of lighting were adopted, chiefly electricity, compressed gas and compressed oil. Very satisfactory results were obtained from the compressed incandescent gas both as regards cost and illuminating power. The gas used was the ordinary Corporation gas, which has a pressure of  $1\frac{1}{2}$ -inch water gauge and was compressed by two large automatic gas compressors (worked by the city service) to about 8-inch water gauge.

In brilliancy it rivals the electric arc lamp, and in the comparative costs are about three to one in favour of the incandescent gas; compared with the ordinary gas light for light, the cost of the compressed incandescent is about one-fourth of the former. The amount of illuminating power used in the grounds of this system was about 240,000 candle-power.

It is a form of lighting admirably adapted not only for exhibition grounds, but for street lighting in towns, stations and wherever large areas are wanted to be brightly lit. It was first used on a large scale, I believe, in the grounds of the Paris exhibition of 1900.

Throughout the grounds eight conveniences, consisting of lavatories and water-closet accommodation for ladies and gentlemen, were provided at convenient distances from the main buildings, but should not be too prominently situated, but the notice directing to them should be placed in positions where they could be readily seen by the public.



will now deal for a moment with the cost of the buildings. While it is an easy matter for an architect to arrive at the approximate cost of a permanent structure built with the usual building materials, it is a more difficult matter when dealing with temporary buildings on a large scale with light scantlings, where the cheapest materials and workmanship are used. The following figures therefore may be of some value:—  
The cost of the Industrial Hall was about 60,000*l.*, or at the rate of 1*1*/<sub>2</sub>*d.* per cubic foot of contents (cubing the building from ground line to halfway up the roofs), or equal to 2*1*/<sub>2</sub>*s.* per square yard of covered area.  
The Machinery Hall cost about 22,000*l.*, equal to 3*1*/<sub>2</sub>*d.* per cubic foot of contents, or about 16*s.* per square yard of covered

area. The Grand Avenue, where no steel was used in the construction, cost 9,300*l.*, equal to 3*1*/<sub>2</sub>*d.* per cubic foot of contents, or 2*s.* per square yard of covered area. This building, however, was long and narrow, and all its walls were more heavily finished than those of the Machinery Hall.  
The Concert Hall, where the framework was entirely of iron, cost 12,600*l.*, equal to 2*1*/<sub>2</sub>*d.* per cubic foot.

The various restaurants and kiosks throughout the grounds, however, were built entirely of wood and plaster, ranged in price from 100*l.* to 5,000*l.*, the price per cubic foot of the former being 2*d.* and of the plainer types 1*1*/<sub>2</sub>*d.* per cubic foot. In conclusion, I may say that I have treated this subject from its utilitarian and technical side, and in doing so I have endeavoured to bring before you such details and facts as are peculiarly adapted to the class of buildings under description. While the materials and workmanship of a temporary building are necessarily of a cheaper and rougher quality than those used in permanent structures, the mere fact that this is so greatly increases the responsibility of the architect.

In the first place, with the permanent structure he is more concerned with the usual methods of construction, and where buildings are large and important, as a rule he has ample resources at his command, and the margin of safety is generally ample and any strain which is ever likely to come on them. In temporary structures, however, and particularly with regard to buildings, matters are somewhat different, for while the architect is required to produce buildings of large floor area with attractive elevations, the money placed at his disposal is, as a rule, none too plentiful for the requirements. In order to produce the best result he is compelled to keep the margin of safety of the structure to its lowest limit. The building must be stable enough to resist the heaviest loads on its floor and galleries sufficient to withstand the surging and jostling of immense crowds; and it is here the architect is faced with his chief difficulty, namely, how to arrive at a medium as regards his construction, so that he may not be unnecessarily on materials and superfluous strength, proportionately curtailing the amount of money available for the decorative part of the scheme. If, therefore, the architect has placed before you this evening, however inadequately it may have been dealt with, should be of value or service to any of you who may be entrusted with similar work, that which I have endeavoured to describe, I shall feel amply repaid with the effort I have made.

H. D. SEARLES-WOOD proposed a vote of thanks for the paper, which was formally seconded by Mr. W. J. GARDNER.

H. P. G. MAULE, who supported the motion, said that there was no doubt that Mr. Miller had given to the public the most comprehensive exhibition scheme that was ever carried out north of the Tweed. The success of the exhibition proved that it was an advantage for such ventures to be the work of one mind.

The PRESIDENT, in concluding the discussion, said that the exhibition could be a very valuable one to the student. The erection of cheap temporary buildings was always a problem to the architect, but Mr. Miller had made their task an easier one. The work at Glasgow displayed considerable artistic feeling.

## THE SOCIETY OF ANTIQUARIES OF SCOTLAND.

The usual monthly meeting of this Society was held in their library at the Museum, Queen Street, Edinburgh, on the 10th inst., Mr. David Murray, LL.D., vice-president, in the chair. Among the papers read was one by Mr. F. R. COLES, Keeper of the Museum, in which he gave a report of his season's work in continuation of a survey of the stone circles of the north-east of Scotland, with measured plans and sections, obtained under the Gunning Fellowship. The total number of sites reported on was seventy-four, of which ten were marked as sites of circles at the time of the Ordnance Survey, four which then remained are now sites only, six are now sites of a single monolith known to be the remnant of a circle, three have still the two pillars flanking a recumbent stone, and six are circles

without a recumbent stone. Altogether forty-eight sites are thus recognisable as stone circles. As a general epitome of the results of the surveys of the past three years it may be stated that upwards of seventy measurable circles and remains of circles have been surveyed, forty-one of which are of the type of circle possessing a recumbent stone. Proceeding to a detailed description of twenty-two of those last surveyed, the most interesting circle in the first section was that of North Strone, with a diameter of 67 feet, and formed of seventeen stones, including a recumbent stone. When excavated by Mrs. Farquharson of Haughton seven burials were found, with pieces of a decorated urn, burnt bones and chips of flint. In section second the most interesting circle was that at Candle Hill, Rayne, which originally consisted of twelve stones, and had a diameter of 60 feet. When excavated by Mr. C. Dalrymple a central deposit of cremated burials was found covered with stones and smaller deposits of the same nature in other parts of the area. A broken wrist-guard of polished stone was the only artificial relic found. The recumbent stone, now fallen on its side, measures 13 feet in length by 7 feet in breadth, and upwards of 16 inches in thickness. It is on record that the head courts of the district were held at the Standing Stones of Rayne in the fourteenth century. In the third section the most interesting circle was that at Ardlair, Kennethmont, which seems to have consisted of ten stones, set round a circle of 35 feet diameter. When excavated by Mr. C. Dalrymple in 1856 cremated burials were found within the area. On the summit of Candle Hill, Inch, a very remarkable circle of probably eight stones originally, of which only one now stands erect, surrounds a central cairn, and has an enormous trench surrounding it on the west side. The recumbent stone is over 13 feet in length, 6 feet in height and nearly 2 feet thick.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. W. Emerson, president, in the chair.

The decease of the following was announced:—Sir Richard Temple, hon. fellow, elected 1900; Mr. Walter Glynn Doolin, of Dublin, fellow, elected 1899.

### Royal Gold Medal.

The PRESIDENT said that the Council's proposal to present the Royal Gold Medal for the current year to the family of the late Mr. Bentley, as a mark of respect for the memory of a great architect, had been laid before the King, and, in reply, a letter had been received from General Sir Dighton Probyn stating that the proposal had received His Majesty's careful consideration; but that His Majesty, while fully appreciating the kindly feelings which had prompted the Council of the Institute to make the suggestion, was of opinion that unless the Council were in any way pledged to award the medal as proposed, or unless it could be shown that a case similar in character had occurred before, it would create a dangerous precedent if the medal for the current year were given to the family of the late Mr. Bentley, on the ground that in virtue of that gentleman's great service to architecture the Council would have recommended him for the medal had he lived until the date of their next meeting.

The Council will therefore after election submit another name as a fit recipient for His Majesty's gift.

Mr. S. K. GREENSLADE read a paper on

### The Planning of some Recent Library Buildings in the United States.

The development of the library movement in America during the last ten years had been so enormous that few buildings erected previous to 1885 would be found to-day suitable for modern requirements. The librarians themselves have settled points in the policy of the working of libraries which previously were undetermined, and it was the very active interest of these men which had so greatly assisted the architects to produce such very fine plans. Mr. Carnegie's generosity had helped forward the movement wonderfully. Last year alone he gave more than 2,500,000*l.* for new buildings. The result was that the American architect had unequalled opportunities, and was showing the greatest interest in his work. At present some of the recent plans seemed as perfect as possible, yet the interest in the subject was so great that new developments were sure to take place.

Various representative libraries were treated under the following heads:—(1) Reference libraries; (2) university libraries; (3) town libraries (in three divisions); (4) branch libraries; (5) small libraries. The planning and general arrangements of the buildings, stack-rooms, furniture, &c., were described in every detail, and illustrated by plans shown by the lantern.



In the first group was placed the Library of Congress at Washington, by far the largest library building in the States, being 470 feet long by 340 feet wide, with four great inner courts. The site was acquired in April 1886, and Messrs. Smithey & Pelz's plans were adopted, but no limit of cost was fixed. By the summer of 1888, Congress, dissatisfied with progress made, lodged the entire control of the work, including preparation of new plans, in the hands of General Casey, chief of engineers of the United States Army. In March 1889, Congress enacted that the building should be erected at a total cost of 1,300,000 $\frac{1}{2}$ , including previous expenditure, according to a plan prepared by General Casey. The plan was based on that originally adopted, and the building, under the new conditions, was at once commenced and finally completed in 1897.

The design for the New York Public Library, now being erected, is the result of two competitions held in 1896 and 1897. In the limited second competition twelve firms of architects were selected from those competing in the preliminary open competition out of a total of eighty-eight. Tentative sketches of the plans of each floor were issued with the instructions. The assessors (with those elected by the competing architects), Professor Ware, of Columbia University; Dr. Billings, the librarian, and Mr. Bernard R. Green, of the Congressional Library, finally selected a design which practically adopted the whole of the suggestions. The site allows of an isolated building with ample space for future extension, 455 feet frontage and 482 feet to the sides. The cost was not to exceed 340,000 $\frac{1}{2}$  without fittings, but it is estimated now to come to 660,000 $\frac{1}{2}$ . Before describing the plan in detail, Mr. Greenslade referred to some interesting and noteworthy points in the conditions of competition. The library will have shelving capacity for 2,000,000 volumes, and seems nearly as perfect a library as possible. Messrs. Carrère & Hastings, of New York, are the architects.

The State Historical Library building at Madison, Wis., is an extremely well-planned building, and forms an ideal reference library. It is to house 675,000 volumes. Architects, Messrs. Ferry & Clas, Milwaukee.

Of University libraries, those of Columbia and New York are particularly worthy of attention. They are not unlike in plan, both in general outline taking the form of a Greek cross. The great central reading-room—in one case octagonal and in the other circular—is the motive of the design in both buildings. Special study-rooms, with their books stacked around them, or near them, are an important feature of both libraries, and in each are treated in a different way. The Columbia University Library is, perhaps, the most monumental of those yet erected in the States. Its magnificent domed reading-room, placed at the intersection of the arms of the cross, is octagonal in form, the four sides at the angles being shorter than the others, and the whole is covered by a great dome. The lighting is from four very large segmental windows following the lines of the main arches to the sides. Architecturally the building is very fine, but it is evident that to obtain it utilitarian points have been somewhat sacrificed. This applies particularly to the storage of books, and the difficulty the staff has in handling them. Its total shelving capacity is 1,050,000 books; the cost was 240,000 $\frac{1}{2}$ ; architects, Messrs. McKim, Mead & White, of New York.

The library of the University of New York (also by Messrs. McKim, Mead & White), though much smaller than the Columbia University Library, is in some ways more compact in plan. Its domed reading-room is circular on plan, and the books are stacked round about it and not below, and are generally more accessible. Its present shelving capacity is for 250,000 volumes. Shelf room for 1,000,000 volumes altogether could be obtained by using the large auditorium below the reading-room for stacks.

The library of the Law School at the University of Pennsylvania—a remarkably well-arranged and convenient plan—was also described. The architects were Messrs. Cope & Stewardson, of Philadelphia.

Town libraries were dealt with in three divisions—under Division I. Large Town Libraries, being grouped the Boston Library, Newark Public Library, Providence Public Library and Washington Public Library. In each of these buildings the motive of the design has been a different one. They all, however, evidence the growth of the free access policy and its great effect upon the plan. Not only is it necessary for the general reading-room to have, as in the Bates Hall at Boston, the walls shelved for books of reference, but the borrower must also be allowed shelves to select from. The excellent plan is adopted at Newark of placing open shelf-rooms on either side of the delivery hall, where thousands of books may be stacked. At Providence the shelves are placed between the entrance hall and the delivery space—not so good a method; still, the floor area at this point is so ample that the whole could be rearranged with advantage. In Newark the stock-rooms are nearly isolated—a great advantage should fire occur in the main building.

The Boston Library (Messrs. McKim, Mead & White, architects), one of the first great monumental libraries in 1888, was opened in 1895. Architecturally of value, its plan is not good from the librarian's point of view, but the librarians now know pretty well what is wrong, whereas fifteen years ago they were doubtful and uncertain. It is therefore unfair to criticise the plan of the Boston Library too hardly, because of the rapid developments since its construction. Still, there are many points in it that are particularly the position of the fine reference reading-room in relation to the stack-room, the cramped position of the delivery hall, and the unfortunate shape and position of the stack-room necessitating the use of carriers. The cost 473,000 $\frac{1}{2}$ ; its present shelving capacity is for 1,000,000 volumes.

The public library at Newark (designed by Messrs. McKim, Mead & White, Philadelphia) was only completed and opened in March 1901. It is evident that a deal of thought was spent in its arrangement and planning. A great point has been made of "free access" to the books both outside and inside the stack. There are some excellent points in the planning of the building. The arrangements for the stack-rooms, delivery hall, work delivery space and stairs are very good indeed, and the approach to these rooms from the main entrance is very direct. The cost of the building 60,000 $\frac{1}{2}$ .

The Public Library building, Providence (designed by Messrs. Stone, Carpenter & Wilson), was completed and opened in March 1900. The Boston Library, as already mentioned, from the librarian's point of view, was hardly a success. The planning of the Providence Library the librarian was invited in the attempt to solve a problem which has been altogether successfully coped with. An interesting result. A serious attempt has been made to meet the requirements of the "free access" policy, and to a large extent it has been successful. The cost of the building was 53,000 $\frac{1}{2}$  and the shelving capacity is for 225,000 volumes.

The design for the Washington Public Library was the result of an open competition. Ten well-known library architects were invited to compete, each receiving an honorarium of 50 $\frac{1}{2}$ . Other architects were also allowed to compete, and the result was that the plans of Ackerman & Ross, of New York, were selected (not a firm). The cost was limited to 50,000 $\frac{1}{2}$ , but this was stepped considerably, the total estimated cost being 100,000 $\frac{1}{2}$ . Building operations were commenced in August 1900.

At least two distinct types of town libraries occur in the libraries illustrated in Division II. The Atlanta and the Pawtucket represent one and the other. The Atlanta has only a basement and first floor; the others have an additional floor. At Atlanta the plan is more compact and therefore more easily worked as a library than the monumental plan at Pawtucket. The open-shelved study-rooms adjoining the stack-room and either side of the delivery hall are an excellent feature in the Atlanta library. The Pawtucket library has not been erected yet. It seems to come between the above types. All the important rooms are on the first floor. Among points worthy of note are the position of reference spaces (10 feet wide) on each floor, the stack-room, the important position of the children's library, which balances the general reading-room, and the provision of special study-rooms. Libraries of this size—averaging 20,000 $\frac{1}{2}$  to 50,000 $\frac{1}{2}$ —are becoming very numerous, and developments in their planning will always be taking place.

Detailed descriptions were given by Mr. Greenslade of the following town libraries in Division II:—The Library, Atlanta, Georgia (architects, Messrs. Ackerman & Ross, New York); the Carnegie Library, Davenport, Iowa (architect, Mr. W. A. C. Jackson, New York); the Public Library, Providence, R. I. (architects, Messrs. Crane, Goodhue & Fernald, Boston); and the Public Library, Fall River, Mass. (architects, Messrs. Crane, Wentworth & Goodhue, Boston).

The author next discussed the third division of town libraries. The effect of the "free access" policy is illustrated in the three libraries selected as examples, the Carnegie Library, East Orange (architects, Messrs. Kent & Jardine, New York); the library at Duluth, Minn. (architect, Mr. A. Rudolf); and the Public Library, Washington. The tendency to do away with the substitute columns with glazed screens between is a feature of all of them. In the East Orange and the Tacoma libraries the use of the radiating stack, the advantages of which are pointed out by the author, is new for a large building.

The system of branch libraries and stations is rapidly becoming organised in many of the large towns. At present few towns have started with a series of new buildings. Old buildings have generally been converted, such as schools, churches, private residences and shops. The branch library is likely to develop in the near future. It will be most interesting to watch the work of the advisory board of architects appointed to design the sixty-five new branch libraries of New York.



Andrew Carnegie has given 1,000,000. to build these libraries, and the Board of Library Trustees have just selected three firms—viz. Messrs. McKim, Mead & White, Messrs. Carrère & Hastings and Messrs. Babb, Cook & Ford—to take the entire charge of the designing and superintending of these buildings. These firms will confer and deliberate on the work.

Up to the present time the planning of the branch library has been studied perhaps in Pittsburgh more successfully than in any other town in America. There are five branches already erected of the seven presented by Mr. Carnegie, each on an isolated site (architects, Messrs. Alden & Harlow). Two were given of the Lawrenceville Branch, opened May 1899; the West-end Branch, opened January 1899; the Wylie Branch, opened June 1899; the Mount Washington Branch, and the Hazelwood Branch. It is interesting to note the gradual development of the plans. The growth of what is called the "turnstile control," resulting in the abandonment of the entrances to the reading-rooms from the delivery hall, as adopted in the West-end branch, and substituted afterwards by screens in the later plans, is also of note. Although the radial-stack plan is costly to erect, yet the advantages where a "free access" policy is adopted are very great.

Especially Mr. Greenslade touched upon small libraries. The plans of these have been particularly well studied in the State of Massachusetts. Hardly a village or hamlet is without one. Many of those around Boston are extremely successful. Here that H. H. Richardson erected several of his well-known libraries, such as the Ames Library at Easton, and those at Burn and Quincy. The great feature of the plan here is the alcove adopted as the main reading-room, and in alcoves all the books were shelved. This method has been found wholly successful from the readers' point of view, although architecturally the general effect of the alcoves

of many of the recently-erected libraries of this class have very compact plans. The little library at Wayland, (architects, Messrs. Cabot, Everett & Mead, Boston); the Small Library, Plymouth, Mass., by the same architects; the library at Weston, extremely convenient and well adapted for its purpose (architect, Mr. Jenne, Boston), were all noted.

Especially the lantern views, the paper was illustrated by a number of the original plans and photographs of the most interesting library buildings in the United States. Professor BERESFORD PITE, who proposed a vote of thanks to Mr. Greenslade, said the paper he had put before them was suggestive material. A considerable amount of congratulation was due to the Institute in the election of Mr. Greenwin Bursar in 1891. That bursary was founded for the promotion of the study of works of modern architecture.

The paper as a historical record, as well as an indication of what had been done, was something more than a catalogue of the use to which that bursary was put. They were accustomed to study architecture in temples and churches, and look to the past, and from archaeology to receive the light of art. In libraries they were in a new field. The originality of the subject, and the ingenuity that the Institute displayed in creating buildings for a want which essentially modern should be admitted. The skill, too, shown in the schemes with a view to future expansion of the building was most characteristic and remarkable. It was admirable if the bookstacks which were to accommodate the books were yet all in use. In the study of English architecture we came across national characteristics and peculiarities which were in many respects strangely different to those found in America. The American was more developed, and there seemed no fear of the library being crowded for anything but serious study, and thus visitors were allowed freer access to the books than was the rule in our country.

The paper would be of permanent value to the profession.

J. H. QUINN, chief librarian of the Chelsea Library, seconded the vote of thanks, said the paper proved that Americans in such work aimed at practicability. The natural design seemed always subservient to the object of the institution. This was an important feature. The Americans did not seem to suffer from want of funds, whereas in this country at the outset were interfered with by the need of planning, all important rooms should be put on the plan. Such an arrangement made a library less habitable for the reader and tramp, who did not like to climb.

Mr. OSBORNE SMITH was struck in seeing the first large library in the way in which the new country had come to the aid of the old in planning. Many of the arrangements were new in America, but they were in vogue in the British Isles. An interesting point was the warming of libraries by steam, what would be the effect on the books?

The PRESIDENT, alluding to the enormous size of the libraries and the number of books they could accommodate, said it mattered little whether the readers or the books were there at present. The matter seemed to prove that the library was part and parcel of the movement for increased instruction. The Americans realised the necessity of the higher education.

Mr. GREENSLADE, in returning thanks, said the libraries were extensively used and the stacks were filled with books. The children's rooms were crowded. The children prepared their lessons in the rooms; the library provided the books which were used in the local schools. Teachers sometimes brought their scholars, and instruction was given in the rooms. The heating of the libraries was a big question, but the arrangements and results were perfect.

### ANCIENT LIGHTS.\*

I WILL not occupy your time with any preliminary remarks, but commence at once *in medias res* and say, my contention and conviction are that the state of the law in England to-day with regards to rights of light is little if any short of an iniquity.

The Prescription Act (2 and 3 Will. IV. c. 71, s. 3) enacts "That when access and use of light to and for any dwelling-house, workshop or other building shall have been actually enjoyed therewith for the full period of twenty years without interruption, the right thereto shall be deemed absolute and indefeasible, any local usage or custom to the contrary notwithstanding, unless it shall appear that the same was enjoyed by some consent or agreement expressly made for that purpose by deed or writing."

The result in practice being that if where two men own two contiguous plots of ground and one owner wants to build and does build at once and the other owner does not want to build, then notwithstanding that he may have every intention of building eventually—if owner number two postpones his operations for nineteen years he is unable to use his own land in accordance with his desire without being hampered by certain so-called rights his neighbour has acquired to access of light to his windows and other openings over number two land. In effect, my neighbour can dictate to me at what period I am to build on my own land by building on his own.

Again, if both owners build simultaneously but A builds a more lofty edifice or a longer than B, if he is ever to increase the size of his building must do so within nineteen years of A's completion or be practically debarred from so doing altogether, regardless of whether B has any need or wish or even whether he is able to extend his premises within that time.

One more illustration, this relating to old buildings. In an urban neighbourhood a large factory is required that will give employment to hundreds or thousands of hands, or a public authority wish to erect a town hall, baths, library, workmen's dwellings or other institutions of public utility; both are hindered and harassed or altogether frustrated in their purpose because buildings not even on the same side of the road, and possibly the most wretched hovels, will be deprived of some light, ignoring the fact that the light which had been enjoyed was not provided for by the owner of the dominant tenement or at his expense or even by his forethought, but simply because the owner of the servient tenement had no need in the past to use his land in the same way or carry his building to the same height and extent as the owner of the dominant. Thus the most useful and necessary building we have imagined is curtailed in accommodation, marred in its usefulness and shorn of much of its beauty for what to my mind is an inadequate reason. One could suggest innumerable cases of a kindred nature, but it seems needless to do so when speaking to an audience of practising architects who are, of course, acquainted with the salient features of the law on this subject and its practical results.

I cannot see the rule has any foundation in natural justice, I cannot see that it is defensible, either ethically or on the ground of expediency. Why should not a man have to make his own provision for the light to his building over his own land or over the public way? If he will not provide an open space on his own land to light his building, why should I have to provide one on mine for him, at any time, earlier or later? Now how can an owner prevent his neighbour acquiring a right of light over his land? In one way, and one way only, and that is actual obstruction.

He may protest in the most emphatic and solemn manner, but it avails him nothing; he may give notices but they give him no protection. No, wherever his neighbour has an opening in his building, overlooking his land or buildings, he must erect a boarding (if he do not wish to build permanently) opposite to it.

\* A paper read by Mr. Walter C. Williams, solicitor, at the meeting of the Society of Architects on the 20th inst.



The hoarding may have to be 60 feet high and 500 long, may be a hideous eyesore to the surrounding property, may be a most oppressive, even ruinous expense, but up it must go, and must be retained there for a full year, for section 4 provides that an interruption to be valid must be for one complete year. Hence you will see, gentlemen, that as soon as light has been enjoyed for nineteen years and one day there cannot be an interruption of one clear year before the expiration of twenty years from the time of its first enjoyment, though the owner cannot bring any action until the full twenty years have elapsed. It is obvious that in some cases this remedy may be as costly as the value of the land.

Even if expense do not stand in the way, in London (and, I believe, in many large provincial towns and cities similar rules are in force), but in London should such a hoarding be erected for the purpose indicated it becomes, under the London Building Act, an irregular or temporary structure, and requires the license of the London County Council or local town council for its erection or retention, and should this license be refused, as it well might, the owner is in this delightful position: he finds he is by one Act of Parliament precluded from doing the very thing which, by virtue of another Act, is the only thing he can do to protect himself from the encroachments of his neighbour.

There is yet another anomaly and hardship. A man may be entitled in remainder expectant on the life of a young or middle-aged tenant for life, say, stepmother or brother, only a year or so senior. During the life of the tenant for life rights to light may be acquired which the remainder man has no means whatever of preventing or resisting, because, as I have pointed out, he must actually physically obstruct the view of the poaching tenement; but, as tenant for life, he has no authority to enter on the land about to be affected to carry out the requisite work. It may be the remainder man was an infant, *non compos mentis*, or abroad; it may be the tenant for life has acted in collusion with the building party; all this notwithstanding, the remainder man has his inheritance depreciated in value by the acquisition of these adverse rights that he was powerless to prevent.

The same with a landlord whose tenant allows rights of light to be acquired over the demised premises.

In *Frewen v. Phillips*, in the course of his judgment when sitting in the Common Bench, Pollock, C.B., says:—"It may be that if a man opens a light towards his neighbours' land, the reversioner may have no means of preventing a right thereto from being acquired by a twenty years' enjoyment, unless he can prevail upon his tenant to raise an obstruction, or is able to procure an acknowledgment that the light is enjoyed by consent." But who would, under the circumstances, give such an acknowledgment?

Section 7 of the Prescription Act provides that time shall not count against a person who is an infant, idiot, *non compos mentis*, feme-covert, or tenant for life, except where the claim is declared to be absolute and indefeasible. Section 8 also contains provisions protecting the owners of the servient tenement in cases of rights of way and water. But by Section 3, rights of light are "deemed to be absolute and indefeasible," and therefore the owner of the servient tenement is excluded from any protection given by Sections 7 and 8. I shall be interested in the course of the discussion to hear if any gentleman is ingenious enough to suggest a reason which justifies this harsh and, I contend, unjust treatment of the man against whom rights of light may be claimed.

Now let us consider how these rights came to be recognised by the Courts, and here it must be borne in mind that this is essentially a judge-made law in its origin; the Prescription Act only gave legislative sanction to a rule that had for some generations been acted on in the Courts.

The origin of the rule is obscure and the text writers do not throw much light on its history.

The older jurists gave no countenance whatever to these claims. There is a passage in Fitz Alwyne's "Assize of Buildings," written in 1189 (1-Richard I.), which runs as follows:—"Of the obstruction of the view from windows—Also if any person shall have windows looking upon his neighbour's land although he may have been a long time in possession of the view from such windows aforesaid nevertheless his neighbour may lawfully obstruct the view from such windows by building opposite the same or by placing anything there upon his own lands in such manner as may to him seem most expedient, unless the person who has such windows can show any writing by reason whereof his neighbour may not obstruct the view from those windows."

This reasonable rule held for 400 years, for we find a case in Crow's Reports, temp. Elizabeth, of *Bury v. Pope*, decided in 1589. The following is the report:—"It was agreed before all the justices that if two men be owners of two parcels of land adjoining and one of them doth build a house upon his land and makes windows and lights looking into the other's lands and the house and the lights have continued by the space of forty years yet the other may upon his own land and soil law-

fully erect a house or other thing against the said land windows and the other can have no action for it was folly to build his house so near the other's land. And adjudged accordingly. *Nota.*—"*Cujus est solum summitas usque ad coelum.*"

Two hundred years later Lord Hardwicke expressed in a case of *Fishmongers' Company v. East India* (1752), as follows:—"It is not sufficient to say it will plaintiff's lights, for then no vacant piece of ground built on. It is true the value of the plaintiff's house reduced, but that is no reason to hinder a man from on his own ground."

In a case of *Angus v. Dalton, Lush, J.*, in giving judgment without expressing any approval of the rule thought Statute of Limitation (21 Jac. I. c. 16), which fixes years as the time for entry on land, suggested that the acquisition of the easement of light. Then he continued: "The earliest recorded case that I am aware of was in that year Willmott, C.J., ruled that where a house built forty years and had had lights at the end of owner of the adjoining ground built against them obstruct them an action lay, and this he said is founded on the same reason as when they have been immemorial, for so long enough to induce a presumption that there was some agreement between the parties. And he said twenty years was sufficient to give a man a title in which he may recover the house itself, and he saw why it should not be sufficient to entitle him to any belonging to the house."

I do not follow the reasoning of the learned judge. There is much difference between adverse possession of which a man can enter or for which he may bring an action and the enjoyment by another of the access of light to his ground.

One can well understand that it is in the public interest to fix a limit to the time for litigation, for if a man be allowed to sue for a right which he has not used for many years, while another has been utilising it, he deserves to lose his interest therein.

But a right to light is quite a different matter, and is acquired against a man who is using his property lawfully and diligently only in a manner different from his neighbour. He may have a rope walk adjoining his neighbour's factory, and after twenty years he must not build because his neighbour has built first.

It should be remembered that the cases which founded the Prescription Act, and which were crystallised into statute law, were founded on the presumption of a person having continued for so long, it was presumed that the right to the use or enjoyment had been actually exercised. It was not the user *per se* that gave the right, but the fact that he had used it for so long that it was held to be evidence that the right had been actually exercised in the past.

The easement of light, however, differs in its nature from other members of the family. Rights of way and other easements may well be presumed to have been granted for the convenience of the actual or supposed grantee as well as of those who enjoyed them. They are also granted for the convenience of the many as against the strict right of the single owner. Whereas the right of light is for the benefit of the single owner at the expense of all his neighbours.

Again, a riparian owner is entitled to the undisturbed flow of a stream over or by his land, and if an owner interferes with the flow in any way the property is damaged, and that independently of any act on the part of the owner. But the claimant of right of light must himself have done in the past the very thing he now complains his neighbour, viz. have interfered by his own building with the access of light to his neighbour's property.

I contend that this judge-made rule is not founded on consideration of natural justice or ground of public utility. On the contrary, the voice of justice seems to me to say that a man must light his premises over his own land or the public and public utility there assuredly is none, as the right to light always to an individual at the expense of others.

I will now quote a few dicta of several judges on the subject. In *Angus v. Dalton, Cockburn, C.J.*, made the following remark:—"But after statute of James (i.e. statute of 21 Jac. I. for twenty years was"—here, again, without any legislative authority and by the arbitrary ruling of the judge—"held sufficient," and further on he quotes and agrees with Sir W. D. Evans, who says "its introduction was a principle of legal principles and an unwarrantable assumption of authority."

Again, in *Chasemore v. Richards*, Lord Wensleydale said: "It is going very far to say that a man must be at the expense of putting up a screen to window lights to prevent a title gained by twenty years' enjoyment of light passing to his neighbour's window."

In a case *Webbe v. Bird*, in which the plaintiff



have the right to currents of air to his windmill, J., says with scorn, "suppose some individual be owner of all the land round the windmill, must he build all round it to prevent the acquisition of a right by the owner of the mill?" Willes, J., in his judgment refers to rights as anomalous as compared with the general law, and says the C.J.'s scoffing question as to building a wall, and J., remarks that "The right to light has led to confusion enough."

The Exchequer Chamber, Wightman, J., approves of the principle that the presumption of a grant from long use only applies where the right might have been acquired.

In another case of *Bryant v. Lefever*, Lord Bramwell says, "who reads the cases relating to the acquisition of a right will see that there has been great difficulty to get on principle," and he goes on to quote with approval two judgments I have just cited.

In the Prescription Act by the custom of the City of London, rights of light could not be acquired in this manner, in virtue of the words in sec. 3 that I have already read, "local usage or custom notwithstanding," the City of London was brought into line with the rest of England. The reasons of uniformity are obvious, but I submit it would be better to have brought the rest of the country into line with the City rather than the reverse.

Coming to this alteration by the legislature, Lord Cranworth, in *Yeates v. Jack* says:—"I cannot but think the law derived from the custom exceed its evils. The necessity for lofty buildings is shown by the great advantage of them in all parts, and I cannot but fear that inconvenience may be felt by the abolition of the law."

With this, sitting to administer the law, however, I am concerned.

I just refer to one more dictum:—

In a very recent case of *Brown v. Warren*, Wright, J., at the end of a long judgment in favour of the defendant, said if it were admitted (and the C. A. held that it should be admitted) Wright, J.'s judgment "it would impose on the defendant an unreasonable burden."

In one still more recent of *Home and Colonial Stores v. Joyce*, J., appeared to entertain a similar opinion. Now, I think these remarks of many learned judges (and many could be found), extending over a long period of time, in the opinion that the law of light is not the result of human reason, does not satisfy one's idea of what the law is capable of—nay, calls for—amendment.

In concluding I must refer to the laws of some foreign

countries. In Scotland our English rule has never been accepted. As Lord Stowell says, in his "Principles of the Law of Scotland," "the right of light cannot be constituted by prescription alone, but a proprietor should have built his house ever so low, and not have built at all for forty years together, he is not to have done so for his own convenience and profit, but he cannot be barred from afterwards building a house on his property or raising it to what height he pleases, he is not tied down by his own consent." Another writer says, "The theory in Scots law is that a proprietor is only bound to provide light for his own property, and any open space may have is not to be reckoned on by his neighbour," and also a man had to provide his own light as well as his neighbour's. The Irish law, however, is now assimilated to the English by Lord Carew's Act in 1858.

In the U.S.A. in 1837, shortly after the Prescription Act was passed, an American judge—Judge Bronson—expresses his opinion:—"There is, I think, no principle upon which an English doctrine on the subject of lights can be maintained."

It is an anomaly in the law since the English law of ancient lights has been repudiated in our Courts. It cannot be applied in the growing cities and villages of this country without working most mischievous consequences. It is, I think, been deemed part of our law." And he refers to Kent's Commentaries.

In 1893 the New York Court of Appeal held that an owner of property may place his windows overlooking his neighbour's premises, but the neighbour may build to the height of his land nevertheless.

Now it is provided that a man may not have a window or a balcony or other projection over his neighbour's estate unless there is a distance of six feet between the wall on which they are made and the neighbour's estate; nor a side or oblique view on the same estate if there is a distance of 6 decimetres.

The Italian code is similar, but the distances are slightly

different. In Canada maintains the French rule.

Sweden a man must not construct windows nearer than six feet to his neighbour's land.

In France in none of these countries can a man rely on his right to light, but must make suitable provision for

himself. Hence we see another example of the isolation of our beloved country; whether it be a splendid isolation, however, is a matter on which a man may "have his doubts."

Now, having briefly considered the state of our law as to light, and briefly how that state came about, and having heard the opinions which some of our judges entertain of the doctrine, and having taken a cursory glance at the law of other countries, I ask you, gentlemen, are you satisfied with the law of your own? If not, there is one remedy, and one remedy only—legislation.

This legislation need not be fantastic or complicated; it could be simple but at the same time effectual, both practical and practicable.

I would suggest an enactment providing that no further rights of light across another's land should be acquired. That existing rights should be extinguished—

1. As to freehold, at the end of fifty years.

2. As to leasehold, at the expiration of fifty years, or the existing term, which period should be the shorter.

This would entail no hardship on anyone, would do an injustice to no one. The man who had built would still have all that he paid for, his land and the materials on it, and the owner of adjacent land would enjoy his own in his own way without being jeopardised by the operations of his neighbour.

I can conceive some objection to this in the case of abnormally high buildings, but this might be easily provided for by giving owner of adjoining building, over say 50 feet high, a right—which indeed I think they would have without special provision, under the maxim, "*sic utere tuo ut alienum non lædas*"—to compensation, not for obstruction to their light *per se*, but for any general damage that might be actually proved in each case by appropriate evidence, as in suits to abate a nuisance.

It now only remains for me to acknowledge my obligation to Mr. Blythe's paper, read before the Incorporated Law Society, for the references to some of the older cases and for information as to foreign law, and to thank the Council of this Society for having honoured me by the invitation to open this discussion, and you, gentlemen, for the patient attention you have given to my remarks.

## SURREY ARCHÆOLOGICAL SOCIETY.

THE annual meeting of the Surrey Archæological Society was held at Guildford on the 15th inst., Viscount Middleton presiding. The report alluded to the satisfactory results which had attended the excavations at Waverley Abbey, Farnham. During the year the foundations of the pulpitum, or portions belonging to the monks' stalls, were discovered, as well as the foundations of the lay brothers' infirmary hall, measuring roughly 94 feet by 41 feet, with the bases of the pillars of the north and south arcades *in situ*, and for the most part in excellent condition. Dr. Finny, mayor of Kingston-on-Thames, proposed a resolution requesting the Council to appoint a deputation to take part in the celebration at Kingston of the millenary of King Edward the Elder. He said Kingston possessed the stone upon which seven of the Saxon kings were crowned, and by a most strange coincidence exactly 1,000 years separated the coronations of King Edward the Elder and King Edward VII. Edward the Elder was the first crowned king in this country, and there had been an unbroken series of coronations for a thousand years, Edward VII. being the fiftieth consecutive Sovereign, and therefore the jubilee Sovereign to be crowned, a succession which no other kingdom could equal. He had communicated the interesting information to His Majesty, who had sent a letter in reply expressing in warm terms his interest in the proposed millenary, which would be celebrated a month before the Coronation. Mr. Ralph Nevill seconded the motion, which was carried. The Society resolved, on the motion of Mr. R. Nevill, seconded by Lord Farrer, to support the proposal for founding a society for the printing of the parish registers of Surrey.

## MERSEY DOCK BOARD OFFICES.

A MODEL of the palatial offices about to be erected on the site of the George's Dock by the Mersey Docks and Harbour Board is at present on exhibition in the Liverpool Exchange Newsroom, where it has created a great deal of interest among business men generally. The plans, as they have now been finally approved, says the *Liverpool Courier*, show a rectangular building covering some two-thirds of the chosen site of over 12,000 square yards, with the main frontage to the river, instead of having the chief entrance on an angle, as was the case in the original design, which secured the first prize in the competition nearly two years ago. Acting on the recommendation of the architects, Messrs. Briggs & Wolstenholme, F.F.R.I.B.A., and Messrs. F. B. Hobbs,



A.R.I.B.A., and Arnold Thornely, A.R.I.B.A., the Dock Board reopened the question of the site with the estates committee of the Corporation, and it was decided that the land could be more advantageously dealt with on the rectangular plan than in the manner at first suggested, and the present scheme was accordingly adopted. There are three entrances to the building, the principal doorway being in the centre of the frontage, and two others in the towers facing the east, towards the city. There are in all four towers, 144 feet in height, one at each corner of the building. The style of the whole design is Late English Renaissance, and a new feature in the adopted plan is a massive dome rising from the centre of the building towards the front to a height of 220 feet, or about twice the height of the Town Hall dome. At each side of the main entrance are niches for sculpture, and on the arched cornice of the building, immediately above the doorway, is a massive figure of Britannia.

In front of the building there is a forecourt, 60 feet in length, enclosed within a stone balustrade wall. The material used in the construction will be Portland stone, with the roof of green Westmoreland slates, and the dome is to be covered with lead. From the entrances in the towers facing James Street and Brunswick Street a wide corridor leads to a large central octagonal hall, 42 feet in diameter, and surrounded by an arcade which increases the width to 63 feet. From this central hall there is an open space right up into the dome, and all round there are galleries opening on to the various floors. In the hall the passenger lifts, six in number, are placed, and there is also the large staircase leading to the different departments. The rates and dues office, 196 feet long and 40 feet wide, is on the ground floor, and faces the proposed new street on the east side of the building, and has an entrance at either end. At the Brunswick Street side of the same floor is the warehouse manager's department, and in the end facing James Street is that intended for the harbour-master and his staff, while looking towards the river are the accountant and treasurer's departments. On the first floor are placed the offices of the marine surveyor and water bailiff, the check department, statistical department, the principal examiner of weights and materials, and the traffic manager's department, while looking on to the proposed new street, on all the floors except the ground floor, are spare rooms, which can be used when necessary or as the development of the board's business necessitates.

In the original plan the board-room and general manager and solicitor's departments were on the first floor, but in the scheme as now adopted these are placed on the second floor. The board-room and committee-rooms will face to Brunswick Street, while the general manager's department will look on to the river, and the solicitor's suite of offices towards James Street. On the third floor are the members' luncheon-room, the estates and rating department and a portion of the general manager's staff, and immediately above, on the fourth floor, are the clerks' dining-room, kitchens, keeper's house and spare offices. On each floor there is lavatory accommodation for every department. The building will be fireproof throughout, and it is expected that the work of preparing the site will be commenced immediately. It is the intention of the board to at once carry out the whole scheme, and it is estimated that three or four years will be required to complete the building and make it ready for occupation. The model at present on view has been constructed by Messrs. Norbury & Co., of Upper Duke Street, and is on the scale of a ninety-sixth of the real size of the building.

### GENERAL.

**The Royal Society of British Artists** have elected the following members:—F. G. Fry, L. Lewis, E. Ertz, Harry Dixon, Hans Trier, Charles Q. Orchardson and Professors Kirchmayer and N. Wilkinson.

**A Professorship** for the study of American antiquities has been founded at the Collège de France through the liberality of the Duc de Loubat, who has given to this institution an annual sum of 6,000 francs.

**Mr. Nuttall** has been commissioned to paint the picture of the opening of the Australian Federal Parliament. When completed, it will contain some four hundred portraits, including that of the Prince of Wales.

**The Bust of Victor Hugo**, by David d'Angers, has been presented to the Académie Française by M. Georges Victor Hugo.

**The Court of Common Council** have adopted plans for the erection of a new police-station in Moor Lane, at an estimated cost of 24,240*l.* Authority was also given to expend a sum not exceeding 5,800*l.* on erection of temporary cells at the Old Bailey. The Council resolved to expend 4,000*l.* in the purchase of the freehold site (about 5½ acres) of a recreation ground for the City of London School, less 1,850*l.* subscribed by old pupils.

**The Prefect of the Seine** is having lists prepared of buildings and historic monuments of Paris on which posting of placards will no longer be allowed. In preparation the authorities are assisted by the Commission Paris. A discreditable spectacle which was presented election times, and which was vandalism of the worst therefore to be abolished.

**The Rev. Thomas Hervey**, rector of Colmer-cum-Dean, Hampshire, has passed away in his eighty-sixth year. He published a history of the joint parishes of which he was incumbent since 1853, setting the type himself and illustrating the book from photographs which he had himself taken.

**The Paris Bourse** occupies a part of the site of the convent of St. Thomas Aquinas, which was suppressed in 1564. The first stone of the present building was laid in 1808, designs were prepared by Brogniart. The Bourse is now enlarged, and a part of the foundations of the conventual walls has been discovered, particularly the chapel, which was erected in 1542.

**The Home Secretary** has appointed Mr. Gilbert Ram, M.I.E.E., to be Electrical Inspector of Factory Workshops.

**Mr. A. D. Webster**, superintendent of Greenwich Park, assisted by Mr. Herbert Jones, has been carrying out excavations in the park. The floor of one of the Roman villas, with a considerable portion of the tesserae has been laid bare. A number of Roman coins, decorated wall plaster and many pieces of pottery have also been discovered. Mr. Webster has had the floor left uncovered, fenced round in order that the public may have an opportunity of viewing these remains.

**The Competition for Signboards** in Paris has been arranged. The examples, which must be of new types, are to be deposited in the Petit Palais on the Champs-Élysées on October 11. The jury will consist of thirty-one members, nominated by the Prefect of the Seine, the Academy of Arts, the Chamber of Commerce, and the competitors. Reproductions of ancient signs are to be excluded from the competition.

**A Competition** has been held for a municipal hospital in Washington. Thirty-eight sets of plans were sent in. The following architects have been selected to enter the final competition:—Frank Miles Day & Bro., Philadelphia; D. Hale and George B. Degersdorff, of Boston; and S. R. Rutan & Coolidge, of Boston.

**M. Emile Molinier**, who was until recently one of the conservators of the Louvre, is about to take up his residence in London as the representative of a Paris picture dealer.

**The New Works Committee** of the London County Council will consist of Mr. E. A. Cornwall, Mr. L. Shaw, Mr. Edward Smith, Mr. A. M. Torrance, Lord Welby, Mr. Ward and Mr. P. S. Waterlow.

**Mr. F. Vigers** has been appointed to carry out the Coronation decoration of the city of Westminster. He proposes the employment of Venetian masts along the greater part of the route, with wreaths besides triumphal arches, representing Great Britain and Ireland, India, Canada, Australia and Africa.

**The Salary** of Mr. Andrew Young, valuer to the County Council, was increased on Tuesday to 2,000*l.* a year.

**At a Meeting** of the Royal Scottish Academy at Edinburgh on Wednesday the following were elected Associates: Messrs. Robert Burns (Edinburgh), C. H. Mackie (Edinburgh), Edwin Alexander (Edinburgh), and James Cadenhead (Edinburgh), painters; and A. Macfarlane Shannon (Glasgow), sculptor.

**A Statue** of the late Queen Victoria, by Mr. Frampton, A.R.A., was unveiled in Calcutta by Lord Curzon on Wednesday.

**The Dean and Chapter of Ripon** have appealed from the order of the Court of Chancery to carry out works of reparation. The estimated amount is 3,000*l.*

**Excavations** just completed at Bourne End, on the site of the ancient abbey of Little Marlow, Bucks, have yielded a harvest to antiquaries. A stone coffin found under the transept contained two male skeletons, outside the lower part of an effigy of a knight in chain armour. In a niche of the infirmary was picked up a steel spur of a knight supposed to have ended his days in the institution. The hearth of the warming-house is still visible, and even the remains of a fire can be seen. Another interesting find has been made on the Castle Estate at High Wycombe, in the shape of an Anglo-Saxon gold pendant, marking the burial-place of a notable person.

**The Headmaster of Lancing College** has been given by an anonymous friend the sum of 10,000*l.* to be expended in preparing the chapel for immediate use. Over three times the sum is still required to complete the original scheme for the whole college.

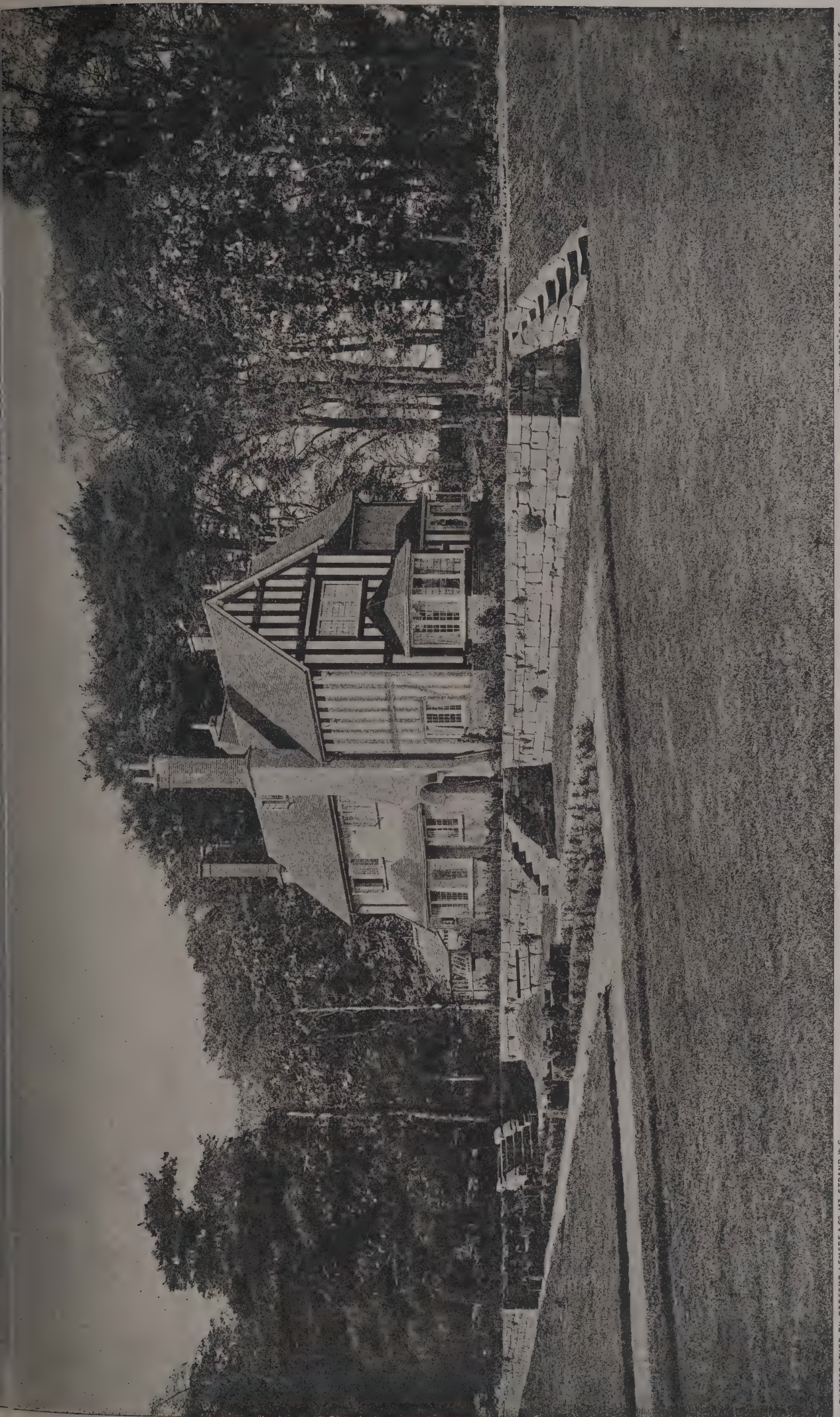


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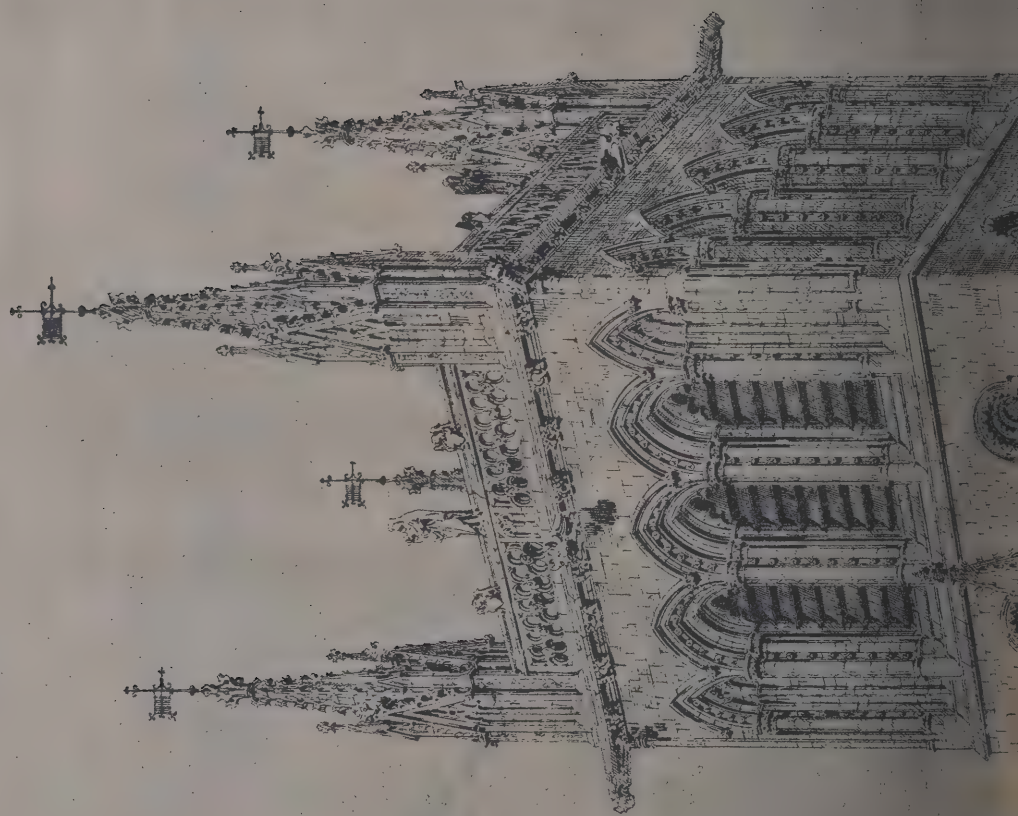
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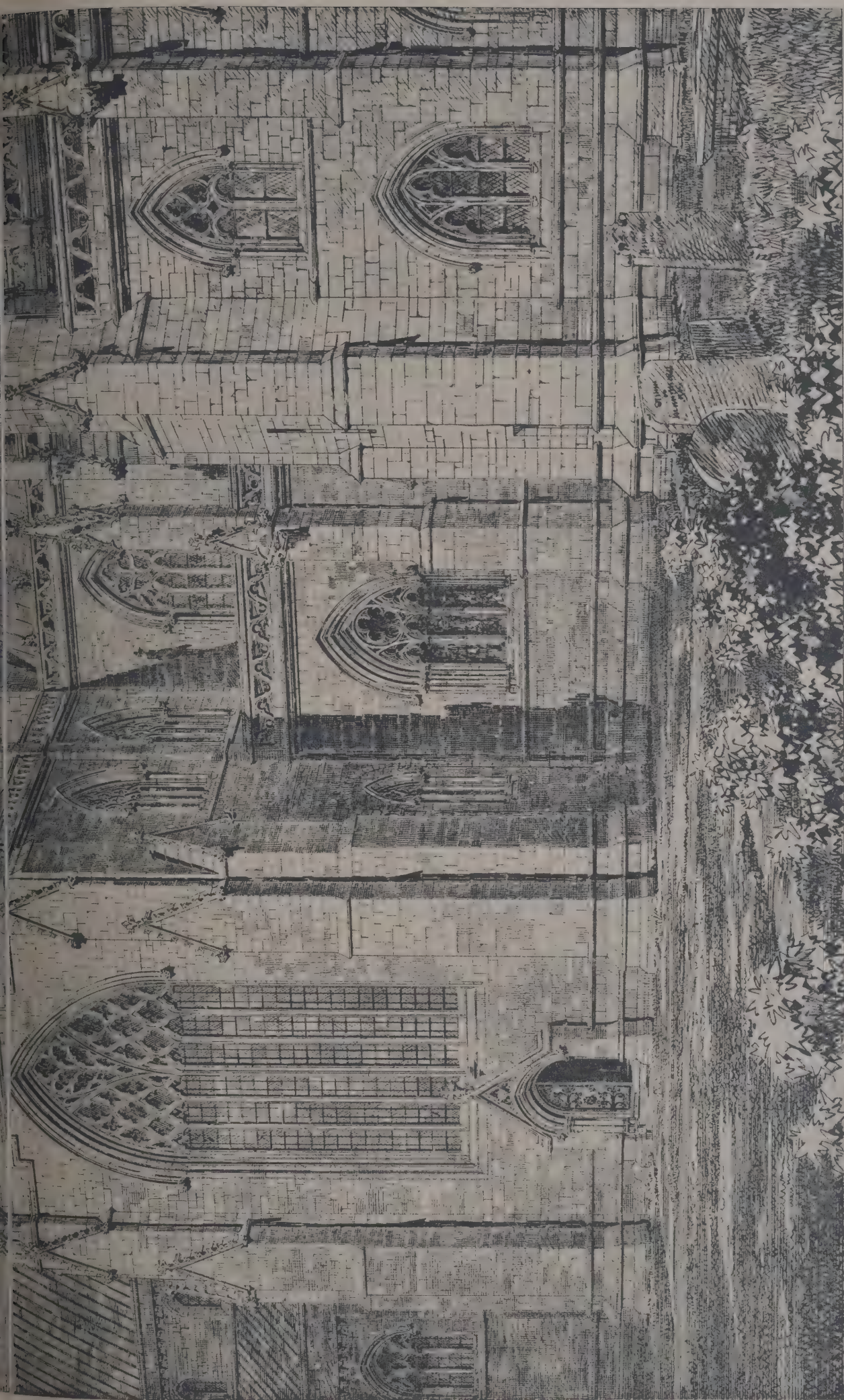
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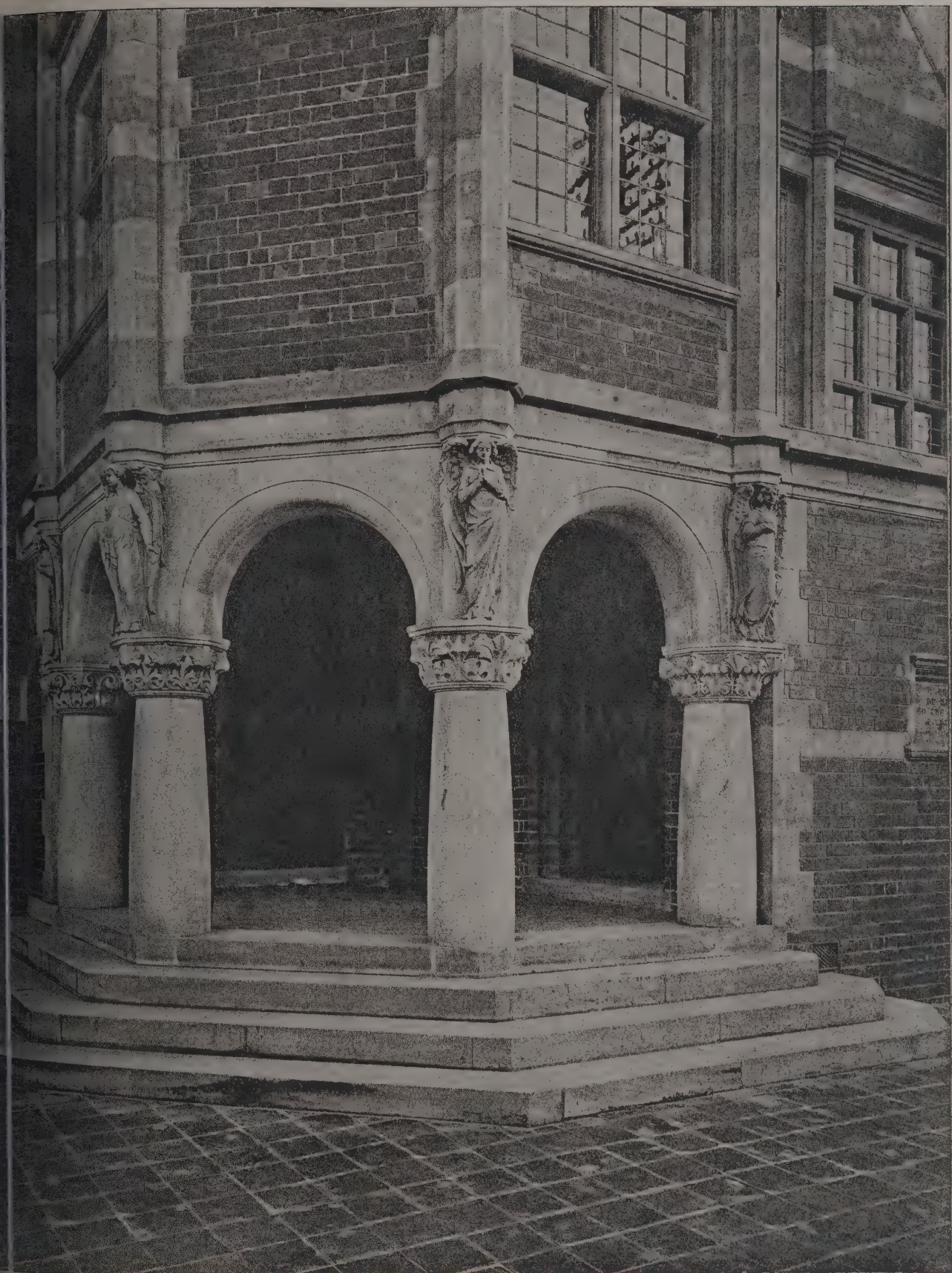
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The Architect, Mar 21<sup>st</sup> 1902.



BY BADFORD LEMERE & CO. 147, STRAND W.C.

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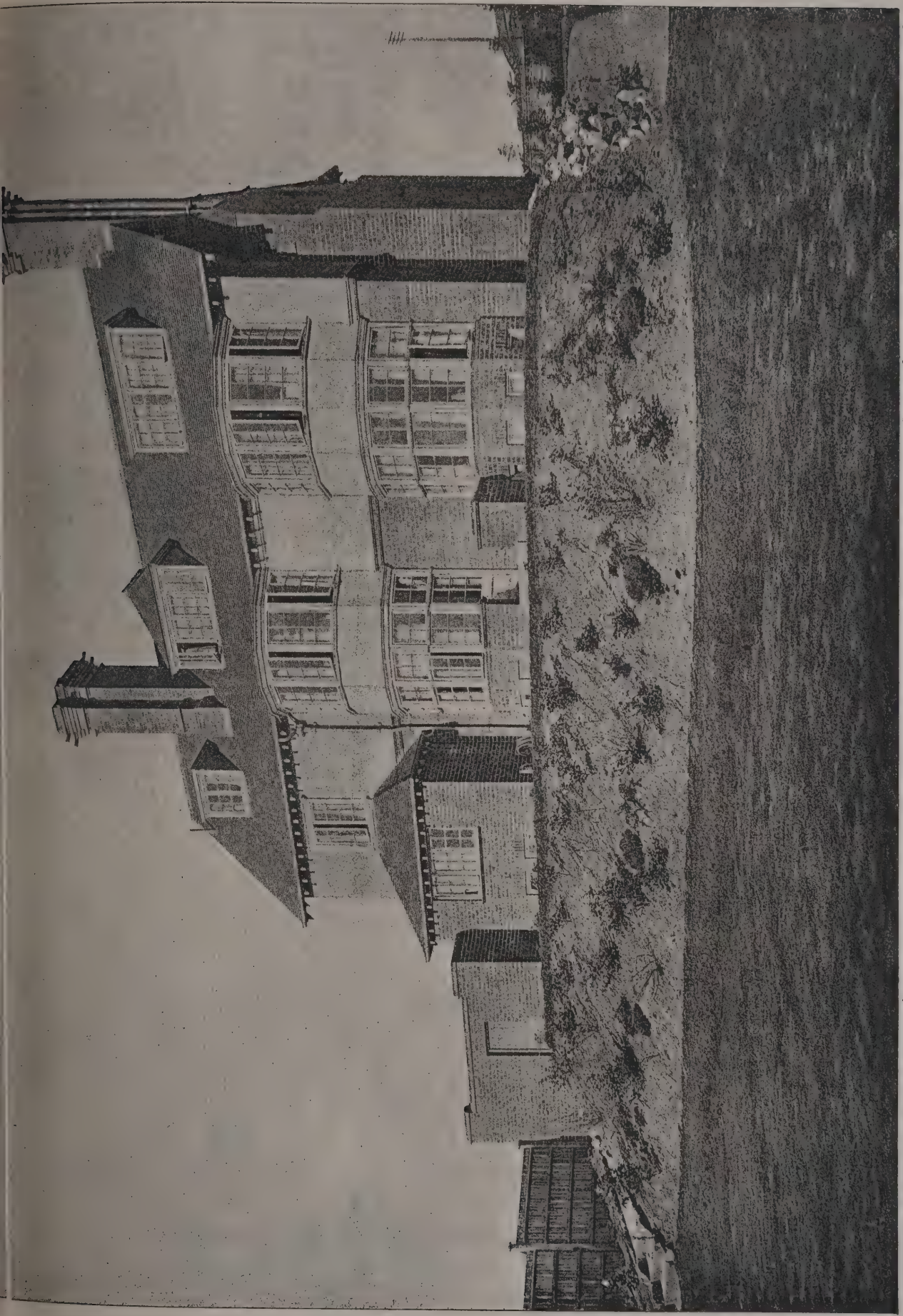
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# THE Architect and Contract Reporter.

## EDITORIAL NOTICES.

*view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## NOTICE.

*Friday being Good Friday, THE ARCHITECT will be published on Thursday. All Advertisements intended for this Number must reach the Office not later than 4 P.M. on Wednesday, March 26.*

## COMPETITIONS OPEN.

**ILKESTON.**—March 29.—Competitive plans are invited for proposed public offices, fire-station and town hall for the year 1902. Premiums of £100, £75 and £50 will be awarded for the first, second and third best plans. Mr. Nelson F. Dennis, I.C.E., surveyor.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West Melbourne.

**ILKESTON.**—The free library committee of the Ilkerton Town Council invite drawings for the erection of public free library buildings in the Market Place and South Street. Premiums of 50*l.*, 25*l.* and 12*l.* 10*s.* will be awarded to the first, second and third selected designs. Mr. H. J. Kilford, borough surveyor, Town Hall, Ilkerton.

**IRELAND.**—April 21.—Prizes of 20*l.* and 10*l.* respectively will be awarded for the first and second schemes in order of merit for utilising to the best advantage a plot of ground acquired by the Council for the erection of about twenty-five workmen's houses in Coleraine. Mr. William Henry, clerk, Town Hall, Coleraine.

**LANGHO.**—April 4.—Competitive drawings are invited for buildings to be erected at Langho, near Blackburn, for the accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200*l.*, 150*l.* and 100*l.* respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**MEXBOROUGH.**—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25*l.* and 10*l.* are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

**NEW SOUTH WALES.**—March 31.—Designs are invited for a bridge across Sydney Harbour. Mr. H. Copeland, 9 Victoria Street, S.W.

**OLDHAM.**—April 8.—Competitive drawings are invited for erection of new market hall and shops in Albion Street and Henshaw Street. Premiums will be awarded to the authors of the three selected designs, viz. 50*l.* for the design placed first, 30*l.* for the design placed second, and 20*l.* for the design placed third. Mr. S. A. Pickering, borough surveyor, Oldham.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**YORK.**—May 1.—Designs are invited for a Memorial to the late Queen Victoria to be placed in the Guildhall, York. The design must include a representation of Her Majesty, and be accompanied by an estimate of the cost of the work complete, such cost not to exceed 1,000*l.* A prize of 50*l.* (to merge in the commission) will be given for the accepted design. Mr. W. H. Andrews, town clerk, Guildhall, York.

## CONTRACTS OPEN.

**AMBLE.**—March 25.—For erection of a club at Amble. Mr. George Reavell, jun., architect, Alnwick.

**ASHINGTON.**—April 2.—For erection of a Presbyterian manse at Ashington. Mr. Osborne Blythe, architect, Market Place, Morpeth.

**BARROW-IN-FURNESS.**—March 24.—For construction of lavatories, &c., at the old town hall. The Town Clerk, Town Hall, Barrow.

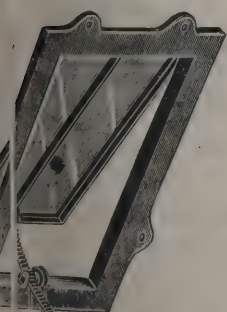


Fig. 9.

## FRED VERITY & SON'S SKYLIGHTS WITH PATENT LIFTERS.

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**BIRDWELL.**—March 26.—For erection of four blocks of semi-detached workmen's dwelling-houses, out-offices, &c., at Pilley Green, near Birdwell station, Yorks. Mr. G. A. Wilson, architect, Hartshead Chambers, Sheffield.

**BLACKPOOL.**—For erection of a pavilion for the South Shore Bowling Club. Mr. J. Wardle Bulcock, architect, 26 Dean Street, South Shore.

**BRADFORD.**—March 24.—For additions to the nurses' home at the workhouse. Mr. F. Holland, architect, 11 Parkinson's Chambers, Hustlergate, Bradford.

**BRADFORD.**—March 24.—For erection of fifteen w.c.'s on property adjoining Wild Boar Street, Bolton Road, Bradford. Messrs. Barber, Hopkinson & Co., architects, Craven Bank Chambers, Keighley.

**BRIDGWATER.**—March 26.—For erection of chapel and school premises in Church Street, Bridgwater. Mr. R. M. Challice, architect, 14 Bedford Circus, Exeter.

**CANTERBURY.**—March 26.—For erection of eighteen cottages, &c., at the Kent County Lunatic Asylum, Chartham Downs. Mr. Francis R. Howlett, clerk to the Kent County Asylums committee, 9 King Street, Maidstone.

**CLAYTON.**—March 31.—For erection of a warehouse at Oak Mills, Clayton, Yorks. Messrs. Milnes & France, architects, 99 Swan Arcade, Bradford.

**COCKERMOUTH.**—March 24.—For erection of a boiler at the pumping station, Great Broughton. Mr. J. B. Wilson, Court Buildings, Cockermouth.

**COCKERMOUTH.**—April 7.—For erection of a greenhouse at the cemetery. Mr. T. Cuthbert Burn, clerk to the Burial Board, Main Street, Cockermouth.

**COLNE.**—April 1.—For erection of a grand stand and all necessary railing, fencing, &c., at the show field on June 7. Mr. R. S. Pilling, architect, Colne.

**DARLINGTON.**—March 24.—For additions to the Kendrew Street Board school. Mr. Neilson, quantity surveyor, Horse Market, Darlington.

**DARTFORD.**—March 24.—For erection of a pair of semi-detached cottages at the sewage pumping station at Slades Green, near Erith. Messrs. Tait & Hobbs, architects, Lowfield Street, Dartford.

**DARTFORD.**—April 4.—For erection of a concert-hall, billiard-room, cloakrooms, &c., at Westgate House, Spital

Street, Dartford, Kent. Mr. Herbert E. Bennett, secretary, Westgate House Club and Institute, Dartford.

**DORCHESTER.**—March 26.—For alterations at the Mas lodge. Mr. J. Feacey, South Walks, Dorchester.

**DURHAM.**—April 4.—For reconstruction of cottages, South Cross Street, Leadgate. Mr. Charles E. Oliver, architect, Consett Iron Co., Ltd., Consett.

**DURHAM.**—For erection of workmen's club and institute, Rowlands Gill. Mr. Thos. H. Stafford, architect, Garesfield Colliery, Lintz Green.

**EAST MOLESEY.**—April 1.—For erection of a fire station. Mr. John Stevenson, surveyor, Council Offices, Walton Road, East Molesey.

**ELLAND.**—March 26.—For erection of a detached residence in Victoria Road, Elland, Yorks. Mr. Fred F. Beaumont, architect, Southgate Chambers, Halifax.

**ELLAND.**—March 26.—For erection of a villa in Victoria Road, Elland, Yorks. Mr. Fred F. Beaumont, architect, Southgate Chambers, Halifax.

**EPSOM.**—March 24.—For additions, alterations and extensions at the isolation hospital at Hook Road, Epsom. Edward R. Capon, surveyor, Bromley Hurst, Church Street, Epsom.

**EVESHAM.**—March 26.—For alterations and additions to the sanatorium, Bengeworth, Evesham. Mr. Henry St. Harvey, 30 Sanatorium Road, Bengeworth.

**GRAVESEND.**—March 26.—For (1) erection of a building, to be used for the purposes of a coach-house and mortuary; and (2) erection of building for disinfectory, and supply and fixing therein of a Thresh disinfectory, at the smallpox hospital, Whitehill Road, Cobham, near Gravesend. G. E. Bond, architect, 384 High Street, Rochester.

**GRAVESEND.**—April 8.—For erection of an additional ward to the hospital, Denton, near Gravesend. Particulars supplied by the City Surveyor, Guildhall, E.C.

**GREAT HARWOOD.**—March 29.—For erection of pig slaughter-houses in Wood and Balfour Streets, Great Harwood. Mr. Alfred H. Dunkin, surveyor, Town Hall, Great Harwood.

**HALIFAX.**—For erection of the Alexandra Theatre and site of the public hall (riding school). Messrs. Jackson & Co., architects, Rawson Street, Halifax.

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HALIFAX.—March 27.—For erection of a bakery, stables, ch-house, &c. Messrs. Geo. Buckley & Son, architects, ver Chambers, Halifax.

HASTINGS.—March 25.—For completion of the lower ion at the East Hill lift at Rock-a-Nore. Mr. Ben. F. dows, town clerk, Town Hall, Hastings.

HELSTON.—April 5.—For erection of a police station and artenances at Helston, Cornwall. Mr. Oliver Caldwell, itect, Victoria Square, Penzance.

HINDLEY.—March 24.—For alterations and additions to central premises of the Hindley Industrial Co-operative ety. Quantities, &c., may be obtained at the Stores,arket Street, Hindley.

HULL.—March 31.—For erection of a new workhouse inary at Patrington. Messrs. Runton & Barry, architects, le Chambers, Hull.

HUNSLET.—For erection of four through houses in Spring e Mount, Hunslet. Mr. John B. Leak, architect, Waterloo l, Hunslet.

LKESTON.—March 27.—For construction of a concrete red service reservoir, of a capacity of 1,400,000 gallons, at wick Nick (about 1½ mile from Whatstandwell station). Wright Lissett, clerk to Water Board.

RELAND.—March 24.—For renovation of the Mount nger Presbyterian church, Belfast. Messrs. Graeme-Watt llock, architects, 77A Victoria Street, Belfast.

RELAND.—March 24.—For erection of a villa at HydePark, ntrim. Mr. Thomas Houston, architect, Kingscourt, ington Place, Belfast.

RELAND.—March 24.—For erection of three houses at urton, Cork. Messrs. W. H. Hill & Son, architects, uth Mall, Cork.

RELAND.—March 27.—For repairs, alterations and iments at the Oughterard workhouse fever hospital. Mr. s Perry, architect, Galway.

RELAND.—March 28.—For erection of a residence at n, co. Tyrone. Mr. John M. Robinson, architect, 7 East Londonderry.

RELAND.—March 31.—For erection of a new hotel on site : present King's Head, Blaina, Mon. Mr. T. Roderick, lect, 50 Glebeland, Merthyr.

RELAND.—April 7.—For erection of a town hall, Macroom. W. Barnard, architect, Macroom.

IRELAND.—April 11.—For erection of a pair of semi-detached villas in Deramore Drive, Malone Road, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

IRELAND.—April 12.—For erection of two villas on the Purdysburn Estate, Belfast. Messrs. Graeme-Watt & Tulloch, architects, 77A Victoria Street, Belfast.

IRELAND.—April 14.—For erection of a parish church at Kilcoe, diocese of Ross. Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

ISLEWORTH.—April 1.—For additions to the Percy House Schools, Isleworth. Mr. W. H. Ward, architect, Paradise street, Birmingham.

KEEKLE.—March 25.—For alterations and additions to Keekle school, Whitehaven. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven, Cumberland.

KEIGHLEY.—March 29.—For erection of a beer-bottling establishment and a residence, Lawkholme Lane. Messrs. Barber, Hopkinson & Co., architects, Craven Bank Chambers, Keighley.

KINETON.—April 3.—For erection of a Wesleyan minister's house, Kineton. Mr. Arthur Fairfax, solicitor, Banbury.

KINGSTON-UPON-THAMES.—April 3.—For erection of the additional buildings for the technical schools, St. James's Road. Mr. Harold A. Winsor, town clerk, Kingston-upon-Thames.

LEEDS.—March 24.—For erection of offices and storerooms at the Kirkstall Road car depôt. The Town Clerk, Municipal Offices, Leeds.

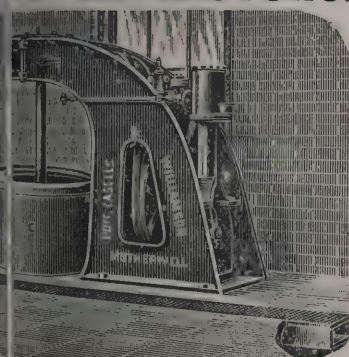
LEEDS.—March 24.—For erection of workshops at Wellington Bridge, Leeds. Mr. William Bakewell, architect, 38 Park Square, Leeds.

LONDON.—April 10.—For erection of a gate porter's lodge and an addition to the steward's house at the Northern Convalescent Fever Hospital. Mr. T. Duncombe Mann, clerk, Metropolitan Asylums Board, Embankment, E.C.

LONDON.—March 25.—For erection of Ottawa and Baffin Buildings, Preston's Road site, Poplar. Particulars at the Architect's Department, Housing Branch, 18 Pall Mall East, S.W.

LONG EATON.—March 25.—For erection of the following works in connection with the generating station, Long Eaton, i.e. Contract E, engine-room, boiler-house, offices, outbuildings and other works; Contract F, chimney-shaft, 120 feet in

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height, and foundations. Mr. Frank Worrall, district engineer, Council Offices, Long Eaton.

MADRON.—March 31.—For erection of a Wesleyan chapel at Madron, Cornwall. Mr. Henry Maddern, architect, 26 Clarence Street, Penzance.

MAIDENHEAD.—March 26.—For erection of a circular chimney-shaft, 125 feet high and 5 feet 6 inches internal diameter. Mr. Percy Johns, borough surveyor, Guildhall, Maidenhead.

MAIDENHEAD.—March 26.—For erection of an electric generating station near the Braywick Road, Maidenhead. Mr. Percy Johns, borough surveyor, Guildhall, Maidenhead.

MANCHESTER.—March 25.—For erection of a carriage-shed, offices, &c., at Irlams-o'-th'-Height, near Manchester, for the Lancashire and Yorkshire Railway Company. Mr. R. C. Irwin, secretary, Hunt's Bank, Manchester.

MIDDLETON-ON-THE-WOLDS.—April 10.—For erection of Wesleyan chapel and schools at Middleton-on-the-Wolds. Messrs. Gelder & Kitchen, architects, 76 Lowgate, Hull.

MORETON-IN-MARSH.—For erection of a large two-storied drying-shed, Moreton-in-Marsh, Gloucester. Mr. J. Kennedy, Batsford Estate Offices, Moreton-in-Marsh, Gloucester.

MORETON-IN-MARSH.—For erection of four round draught kilns, for the Aston Magna Brick and Tile Company, Moreton-in-Marsh, Gloucester. Particulars of the Manager.

NANTWICH.—April 7.—For erection of electricity works and refuse-destroyer. Mr. W. F. Newey, surveyor, Market Street, Nantwich.

NELSON.—March 24.—For extension to the culvert at Reedyford. Mr. J. H. Baldwick, town clerk, Town Hall, Nelson.

NEWCASTLE-UPON-TYNE.—April 2.—For erection of the Bentinck special school. Mr. Alfred Goddard, clerk, Grainger Street West.

NOTTINGHAM.—March 26.—For alterations and additions to the works and ways offices in the Eastcroft dépôt. Sir Samuel G. Johnson, town clerk, Guildhall, Nottingham.

NOTTINGHAM.—For erection of villa residence at Plumtree. Mr. Frank Parkin, architect, Prudential Buildings, Nottingham.

ORMSKIRK.—March 26.—For erection of four cast-iron fire-escape stairs and works in connection therewith, at the

industrial schools, Wigan Road, Ormskirk, Lancs. Mr. architect, D 16 Exchange Buildings, Liverpool.

PICKERING AND KIRBYMOORSIDE.—March 31.—laying six miles of 3½-inch and 3-inch cast-iron water-pipes the construction of impounding tanks and service reservoirs the supply of about 210 tons of cast-iron pipes and fitting the joint water-supply of Spaunton, Lastingham and Apple-Moors, Yorks. Mr. J. E. Parker, engineer, Post Chambers, Newcastle-on-Tyne.

QUORN.—March 26.—For erection of manse at Leicester, and construction, kerbing and sewerage new on the Derby Road building estate. Messrs. Barrow Allcock, architects, Quorn, Leicester.

ROMSEY.—March 29.—For taking-down existing church, Sheffield English, near Romsey, Hants, and the erection new church on same site. Mr. Fred. Bath, architect, Chambers, Salisbury.

ROTHERHAM.—March 25.—For erection of boundary &c. Mr. H. L. Tacon, architect, 11 Westgate, Rotherham.

ROTHERHAM.—March 28.—For erection of five dwellings in France Street, Parkgate. Mr. J. Platts, architect, High Street, Rotherham.

ST. AUSTELL.—March 22.—For rebuilding of the wall, &c., at the vicarage in Tregonissey Road, St. Austell. Mr. J. Samble, surveyor, St. Austell.

SANDBACH.—April 4.—For erection of a detached Wesleyan minister at Sandbach. Mr. Alfred Price, architect, Sandbach.

SCOTLAND.—For erection of a fever hospital at Messrs. Sydney Mitchell & Wilson, architects, 13 Young Street, Edinburgh.

SCOTLAND.—March 24.—For erection of the Victoria U.F. church, Kirkcaldy. Mr. William Dow, architect, 259 High Street, Kirkcaldy.

SCOTLAND.—March 26.—For erection of a boundary at Kirkpatrick-Fleming public hall. Mr. C. F. secretary to the hall committee, Kirkpatrick-Fleming.

SCOTLAND.—March 26.—For erection of new and old farm buildings on farm of Caputhall. Messrs. D. & Bell, architects, 1 Rutland Square, Edinburgh.

SCOTLAND.—March 28.—For additions to dwelling at Mayfield, Whitehouse, Aberdeen. Messrs. Jenkins & Co., architects, 26 Bridge Street, Aberdeen.

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SCOTLAND.—March 28.—For alterations on farm offices at Naboth, Glenkindie, Aberdeen. Messrs. Jenkins & Marr, architects, 16 Bridge Street, Aberdeen.

SCOTLAND.—March 28.—For erection of a villa at Hirwain, Ardare. Mr. Thomas Roderick, architect, Clifton Street, Ardare.

SEACOMBE.—April 2.—For erection of a new police-station Seacombe, Cheshire. Mr. H. Beswick, county architect, Wgate Street, Chester.

SOUTH TOTTENHAM.—March 26.—For erection of about feet of fence wall at the North-Eastern Hospital, St Ann's Rd. Messrs. A. & C. Harston, architects, 15 Leadenhall Street, E.C.

STOCKSFIELD-ON-TYNE.—March 29.—For erection of eight houses at Mickley Riding, near Stockfield-on-Tyne. Messrs. Innoch & Bruce, architects, 55 Pilgrim Street, Newcastle-on-Tyne.

SUNDERLAND.—April 3.—For pulling-down and rebuilding houses at the corner of Saville Place and Tatham Street. Messrs. Wm. & T. R. Milburn, architects, 20 Fawcett Street, Sunderland.

SUTTON FORD.—March 27.—For erection of a new bridge at Sutton Ford, near Rochford. Mr. Percy J. Sheldon, surveyor, City Offices, Chelmsford.

TROWBRIDGE.—March 29.—For restoration of the Baptist Chapel, Church Street, Trowbridge. Mr. Walter W. Snailum, architect, Church Street, Trowbridge.

TROWBRIDGE.—March 29.—For erection of a temporary hospital for the isolation of patients suffering from smallpox. W. J. Mann, clerk, Union Offices, Trowbridge.

TRURO.—March 29.—For erection of classrooms at Fairlie Street schools, Truro. Messrs. Carder & Carder, architects, 4 Princes Street, Truro.

TWICKENHAM.—March 27.—For taking-down, setting-back rebuilding the front boundary-wall of the kitchen garden, the front of stables and coach-house, Cross Deep Hall, Twickenham. Mr. Fred W. Pearce, surveyor, Town Hall, Twickenham.

WALES.—March 24.—For erection of from twenty to thirty-five cottages at Tonyrefail. Mr. W. E. Davies, architect, High Street, Tonyrefail.

WALES.—March 24.—For erection of retort-house, coal-store, exhauster, boiler, purifying and station meter-houses and tar and liquor well at the gasworks, Aberavon. Mr. M. Tennant, town clerk, Aberavon.

WALES.—March 26.—For erection of a Presbyterian church of Wales, Builth Wells. Messrs. Habershon, Fawckner & Groves, architects, Pearl Street, Cardiff.

WALES.—March 28.—For erection of thirteen new cottages in two blocks of eight and five near Stanley Road, Garndiffaith. Mr. Alfred Gay, architect, Prospect Place, Harper's Road, Garndiffaith.

WALES.—March 28.—For rebuilding Elim Congregational chapel, Cwmdare, Aberdare. Rev. D. Griffiths, 94 Bwlfa Road, Cwmdare.

WALES.—March 31.—For erection of six houses at Hengoed. Mr. P. Vivian Jones, architect, Hengoed.

WALES.—March 31.—For erection of a villa on the Gwaelodygarth Estate, Merthyr Tydfil. Mr. T. Roderick, architect, 50 Glebeland, Merthyr.

WALES.—March 31.—For erection of twenty-eight houses or more, Abercynon. Mr. Dowdeswell, architect, John Street, Treharris.

WALES.—April 1.—For erection of a classroom and other additions to the Neyland Board school buildings. Mr. D. Edward Thomas, architect, Victoria Place, Haverfordwest.

WALES.—April 1.—For erection of a convalescent home at Cwmdonkin, Swansea. Mr. Glendinning Moxham, architect, Castle Street, Swansea.

WALES.—April 2.—For erection of a pavilion at Bangor for the Royal National Eisteddfod. Mr. Frank Bellis, architect, 204 High Street, Bangor.

WALES.—April 14.—For erection of schools and classrooms, &c., Rhosllanerchrugog. Rev. R. Roberts, Laurel House, Rhosllanerchrugog.

WEST HAM.—April 1.—For erection of a public library at Broadway, Plaistow. Mr. S. B. Russell, architect, 11 Gray's Inn Square, W.C.

WHITBY.—For alterations and additions to a house at Stoupe Brow, near Fyling Hall station. Mr. Harold G. Walker, architect, Skinner Street, Whitby.

WIVENHOE.—March 24.—For erection of a brick wall and iron palisading and gates for enclosing the new burial-ground at Wivenhoe, Essex. Mr. R. H. Barrell, surveyor, Wivenhoe.

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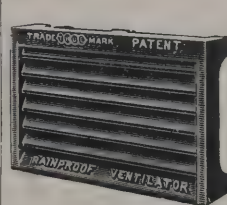
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*Accepted tenders.*

T. West, Bradfield	£298	0	0
J. Manners, Bucklebury	284	0	0
W. G. Johnson, Aldermaston	136	0	0
J. Goddard, Ufton	98	0	0
H. Griffin, Beenham	73	0	0
W. C. Adie, Stanford Dingley	73	0	0
H. G. Wise, Wokefield	63	0	0
W. G. Johnson, Padworth	60	0	0
H. G. Wise, Grazeley	34	5	0

**BRADFORD.**

For alterations to entrance lodge and laundry at the City Hospital, Bierley Hall.

*Accepted tenders.*

Toothill & Balmforth, Spicer Street, mason.  
Bradford and District Joiners' Works Department, Adolphus Street, joiner.  
W. Bolton, plumber.  
A. Taylor, Eccleshill, plasterer.  
G. J. Walton, painter.  
J. Smith, Great Horton, slater.

**BROMLEY.**

For making-up Union Road.

Wallace & Inns	£562	7	7
Lawrence & Thacker	536	17	3
J. Mowlem & Co.	532	3	6
M. Dennie	500	8	11
J. Coker	493	3	11
E. PIELL & SONS, Bromley, Kent (accepted)	452	1	4
H. Woodham & Sons	414	11	11

**BROADSTAIRS.**

For street and sewerage works, Dickens Road. Mr. H. H. town surveyor.

Castle & Co.	£792
W. Wilson	571
G. Griggs	568
A. E. GOODBURN, Ramsgate (accepted)	525

**BROTHERTON.**

For works and materials required in laying and joining 3,500 lineal yards or thereabouts of earthenware sewers and cast-iron pipes, the construction of manholes, flushing-tanks, &c., the construction of boundary fence to works, tank, filtration areas, pump house, storage tank, &c., in connection therewith.

JOHN WAUGH, engineer, Sunbridge Chambers, Bradford.

H. Tyson	£6,759
J. H. Bentley	5,971
Milson Dixon	5,345
Jones Bros.	5,310
H. Dawson	4,961
Walter Binns	4,780
Egan & Sons	4,717
Ward & Tetley	4,498
E. W. Ives	4,367
WM. SUTCLIFFE, Sowerby Bridge (accepted)	4,300

**CARLISLE.**

For erection of bridges at the following places, Longtown Over the burn at Kays House Burn, Stapleton, and the burn at Bogburn, Kirkandrews on Esk. Mr. J. MURRAY, surveyor, The Courts, Carlisle.

J. MURRAY & SON, Royalty, Stapleton, Brampton (accepted).  
Kays House Burn, 211l. 2s. 8d.; Bogburn Burn, 168l. 10s.  
Surveyor's estimate—Kays House Burn, 200l.; Bogburn, 180l.

**EGREMONT.**

For erection of schools in Main Street, Egremont, Cumbria.  
Mr. J. S. MOFFATT, architect, 53 Church Street, Liverpool.

J. MOFFATT (accepted).

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making-up of Broughton Road, Handsworth, Staffs. Mr. H. RICHARDSON, surveyor.  
 Barnes & Co. . . . . £390 0 0  
 Curall, Lewis & Martin . . . . . 384 0 0  
 White, jun. . . . . 329 0 0  
 COOPER, 379 Rotton Park Road, Dudley Road, Birmingham (accepted) . . . . . 312 0 0

**HARNHAM.**

pulling-down some cottages and rebuilding the Swan inn. Messrs. JOHN HARDING & SON, architects, Salisbury.  
 Dawkins . . . . . £745 0 0  
 Ailey & Marlow . . . . . 710 10 0  
 Stiles . . . . . 680 0 0  
 GORHAM, Fordingbridge (accepted) . . . . . 645 0 0

**HARROGATE.**

supply of a Lancashire boiler. OLDHAM BOILER WORKS CO., Oldham Edge Boiler Works, Oldham (accepted) . . . . . 320 0 0

**HARROW.**

Contract No. 1) supply of and laying about 25,500 lineal feet of Norwegian granite kerb, 31,500 lineal feet of Norwegian granite channel, 150 square yards of 4-inch granite cubes. Mr. J. PERCY BENNETTS, surveyor.  
 Ballard . . . . . £10,797 0 0  
 Buxton & Jenner . . . . . 9,430 0 0  
 Back & Co. . . . . 9,340 0 0  
 Wimpey & Co. . . . . 9,232 0 0  
 Pont & Co. . . . . 9,011 0 0  
 Hollingsworth . . . . . 8,954 0 0  
 Ford . . . . . 8,859 0 0  
 Smiths & Co. . . . . 8,700 0 0  
 Leeler . . . . . 8,458 0 0  
 Buxton & Jenner . . . . . 8,360 0 0  
 Jackson . . . . . 8,288 0 0  
 Nowell & Co. . . . . 8,257 0 0  
 Neave & Son . . . . . 8,116 0 0  
 Lawrence & Thacker . . . . . 7,870 0 0  
 Adams . . . . . 7,672 0 0  
 Dinnie . . . . . 7,593 0 0  
 FREE & SONS, Maidenhead (accepted) . . . . . 7,532 0 0  
 Manders . . . . . 7,396 0 0  
 Granite Corporation Co. (informal) . . . . . 7,283 0 0

**HARROW—continued.**

For (Contract No. 2) supply and laying about 15,000 square yards of permanent concrete slab paving, in slabs of not less than 2 inches in thickness. Mr. J. PERCY BENNETTS, surveyor  
 Hard York "Non-Slip" Stone Company . . . . . £5 007 0 0  
 Meston & Hale . . . . . 4,701 0 0  
 Threkeld Granite Company . . . . . 4,322 0 0  
 Imperial Stone Company . . . . . 4,313 0 0  
 Adamant Stone Company . . . . . 4,298 0 0  
 W. Jackson . . . . . 4,108 0 0  
 Patent Indurated Stone Company . . . . . 4,093 0 0  
 W. Manders (patent indurated) . . . . . 4,093 0 0  
 C Ford (Croft stone) . . . . . 3,948 0 0  
 Nowell & Co. (Ceriog stone) . . . . . 3,924 0 0  
 Free & Sons (Croft stone) . . . . . 3,893 0 0  
 W. Hollingsworth . . . . . 3,839 0 0  
 Lawrence & Thacker . . . . . 3,778 0 0  
 Victoria Stone Company (indurated) . . . . . 3,747 0 0  
 Neave & Sons (Victoria indurated) . . . . . 3,739 0 0  
 Hard York "Non-Slip" Stone Company (concrete slabs) . . . . . 3,714 0 0  
 Buxton & Jenner (J. Ellis's stone) . . . . . 3,689 0 0  
 T. Adams (Croft stone) . . . . . 3,630 0 0  
 Wimpey & Co. . . . . 3,619 0 0  
 Empire Indurated Stone Company . . . . . 3,584 0 0  
 CROFT GRANITE COMPANY (accepted) . . . . . 3,568 0 0  
 W. Tearle (Alexander stone) . . . . . 3,565 0 0  
 Gibbs Bros. . . . . 3,543 0 0  
 Abell & Cammell . . . . . 3,385 0 0

For alterations to Ida Cottage, Harrow-on-the-Hill. Mr. J. PERCY BENNETTS, surveyor.  
 J. Smith . . . . . £147 13 6  
 Lacey & Eyden . . . . . 145 0 0  
 Hastings & Ladley . . . . . 135 0 0  
 H. Woodbridge . . . . . 115 0 0  
 BRACEY & CLARK, Watford (accepted) . . . . . 100 0 0  
 Tilbury, Sudbury . . . . . 99 0 0

For alterations and additions, 1 Lyon Villas, Sudbury, Harrow, for Mr. M. Morris. Messrs. HIGGS & RUDKIN, architects, 25 John Street, Bedford Row, W.C.  
 J. Milroy . . . . . £127 15 0  
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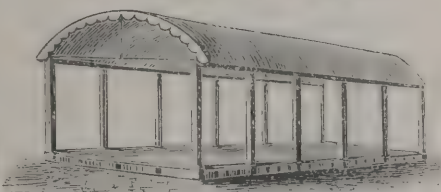
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Kiddle & Son . . . . . 2,309 0 0  
AKERS & CO. (accepted) . . . . . 2,187 0 0

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For erection of boundary walls, fencing, drainage, &c., at the borough cemetery. Mr. P. H. PALMER, engineer, Town Hall, Hastings.

W. SMITH, Hastings (accepted) . . . . . £2,975 19 9

**HAYWARD'S HEATH.**

For drainage of Boltro Road. Mr. L. BLACKSHALL, borough surveyor.

C. MAYO (accepted) . . . . . £236 10 0

**HEREFORD.**

For restoration of St. James's Church, Hereford. Messrs. NICHOLSON & HARTREE, architects, Hereford.

H. Smith . . . . . £5,707 0 0  
King & Son . . . . . 5,688 0 0  
Hatch & Sons . . . . . 5,400 0 0  
R. Morgan . . . . . 5,270 0 0  
Broad & Co. . . . . 5,207 2 6  
W. P. Lewis & Co. . . . . 4,985 0 0  
Bowers & Co. . . . . 4,830 0 0  
Beayan & Hodges . . . . . 4,682 0 0  
C. COOKE, Hereford (accepted) . . . . . 4,400 0 0

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G. Wells . . . . . £358 16 8  
Tullock . . . . . 342 15 0  
Glen & Moffett . . . . . 317 7 4  
G. THORNTON & CO, South Shields (accepted) . . . . . 314 19 0

**IRELAND.**

For alterations to premises at Carlisle Road, Londonderry. Mr. J. P. MCGRATH, architect, 28 Carlisle Road, Londonderry.

J. W. BOYD, Londonderry (accepted).

For erection of a residence at Lawrence Street. Mr. MCGRATH, architect, 28 Carlisle Road, Londonderry.

A. DUNLOP, Sackville Street (accepted) . . . . . £580

Amended tender, omitting painting and plumbing work.  
For erection of three cottages at Lecky Road, Londonderry. Mr. J. P. MCGRATH, architect, 28 Carlisle Road, Londonderry.

J. GALLAGHER & SONS, Moville (accepted) . . . . . £375

For conversion of the present disused fever hospital, Clontarf, to a workhouse infirmary.

P. McGorman . . . . . £356 10 0

J. Kelly . . . . . 335 10 0

T. Gray . . . . . 295 10 0

J. DONNELLYR, High Street, Enniskillen (accepted) . . . . . 254 10 0

For erection of two houses, Cockhill Road, Buncrana. Mr. J. P. MCGRATH, architect, 28 Carlisle Road, Londonderry.

H. Campbell . . . . . £600

R. COLHOUN, Londonderry (accepted) . . . . . 420 10 0

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W. Pattinson & Sons . . . . . £611,289

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Higgs & Hill, Ltd. . . . . 585,000

Leslie & Co., Ltd. . . . . 586,670

J. Mowlem & Co. . . . . 580,500

A. King . . . . . 549,500

Perry & Co. . . . . 545,973

Kirk & Randall . . . . . 536,606

F. S. Minter . . . . . 520,800

H. Lovatt . . . . . 517,527

Holloway Bros. . . . . 508,115

R. M. Hughes . . . . . 499,700

J. Shillitoe & Son . . . . . 490,650

Maple & Co., Ltd. . . . . 482,992

SPENCER, SANTO & CO., LTD. (accepted) . . . . . 473,000

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LONDON—continued.

Painting and decorating board-room, library and chapel at  
the Licensed Victuallers' Asylum, Asylum Road, Old  
Kent Road, S.E. Mr. W. F. POTTER, architect.  
Candler & Sons . . . . . £232 0 0  
Hawker . . . . . 230 0 0  
Croft . . . . . 191 0 0  
Hawes . . . . . 180 0 0  
ing & Son . . . . . 174 0 0  
COOKE, Clapham Road (accepted). . . . . 94 15 0

Erection of new banking premises at the corner of Pall  
mall and Waterloo Place, S.W. Mr. A. E. THOMPSON,  
architect, Leadenhall Buildings, E.C.

er & Dicksee . . . . . £27,777 0 0  
oway Bros. . . . . 27,201 0 0  
son & Son . . . . . 24,657 0 0  
Downs . . . . . 23,243 0 0  
le & Co . . . . . 22,924 0 0  
rmichael . . . . . 22,280 0 0  
MAN & FOTHERINGHAM (accepted) . . . . . 21,963 0 0

Erection of eight houses in Barmouth Road. Messrs.  
RIGHT, THOMAS & CO., architects, 23 Palace Street,  
Westminster.

ON & STYLES (accepted subject to revi-  
n of estimate) . . . . . £3,840 0 0

LOUGHBOROUGH.

ing at the workhouse of about 80 yards of new 4-inch  
ter-main.  
RKINS, Leicester Road (accepted)\* . . . . . £28 0 0  
\* Exclusive of excavating, &c.

NEWCASTLE-UNDER-LYME.

ction of two houses, London Road, Newcastle-under-  
me, Staffs. Mr. WM. CAMPBELL, architect, 2 and  
agnall Street, Hanley.  
BATH, Stoke-on-Trent (accepted) . . . . . £797 0 0

NEWPORT (ISLE OF WIGHT).

ction of a technical institute. Mr. GOUGH, architect.  
INS, Newport (accepted) . . . . . £7,804 10 0

NORWICH.

For extension of the Post Office.

T. H. Blyth . . . . . £12,250 0 0  
J. Downing & Son . . . . . 11,443 0 0  
J. Youngs & Son . . . . . 11,397 0 0  
J. S. Smith . . . . . 10,654 0 0  
S. Chapman & Son . . . . . 10,233 0 0  
G. E. HAWES (accepted). . . . . 9,889 0 0

OGBOURNE ST. ANDREW (WILTS).

For erection of three cottages. Messrs WRIGHT, THOMAS  
& Co., architects, 23 Palace Street, Westminster, S.W.  
PARKER BROS, Swindon (accepted) . . . . . £570 0 0

PRESTON.

For re-roofing a portion of the large plunge bath and other  
repairs at the baths, Saul Street.

R. N. HULL (accepted) . . . . . £341 0 0

For painting, &c, at the baths, Saul Street.

S. & J. TURNER (accepted) . . . . . £100 0 0

ROCHDALE.

For supply of a complete traction switchboard and accessories.  
STATTER & Co., Birmingham (accepted).

SALISBURY.

For building new residence from plinth level at Milford  
Manor, Salisbury. Mr. FRED BATH, architect, Salisbury.

Guppy & Chant . . . . . £12,000 0 0  
Holliday & Greenwood, Ltd. . . . . 8,557 0 0  
James Downham . . . . . 8,386 2 7  
G. H. Gibson . . . . . 7,965 0 0  
J. Harris & Son . . . . . 7,949 0 0  
Exors. of the late W. Franklin . . . . . 7,916 13 0  
F. Merrick & Son . . . . . 7,908 0 0  
C. H. Green . . . . . 7,900 0 0  
Henry Cawte . . . . . 7,834 2 0  
B E Nightingale . . . . . 7,800 0 0  
John Shillitoe & Son . . . . . 7,800 0 0  
Bailey & Marlow . . . . . 7,765 10 0  
Webb & Co. . . . . 7,595 0 0  
Thos. Dawkins . . . . . 7,550 0 0  
WM. BEAZLEY, Calne, Wilts\* . . . . . 7,489 0 0

\* Accepted subject to deductions amounting to 7c0l.

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## SCOTLAND.

For electrical equipment of the Rosemount route of tramways, Aberdeen. Mr. J. A. BELL, city electrical engineer.

*Accepted tenders.*

British Insulated Wire Co., Ltd., Prescott, overhead work.  
Anchor Cable Co., Ltd., Leigh, Lancs., cables only.

For extension of main sewer and water main in Emma Street, Blairgowrie. Mr. GEORGE CUNNISON, burgh surveyor.

*Sewer.*

F. McDonald	£25 10 0
G. Kidd	24 16 0
R. Kidd	23 18 0

*Water-main.*

F. McDonald	16 15 0
R. KIDD, Blairgowrie (accepted)	11 15 0
G. Kidd	11 10 0

## SEASCALE.

For alterations and extensions to the golf clubhouse, Seascale, Cumberland. Messrs. W. S. SCOTT & Co., architects, Victoria Buildings, Workington.

J. STEEL, Workington (accepted) . . . £221 12 0

## SLOUGH.

For sewerage and other works, including the supply of about 3,359 yards of 15-inch pipes, 1,973 yards of 12-inch pipes, 11,000 yards of 9-inch pipes and 1,350 yards of 6-inch pipes, &c. Mr. W. W. COOPER, engineer.

W. H. Wheeler	£31,866 0 0
Wimpey & Son	28,174 0 0
Trimm	26,343 0 0
Free & Son	24,750 0 0
Osenton	24,344 0 0
Lee & Son	23,942 0 0
Cooke & Co.	23,870 0 0
C. Ford	23,829 0 0
Binns	23,566 0 0
Lang	23,323 0 0
Jones & Son	21,110 0 0
Deveritt	22,597 0 0
Jackaman	20,973 0 0
J. Jackson	20,869 0 0
Wilkinson Bros.	19,429 0 0
Johnson & Langley	18,185 0 0

## STRATFORD.

For erection of twenty-seven houses and shops in Bis Leighton Roads, High Street. Mr. J. M. H. GLA architect, Boston House, 63 and 64 New Broad Street.

F. Smith & Co.	£9,269
A. Webb	8,700
A. E. Symes	8,250
H. Evan Jones & Co.	7,750
C. North	7,340
C. SIMMONS (accepted)	7,060

## SUDBURY.

For sewerage works, Suffolk. Mr. T. W. A. H. borough surveyor.

*Section No. 1.*

G. Double	£4,400
G. Burgoyne & Sons	4,070
Gill & West	4,050
G. Bell	3,950
A. Braithwaite & Co.	3,940
J. & T. Binns	3,830
W. Manders	3,570
B. Cooke & Co.	3,550
F. Bennett (withdrawn)	3,500
Streeters & Todhunter	3,280
T. J. Coxhead	3,190
Wilkinson Bros.	3,070
JOHNSON & LANGLEY, Leicester (accepted)	2,920

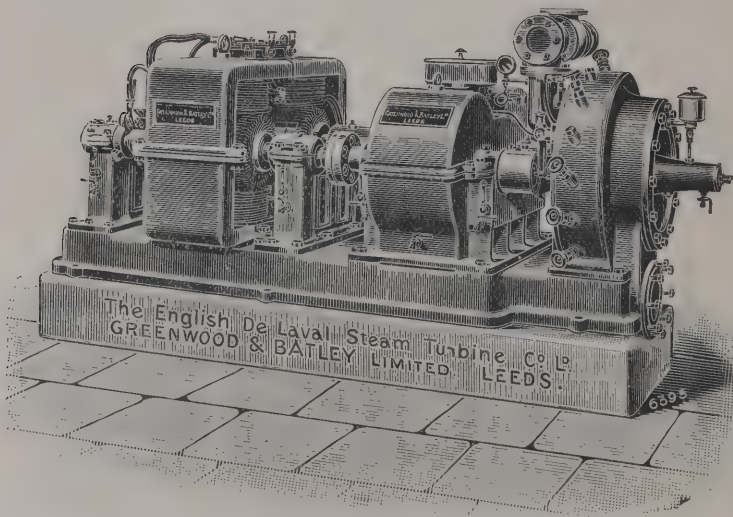
*Section No. 2.*

Gill & West	4,380
Wilkinson Bros.	3,290
G. Double	3,230
G. Bell	3,160
A. Braithwaite & Co.	3,050
J. & T. Binns	2,960
B. Cooke & Co.	2,950
Streeters & Todhunter	2,670
W. Manders	2,650
G. Burgoyne & Sons	2,620
Johnson & Langley	2,600
T. J. COXHEAD (accepted)	2,470
F. Bennett (withdrawn)	2,440

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SUDBURY—continued.

Section No. 3.

Smithwaite & Co.	£5,510	11	3
West	5,299	6	0
son Bros.	4,850	0	0
oke & Co.	4,632	5	10
Binns	4,617	3	6
	4,545	0	0
	4,220	18	0
on & Langley	4,033	14	5
Coxhead	4,019	0	0
ers & Todhunter	3,974	0	0
rgoyne & Sons	3,826	14	7
innett (withdrawn)	3,787	0	0
ANDERS (accepted)	3,785	0	0

Whole tender.

eldon, Birmingham	10,379	18	6
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WALES.

tion of stabling for 34 horses, Newport, Mon. Messrs. PERSHON, FAWCKNER & GROVES, architects, Newport.

	£7,450	0	0
es & Son	6,187	0	0
n & Co.	6,183	0	0
on	5,961	0	0
Bros.	5,870	0	0
ffitt	5,819	0	0
Jordan	5,787	0	0
ke	5,750	0	0
Javies	5,732	0	0
Morgan & Co.	5,683	0	0
Parfitt	5,662	0	0
earer Bros.	5,597	0	0
Reed	5,509	0	0
Powles	5,435	0	0
Richards & Co.	5,298	0	0
& Fisher	5,245	0	0
OPER, Newport (accepted)	5,185	0	0

ysing an acre of land, part of the Eglwysrwr Common, ligan, and the erection thereon of a concrete foundation hospital building.

AN & MICHAEL, Pendre, Cilgerran, R.S.O. £37 10 0

WALES—continued.

For erection of a minister's house, Blaenannerch.

Accepted tenders.\*

J. Davies & Son, Blaenannerch.

J. Morris, Tremaden.

O. Moses, Brynadrfor.

\* Given jointly for £400.

For erection of a house, Sully Road, near Penarth. Messrs. BATCHELOR & JARMAN, architects, 19 Duke Street, Cardiff.

J. S. Shepton	£765	0	0
Cox & Bardo	729	14	0
J. Blight	700	0	0
J. BUTTON, Dinas Powis (accepted)	637	0	0

WALTON.

For drainage work, Walton-on-Thames, Surrey. Messrs. FOULSHAM & HERBERT RICHES, surveyors, 3 Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E.

E. J. Ingram	£198	0	0
B. Ingram & Co.	175	0	0
Gaze & Sons	165	0	0
G. LUKER & SON (accepted)	149	10	0

WILLENHALL.

For rebuilding and widening Morfital Lane, Brook Bridge, Willenhall, Staffs. Mr. T. EDGAR FELLOWS, surveyor.

T. Woodhouse	£454	0	0
Barnes & Co.	429	0	0
T. Tildesley	427	0	0
J. Hicken & Sons	420	0	0
Hammond Bros.	371	0	0
J. MOSELEY & SONS, Albion Road, Willenhall (accepted)	365	0	0

YORK.

For erection of isolation hospital, Huntingdon Road. Mr. ALFRED CREER, city engineer.

R. DENT, Lord Mayor's Walk (accepted) £1,089 12 0

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## CORRESPONDENCE.

Bassett v. Adamant Company, Ltd.

SIR,—Referring to above case reported in the daily papers of Saturday last, we should be glad if you will kindly allow us to state that we have no connection whatever with the plaintiff or defendants in the action, as, owing to the somewhat similar names, viz. *Adamant* and *Adamantine*, the public might perhaps think that we may be in some manner connected with the case.—We are, dear Sir, yours truly,

G. M. RESTALL &amp; SON,

Adamantine Plaster Manufacturers.

Soho Pool Wharf, Birmingham :

March 19, 1902.

## ELECTRIC NOTES.

THE Margate Corporation have provisionally agreed to construct an electric lift connecting the Marina with the Victoria Parade.

FLADBURY, a Worcestershire hamlet of 425 inhabitants, is electrically lighted by means of two water turbines, which derive their power from the Avon. Seven public electric lamps brighten the village street, and 280 private-house lamps are in use. The whole working expense is about 70*l.* a year, and the revenue about 120*l.*

ONE of the largest blasting operations ever witnessed at the Swell Tor Quarries, Princetown, Devon, has just taken place. The powder was fired by a network of electrical wires. When the arrangements had all been completed every one was removed out of danger. A slight wait ensued, and then there was a long roll as of thunder, a blaze of fire, and many hundreds of tons of stone went crashing into the quarry. One stone measured 23 feet long by 9 feet wide and 8 feet deep.

THE Hove Town Council had recently before them a report advising the purchase by the Corporation of the tramway now running between Hove and Shoreham, and the working of it in future by electricity. Four routes were also suggested for the municipal tramways it is proposed to lay down. The sea-front was omitted from the scheme, it not being deemed desirable to have a tramway in that position. The other routes extended over a distance of four and three-quarter miles, starting from the Brighton boundary, and going westwards and northwards. Nearly all the length would be a double track.

The cost of permanent way and overhead electric equipment was estimated at 85,000*l.* The subject is to be further considered at a special meeting.

A COMMITTEE of the House of Commons, of which Mr. Welby was the chairman, last week found the preamble of the Kent Electric Power Bill proved. The object of the Bill is to supply electric power in the administrative part of the County of Kent, and it is anticipated that it will afford assistance to local authorities in carrying out provisional orders. It is a good deal of power will be required for electric light railways, and the numerous manufactures in the County are looked to to provide a considerable revenue. Generating stations are to be erected at Canterbury, Tonbridge, and Rochester, a proposed fourth at Dover having been abandoned owing to opposition. Mr. S. Z. Ferranti, electrical engineer, gave evidence in support of the Bill, stating that the normal price was 4*d.* per Board of Trade unit, with a sliding scale down to 3*d.* per unit. There was no opposition.

At a meeting of the tramway committee of Dundee Council the electrical engineer submitted a report on proposed additions to the plant at the electric station. His report it appeared that the existing plant was equivalent to 3,770 horse-power. During the past winter the quantity of electricity required to supply the demands of the Corporation was equal to 2,556 horse-power, while next winter it was estimated that 3,368 horse-power would be needed. The pressure on the return feeders allowed by the Board of Trade had been reached, and it would now be necessary to instal boosters. He therefore recommended the purchase of one 750 kilowatt engine and dynamo at a total cost of 6,000*l.*; two 600 horse-power tubular boilers fitted with mechanical stokers and force draught apparatus for burning cheap fuel, at 200*l.*; and boosters and switches at 1,000*l.*—in all, 9,000*l.* Bailie Robertson suggested that the committee might have a report from an expert on the electric supply in order to ascertain if they were getting all the possible from the present plant. He was supported by Mr. High. The convener (Mr. Brownlee) pointed out that in the report by the engineer it appeared that they were working the machinery at more than its recognised capacity. He also pointed out that the demands for tramway and light railways were increasing, and that by next winter there would be too narrow a margin to work upon. It was finally agreed to approve of the engineer's report.

7 PALL MALL, S.W.

7 PALL MALL, S.W.

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## ILLUSTRATIONS.

SOUTH TRANSEPT, SELBY ABBEY.

GOSPEL OAK CHAPEL.

LISCARD CHURCH, CHESHIRE.

GARDENE, NEW BRIGHTON: ENTRANCE FRONT.—GARDEN FRONT

BROOKLANDS, NEAR MANCHESTER.

FOUR OAKS, WARWICKSHIRE.

## TRADE NOTES.

A new police station at Prestatyn has been fitted with well-known "small tube" hot water heating apparatus by Messrs. John King, Ltd., engineers, Liverpool.

THE Westbrook Temporary Hospital, Herne Bay, is being heated and ventilated by means of Shorland's patent Mantel stoves and special inlet tubes, supplied by Messrs. L. Shorland & Brother, of Manchester.

MESSRS. COUSLAND & MACKAY, ventilating engineers, Glasgow and Manchester, are at present carrying out the ventilation of the Minehead Baptist chapel, Minehead, by means of Mackay's direct-acting ventilators, of which they are the sole agents.

HAT His Majesty has decided not to go abroad, but to spend his holiday yachting round the British coasts, is as it should be, and will be much appreciated by the people of the most seafaring nation in the world, and give an impetus to yachting. In spite of all that has been said about the new yacht, there is no doubt that she is not only thoroughly worthy, but probably is the finest yacht in the world, and is also in the matter of fireproof construction, non-flammable having been used almost throughout.

AMONGST the recent improvements at Windsor Castle was the installation of a "Teba" auto-geyser, made by Maughan's Hot Water Geyser Company, Ltd., for the purpose of supplying hot water to the King's bath. This apparatus is fitted in an airing lobby, the gas and cold water supplies being automatically opened and closed by the turning on or off of the hot-

water tap to the bath. The principle on which the "Teba" auto-geyser works is as follows:—The opening of any hot-water tap draws hot water from the auto-geyser. Fresh cold water enters through a ball valve. This lifts a float which opens a full supply of gas. The cold water is heated in passing through the auto-geyser, and an unlimited quantity can be drawn. When the tap is closed the apparatus fills and the ball valve shuts off the supply. The float then falls, shutting off the gas to pilot light, which serves to maintain the heat of the contained water, and to relight the burner when again used. There is, accordingly, practically no expense for fuel except when hot water is being drawn, an obvious economy as compared with the kitchen-boiler system.

## VARIETIES.

NEW Church schools have been opened in Waterloo Road, Lambeth. The building provides accommodation for 900 children.

Messrs. Hill & Smith's premises, Janus Works, Queen's Road, Battersea, were the scene of a serious outbreak of fire yesterday (Thursday) morning.

MR. ROBERT BRYCE WALKER has been elected town clerk of Pollokshaws, in the room of Mr. John Campbell, resigned.

A NEW church and Sunday school, which has been erected at Beeston Hill, Yorks, from the designs of Mr. G. W. Smithson, of Leeds, at a cost of 3,049*l.*, exclusive of the cost of site, was opened on the 15th inst.

THE new porch which has been erected at the south-eastern door of Holy Trinity Church, Shrewsbury, at a cost of 200*l.*, was formally dedicated by the Bishop of Shrewsbury at the evening service on Sunday, the 9th inst.

ST. MARY'S CHURCH, Send, Surrey, has been repaved, the old stone paving, which was greatly worn, having been replaced by wood blocks. All the old tombs have been sealed down, and the chancel has been paved with white marble, the gift of the Earl of Onslow. The exterior of the church windows has also been restored. The work has been carried out by Messrs. Harris & Son, of Woking.

THE new municipal hall, public library and technical schools erected by the Corporation of Colne, Lancs, at a cost of 10,000*l.*, were opened on Saturday afternoon. The buildings have a main frontage to Albert Road, the principal thorough-



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175, 176 SLOANE STREET, S.W.

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fare of the town. The public hall (which will seat 1,000 persons) and library are approached by the elevation to Albert Road, and the technical schools occupy the rear portion of the building, which has a commanding site and is erected from the designs of Messrs Woodhouse & Willoughby, architects, of Manchester.

NOTWITHSTANDING the excellent booking for "Made-moiselle Mars," Mrs. Langtry has decided to take a rest during Holy Week, and her elegant theatre will therefore remain closed from to-morrow until the following Saturday, the 29th inst.

THE last of the monthly meetings of the Manchester Society of Architects was held on the 13th inst., when the students' drawings, over fifty in number, were on exhibition. The president, Mr. Alfred Darbyshire, presented the prizes to the successful students, and Mr. Isaac Taylor, taking the drawings one by one, gave each a brief criticism. The winners for the design for a gatehouse were, in the senior class of design, Mr. J. T. W. Brooke, and in the junior Mr. G. F. Ely, special second prizes being also awarded to Mr. C. Paterson and Mr. Harold Hill. Mr. Holden's prize for an art gallery was awarded to Mr. P. A. Horrocks.

A NEW isolation hospital for Rhondda, Wales, was opened on the 13th inst. The building, which is on the most modern lines, is situated at the junction of Penrhys Road and Hospital Road, Ystrad Rhondda, thus being placed in a central position with regard to the Council's area. The hospital is composed of seven blocks of buildings, viz the administrative block, scarlet-fever pavilions, typhoid pavilions, laundry and disinfecting block, mortuary, discharging block and stable. The whole structure is of local stone, surrounded by a wall, and within the enclosure is ample room for extension of the hospital. Accommodation is provided for 32 patients. The cost amounted to £13,385. The plans were prepared by Mr. W. D. Morgan, architect, Ton, who was successful amongst 10 competing architects.

A CURIOUS development has taken place in connection with the Rothesay town-clerkship, Mr. James Carse having refused to quit the office premises. He contends that the scope of the petition, in favour of which an interlocutor has been sent from the Court of Session, is not wide enough. He holds that under the terms of that petition Mr. R. D. Whyte, the interim town clerk, can only act under the Burgh Police (Scotland) Act, 1892, Roads and Bridges, Public Health and Electric Lighting Acts, also Rothesay Harbour Act and Orders.

He says that there are many duties outwith these which not covered by the petition, such as licenses and the keeping of the Register of Sasines. On the other hand, it is contended that the petition is perfectly explicit, for after specifying the duties it goes on to say, "And all the other duties pertaining to the office of town clerk." Provost M'Intosh has communicated with the burgh's legal advisers.

IMPORTANT additions to the Birkenhead Institute have just been completed, and greatly enhance the appearance as well as increase the accommodation of the building. These comprise a fine entrance hall, with cloakroom accommodation, and classroom, 24 feet 6 inches by 22 feet, on the ground floor. The first floor is an extension of the science department in the shape of a physical laboratory equipped with specially designed benches and fittings according to the most modern and approved ideas for instruction in this important branch of science. Attached to this physics laboratory are a workshop and dark room for special optical experiments. The whole of the buildings now form a most complete establishment for educational purposes, and, viewed from the standpoint of efficiency, would be difficult to improve. All the rooms are well lighted on modern principles. Scientific education is provided for on a lavish scale. The façade to Whetstone Lane is of white Stourton stone, "so faced," with dressed quoins and moulded window jambs. The gables at each end are dignified and expressive of the purpose of the building. The main entrance is of Classical design, which feeling dominates the whole front, but treatment is free, to admit of adaptation to modern requirements. The buildings from the commencement have been designed and erected under the superintendence of the architects to the Birkenhead Institute Company, Messrs. T. M. Reade & Son, Liverpool. The contractor for the present additions is Mr. Charles Burt, of Liverpool.

#### BUILDING AND BUILDERS.

It is proposed to enlarge St. George's Church, Wolverhampton, Bucks, at a cost of £1,400, or £1,500.

OBAN is to have a new post office, and a plot of land adjoining the railway station is about to be acquired for it.

THE Associated Carpenters and Joiners' Society held a soirée and assembly in the Co-operative Hall, Dunfermline, Friday evening. Provost Scobie presided.

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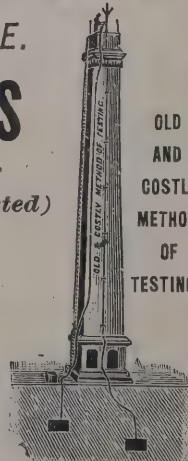
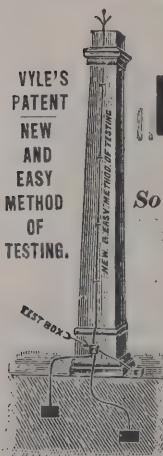
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ANS have been passed for the erection at Coatbridge by the Monkland School Board of a new elementary school which will accommodate 720. The building is estimated to cost

a meeting of the committee charged with the administration of the money to be provided by Mr. Andrew Carnegie for new baths and gymnasium for Dunfermline, tenders accepted to the amount of 27,057*l*. The sum originally estimated was 20,000*l*.

The sanction of the Local Government Board has been given by the Margate Corporation for the expenditure of 700,000*l* upon works of sea defence. The plan includes the construction of artistic shelters and easy paths along the face of the east cliff.

LONDONDERRY builder and contractor named Malseed threw himself in front of a passenger train at a level crossing on the Lough Swilly Railway and was instantly killed. His head and feet being severed. Deceased had only been released a short time ago from a lunatic asylum.

The Halifax licensing justices inspected last week the plans for the proposed Palace Theatre to be erected at Ward's Quay, Halifax. Mr. E. Rüntz, architect, explained the plans. The scheme will involve an outlay of 30,000*l*. or 40,000*l*., as the case may be, and is to be well planned and up to date.

A CREMATORIUM is being erected at Golder's Green, near Hampstead. The structural part includes a chapel, waiting-attendant's lodge, cloisters and suitable structures for the burning of urns and the keeping of memorial tablets. The crematorium adjoins the terminus of the proposed Hampstead and High Cross Electric Railway.

At a meeting of the Bromsgrove, Droitwich and Redditch Local Committee last week, the clerk reported that 9,806*l*. had already been expended on the hospital buildings that will be opened at Hill Top, and he estimated that a further 3,496*l*. would have to be paid. On the whole work he estimated that the expenditure would exceed the architect's fee by 3,707*l*.

A committee of the Lancashire and Cheshire Congregational Chapel and School Building Society have voted the following sums:—A grant of 250*l*. for a new school at Oxtun, near Leeds; a grant of 200*l*. and a loan of 300*l*. for a new school at St. Paul's, Wigan; a grant of 150*l*. and a loan of 200*l*. for a new school at Garstang; and a grant of 500*l*. and a loan of 300*l*. for a new chapel at Broadheath, Altrincham.

A STEEPLEJACK, named Jones, who was at work on a shaft at Messrs. Knowles & Co.'s sanitary ware premises, Woodville, Burton-on-Trent, on Tuesday morning, fell a distance of 60 feet into a channel below. Those who witnessed the occurrence quite anticipated that Jones was killed outright, but when taken to the infirmary it was found that although he was severely injured, his case was anything but a hopeless one. He had sustained a fracture of both ankles, and of one or two ribs.

THE master masons of Arbroath have had under consideration a request by the men to increase the rate of wages from 8*d*. as at present to 8½*d*. per hour; also to allow the men to cease work at noon on Saturdays during the winter months instead of one o'clock as at present; to grant an extra ½*d*. per hour on jobs outside the burgh boundary up to two miles distant and 1*d*. beyond two miles. The masters have declined to entertain the request on the ground that the present state of the building trade does not warrant any alteration in the existing arrangements.

THE construction of the new railway bridge over the river Tyne at Newcastle, the contract for which has been let to the Cleveland Bridge and Engineering Company, Ltd., Darlington, is the largest undertaking of the kind which has been started in the United Kingdom since the completion of the Forth Bridge. The engineer's estimate of the cost of the bridge was 470,000*l*., but it is understood that the contract has been placed at something under this amount. The new bridge will not supersede the existing high-level bridge at Newcastle, but will supplement it, the congestion of traffic at the point making another bridge necessary. It will cross the river more than a third of a mile higher up the stream than the present bridge.

AN interesting event took place at the Queen's hotel, Leeds, on the 7th inst., when Messrs. W. Nicholson & Son, builders and contractors, invited their staff and a few friends to a complimentary dinner given to their oldest foreman (Mr. William Sutcliffe) who had that day served fifty years with the firm, commencing with the grandfather of the present Mr. William Nicholson. After the dinner Mr. Sutcliffe was presented by the firm with a life-size portrait of himself, a dining-room clock and a purse containing 125*l*. Mr. Nicholson, in a pleasant little address, stated that Mr. Sutcliffe had not been away from his work, either from illness or holidays, one week in ten years, or five weeks during the whole fifty years, and his services had been continuous in spite of strikes and lock-outs over

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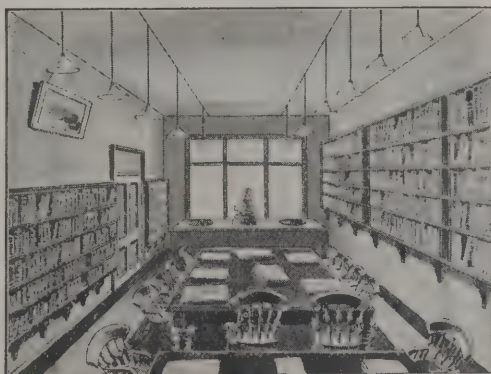
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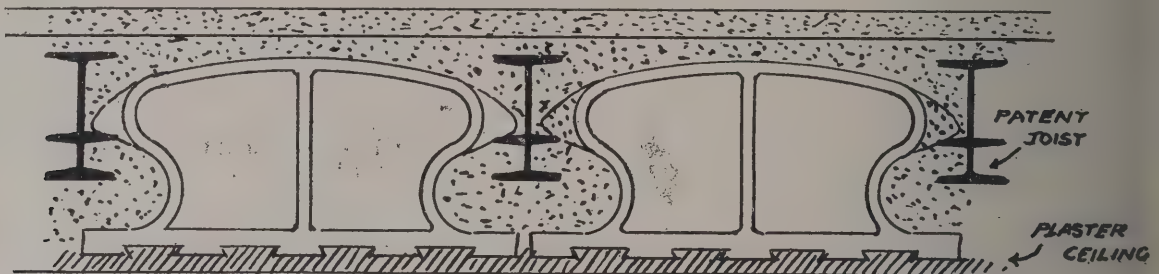
the whole period; in fact, he was an example of faithfulness, honesty, sobriety and energy. He was glad to say Mr. Sutcliffe was not going to retire. Mr. Sutcliffe in returning thanks said that he had achieved that day what he had set his mind on forty-two years ago. Mr. H. S. Atkinson, the general manager, in proposing the health of the firm, gave a list of many of the difficult tasks carried out so well by Mr. W. Sutcliffe.

A FURTHER step has been taken towards the realisation of Birmingham's Rowton House scheme. The contract for the purchase of a site for the new house having now been signed, building operations will shortly be in active progress. The site is situated at the corner of Moseley and Alcester Streets, with a frontage of over 80 yards to the former, and of 53 yards to the latter thoroughfare. It lies high, and quite an exceptional feature is that it adjoins Highgate Park. Its frontage to the park is about the same as to Moseley Street, and thus one side of the house will overlook a large open space and will have a southern aspect, so that a copious supply of sunlight and fresh air is assured. Another feature of the site is its proximity to the centre of the town. It adjoins the Moseley Street police and fire-brigade stations, is within a minute's walk of the Moseley tram route, three minutes' walk of the Small Heath tram route, about five minutes' walk of the new dead-meat market and the other public markets, and is close to the lodging-house district of the city. It is considered by Lord Rowton and all the officials of the London Rowton Houses to be the most eligible site they have ever seen offered for the erection of a Rowton House, and the enterprise is to be congratulated upon such an excellent acquisition. The

land is being surveyed, and, as stated, building operations will shortly be commenced. The directors, after carefully into the cost of the building and considering income which will be derived from the provision of a number of cubicles, have been induced to favourably consider the erection of a larger house than was originally contemplated and that in all probability a house capable of finding room for 800 persons will be erected. Plans have already been prepared, and as the site stands so high, and lends itself to architectural treatment, the building will be a handsome addition to the public buildings of the city.

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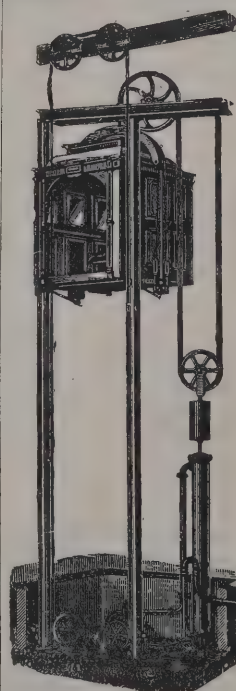
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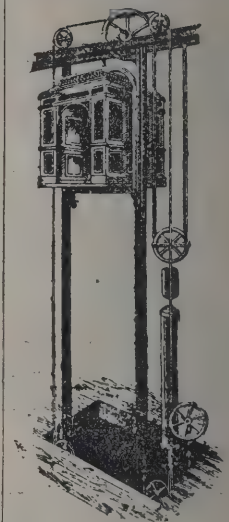
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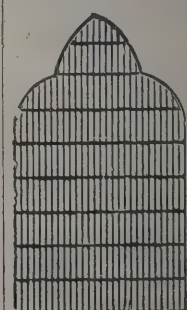
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er fires, and possesses the advantages of lightness and with exceptional strength and rapidity and facility of action, while all severe impact by falling debris during fire is effectually provided for. It is being placed on the market by Messrs. P. & W. MacLellan, Ltd., of Glasgow, and its reputation in roof, bridge, and structural work generally is well known. It has been approved and adopted by the Corporation of Glasgow on the advice of their architects, Messrs. James & R. D. Sandilands, and the City engineer, Mr. Macdonald, C.E., M.Inst.C.E., for their Bell Street, Street, Trongate and High Street improvements; also by the Glasgow Parish Council for their Western District on the advice of their architect, Mr. Alexander Cullen, A.A., Brandon Chambers, Hamilton. This construction has been subjected to the keenest criticism, and was favourably reported upon by large numbers of practical experts from all over the world when shown at the recent Glasgow International Exhibition.

#### ARTISTIC ELECTRIC ILLUMINATIONS.\*

Subject selected for discussion this evening is, no doubt, one eminently appropriate to a time when many of our citizens are thinking of showing their loyalty by a display of illumination devices on the fronts of their houses of business or at their private residences. How I, however, have come to the honour of being selected to discuss this subject I really do not know, inasmuch as I had never before spoken on anything relating to the artistic side of electricity, much less to any question of decorative art, but have generally limited myself to questions of technical and constructive importance.

My selection has something to do with the fact that many curious coincidences, I have, during my travels and recent visits abroad, seen much of illuminations on many occasions, and that I am able to tell you something of the doings in countries which, I may almost say, are "in the process of demonstrating their loyalty or joy by illuminations."

It may be, however, that I have been called upon to speak on this subject, as an amateur, takes considerable interest in

paper read by Edwin O. Sachs, architect, A.M.I.Mech.E., before the Society for the Encouragement of the

electric lighting and stage lighting, and the lighting of public buildings in particular, and who, in a sordid moment, having assisted in the development of a certain electrical system and certain electrical devices, had the impertinence to interest himself financially in what I believe may shortly revolutionise the whole problem of rapid and artistic electrical illumination. I here refer to my association with what is generally known as the E.L.B. system of electric lighting, brought out by a company trading under the name of Electric Lighting Boards.

Whatever the actual reason may have been, I will approach the subject to-night, firstly, as an architect; secondly, as one who has travelled; and thirdly, as one who believes (rightly or wrongly) that there is now at least some means of economically and rapidly employing electricity for special temporary effects in an artistic manner, and also a system which will far supersede everything that has been done before, and more particularly supersede the ugly gas-flare and the hideous gas-jet that have been used in the Metropolis, until we are not only tired of their vulgar presence, but will only too gladly abandon them for all time.

As an architect, I mainly look upon electrical illuminations as a simple and rapid manner of outlining the façades of public buildings, marking the important features of public thoroughfares, and generally applying the principles of architectural design in showing up the features of a building or thoroughfare by artificial light.

As a traveller—and I may say that I know every European capital and many of the minor towns, and have attended in some form or other many of the great ceremonies of the past decade, not only near by in Paris, Berlin or Vienna, but also in the more distant St. Petersburg, Warsaw or Stockholm—I must draw attention to the fact that, with few memorable exceptions (notably last year at the Glasgow Exhibition), we are really behind the rest of the world in our attempts at illuminations.

As an amateur electrician and one who, when attempting to design effective decorative schemes in electrical work, has frequently met with difficulties of execution and expense, I speak to-night as one who believes that, with the new E.L.B. system which I have helped to nurse these difficulties have at last been surmounted.

I am not going to trouble you with a lot of historical detail as to the evolution of electrical illuminations or of illuminations generally, for I believe an audience such as I see before me would rather hear something relating to the practical applica-

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tion of artistic electrical illumination than to the gradual evolution of the illumination schemes of to-day.

Nevertheless, I cannot but remind you that this whole question of artistic illumination is one of very, very long standing, and anyone acquainted with history will know how the great Roman emperors, and before them the Greeks, and before them again the Egyptians, on occasions of great rejoicing, would at night arrange special displays of artificial lighting. Such illuminations have also found a place in many of the great religious ceremonies that have been brought down to us from century to century, and anyone to-day visiting Russia will remember how on special occasions of religious importance there are great displays, not only of illuminations, but also of fireworks.

The application of many small lights at night has, from time immemorial, been the means of expressing joy.

In Russia and in the Slav, Latin and Teutonic countries, illuminations have always been much favoured during the last three centuries, and anyone coming across old prints will frequently find illustrations showing what was done at the time. I myself recently came across a print showing how the historical buildings of Nuremberg were illuminated on May 13, 1774, in a manner that would make us envious, although we now have electric light, and in those times they used only small oil lamps.

But I will not enter into any detailed description of the various illumination appliances utilised prior to the introduction of electric light, yet I must just touch on some of them.

The small earthenware pan, for instance, filled with tallow and a wick, was an appliance used for a very considerable period.

Candle illumination devices, protected by lamp-shades, either of glass or some other semi-transparent material, were popular illumination appliances for many years.

Then we have had the various forms of small lanterns made of metal, and the innumerable paper appliances generally described as Chinese lanterns. Of course, these Chinese lanterns were originally intended and are still intended in the main to be used with candles. They are quite unsuitable for gas, but, on the other hand, they are used with considerable effect as a covering for electric lights. Again, if we go to a country like Italy, we shall find the application of water plays a considerable part in the illumination appliances. Thus you will find glasses filled with water on which a kind of night-light is floating, and the light throwing its rays through the

water makes a charming effect. As a matter of fact, the water thus used is frequently coloured. Another illumination appliance, originally intended to be used with candlelight or with oil lamps, is transparency, which, nowadays, is also used with gaslight or electric light, being to simply draw the illumination device on a semi-transparent material behind which lights are placed in order to show up the device in question.

But, before leaving candlelight, perhaps I should say that the most wonderful effect that I have ever seen in the application of candles was at the celebration of the birthday of William I.'s eightieth birthday at Berlin when, in the arrangement, the entire city of Berlin placed six candles on the lower sill of every window in a row, there was not a window in the whole city of Berlin that did not get its row of lights in practically an identical manner. Even in the slums the candles were provided gratis by the city subscription, and similarly landlords having unlet houses not wishing to spend money on these unlet houses provided with candles. I consider that a simply of effect of this description, arranged with the most plain materials, but arranged simultaneously by a community of some one million souls in buildings covering many miles, was the most effective and impressive form of illumination that has ever been or is ever likely to be seen, and it utterly eclipses individual efforts to shine. What, may I ask, would the effect have been if, instead of candles in windows, the citizens could have arranged plain lines of electric light along the fronts of the buildings?

Turning back, however, to gaslight, we, in the first instance, find the various forms of partially outlining buildings, and the varying of devices and the like in plain gas-piping, with holes bored into the piping equally spaced, from which the light is given. Such outlining with plain, simple gaslights is not so effective if the idea of a really plain outline is retained, as a matter of fact, too much ambition has been shown in the view of making pretty devices, and ugliness as a result. These plain punctured lights are particularly well utilised for letters or emblems. The only device I know of these plain gas-burners that is in any way artistically successful is the star, owing to its simply being a number of plain lines meeting in one centre; but the star is comparatively rare.

The next form of this plain gas outlining is a device obtained by the application of a small burner, which does not, to any extent improve matters.



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next step is the application of a small glass globe  
e burner, the glass globe frequently being coloured.  
means gas can certainly be made an effective illuminant  
s plain, straight work is done; but here, again, the  
decorative devices are used I do not consider the  
all good. In fact, it is most tawdry, as many will  
r who saw the last jubilee illuminations at the Bank  
sion House.

, as far as gas is concerned, comes the very popular  
on of ordinary gas-jets behind crystal emblems.  
Crystal emblems are essentially national, and are  
met with anywhere else outside England, and I must  
their application in certain directions can be made  
istic; but here, again, the moment simplicity is left  
icated designs, nothing but ugliness results.

leaving this question of gas illumination I should  
ce a walk I took down some of the main thorough-  
ne West End on the occasion of the King's birthday,  
r 9 last. I wish I had made my notes more detailed,  
no idea of this lecture impending, and I really only  
notes for my own private information.

(To be concluded.)

## NATIONAL PHYSICAL LABORATORY.

nesday the National Physical Laboratory at Ted-  
as formally opened by the Prince of Wales. The  
such an institution, says the *Times*, was mooted by  
in when president of the British Association, so far  
371. Professor Oliver Lodge, at the Cardiff meeting  
ars later, urged the importance of the scheme, and  
as Galton made it the subject of his presidential  
1895, when, in addition, he described a detailed  
efore the mathematical and physical section. A  
committee was then appointed by the Association, and  
ort, which was presented at Liverpool in 1896, it  
ed the facilities afforded by the Government, by the  
educational establishments, and by private societies  
ring the progress of science in Great Britain, and  
e peculiar kinds of work which might properly be  
n in the proposed institution. In consequence of  
t the British Association took a leading part  
z up an influentially-signed memorial to the

Government, with the result that a Treasury committee  
was appointed in 1897 to consider the question, the  
members being Lord Rayleigh (chairman), Sir Courte-  
nay Boyle, Sir John Wolfe-Barry, Sir W. C. Roberts-  
Austen, Mr. Robert Chalmers, Professor A. W. Rücker,  
Dr. Alexander Siemens and Dr. T. E. Thorpe. During the  
sittings, which lasted for about six months, a number of  
leading experts in the different branches of physical and  
mechanical science were examined, and in the report which  
was presented to Parliament in 1898 the opinion was  
unanimously expressed that a public institution should be  
founded for standardising and verifying instruments, for testing  
materials and for the determination of physical constants.  
Shortly afterwards the old Kew Observatory committee was  
wound up and its powers and properties were vested in a  
newly elected National Physical Laboratory committee, con-  
sisting of twenty-four Fellows of the Royal Society and two  
representatives from each of the following:—The Institutions  
of Mechanical, Civil and Electrical Engineers, the Institution  
of Naval Architects, the Iron and Steel Institute and the  
Society of Chemical Industry. These, with the president,  
treasurer and one of the secretaries of the Royal Society, and  
the Permanent Secretary to the Board of Trade, form the  
general committee, half of their number constituting the  
executive, which meets monthly to transact the business of the  
laboratory.

Almost the first business of the committee was the election  
of the director, to whom large administrative powers were  
delegated, and after much deliberation the post was offered to  
and accepted by Mr. R. J. Glazebrook, the recently-elected  
principal of University College, Liverpool. The first site pro-  
posed for the laboratory building was some part of the Old  
Deer Park at Richmond, near Kew Observatory, but for a  
variety of reasons this idea was abandoned, and the offer was  
made by the Government to assign to the Royal Society for  
the purposes of the laboratory the building and grounds of an  
old Royal residence—Bushy House—together with a grant of  
14,000*l.* for remodelling the building, and a maintenance  
allowance of 4,000*l.* a year. Although the house in many  
ways is not badly adapted for the purposes of a labora-  
tory, the task of transforming it and fitting it up with  
the necessary gas, water, drainage and electrical equip-  
ment was an extremely difficult one, much more difficult  
than that of designing a new building. The peculiar require-  
ments of certain branches of delicate physical research are in



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many cases far from easy of attainment, and great care had to be taken in arranging the different departments so that vibration or electrical or magnetic disturbance set up by one worker should have the least possible effect upon the others. In Bushy House—the physical laboratory proper—it was not found necessary to make any extensive structural alterations, and except for the relaying of the basement with concrete and the provision of an entirely new drainage system the fabric remains much as it was. An extensive additional building has, however, been provided alongside the old laundries, to accommodate the mechanical or engineering department. The chief part of this building consists of two spans on the lines of a weaving-shed, with glass roof carried by iron pillars, and it is arranged so as to be capable of extension without difficulty by the successive addition of new spans. Adjoining this engineering shop is a power-house with a 60-kilowatt Parsons turbo-generator, worked from a Lancashire boiler, which also supplies steam for heating the whole of the buildings on a low-pressure radiator system. A gas-engine and dynamo giving 12 kilowatts serve as a stand-by and smaller source of power when the turbine is not needed. An interesting feature is the experimental wiring, which has been mainly designed by the director, in consultation with Mr. G. A. Steenthal, of Bradford. The system adopted is that of bare wire run on porcelain insulators, a plan which has proved satisfactory in the new physical laboratory at Owens College, Manchester. From the main switchboard and four subsidiary boards circuits are led to almost every room in the building, and to these any voltage from 2 to 150 may be applied by making the appropriate connections.

The general scheme of the building is such that the main departments occupy the principal rooms in four of the wings, along with the portions of the basement most nearly adjoining, while the first floor and a number of small rooms in the central north wing are general laboratories. The three departments having the most extensive special accommodation are electricity, thermometry and chemistry. The chief electrical rooms are in the south-east corner—the old library and dining-room respectively. In the latter all iron has been removed from the structural work and the fittings have been arranged to be as non-magnetic as possible, so as to admit of experiments requiring a uniform and undisturbed earth's field. It may be interesting in this connection to mention that the near proximity of an old cannon, serving as a support for a lamp in the garden, was found by experiment to render

futile the labour spent in keeping away iron from the internal work of this room. This cannon and its fellows have since been moved some distance away in the ground. The electrical department will undertake the verification of electrical instruments as are not provided for at present. The Board of Trade, together with tests of the electrical properties of the materials used in trade, such as the conductivity of wires or electric arc carbons, or the insulation resistance of different dielectrics used in cable-making. The classical Association standards of resistance used by Jenkin and others are installed in a special room in the basement.

Chemistry is accommodated in the south-west portion of the chief laboratory having been formerly the chapel. A room in the basement has been fitted as a metal laboratory with furnaces and hearths, but the equipment of this department with the necessary apparatus has been postponed for the present for lack of funds. A very complete outfit has, however, been provided for investigation of the structure of metals by microphotography, and it is that the work of the alloys research committee of the Institution of Mechanical Engineers will be continued in this laboratory. The department of thermometry is placed in the north-west portion of the building. The main room is fitted with the latest forms of apparatus for the measurement of temperature up to the highest limits in industrial processes. The fundamental standard temperature scale chosen by the International Committee of Weights and Measures is that of the hydrogen thermometer. Andrew Noble has presented to the laboratory a thermometer for use up to high temperatures, to serve as a provisional standard. In addition, the department possesses equipment of Callendar & Griffiths's electrical resistance thermometers, some of which have been directly compared with the international standards over a wide range. A complete apparatus has also been provided for the measurement of temperature by means of thermojunctions, such as were employed by the late Professor Tait, and have been recently perfected in France and Germany. A range of combustion baths for temperatures extending from the boiling point of liquid air to the melting-point of gold is nearly complete, those for the higher temperatures being heated electrically. The Department hopes soon to be in a position to possess thermometers of all kinds, embracing any part of this range.

In other departments there is provided an elaborate engine, a Whitworth measuring machine, a Pratt &

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ing machine and a comparator. A mercury column high permits the direct measurement of moderate pressures, and the calibration of pressure gauges up to the limits is provided for in the engineering laboratory. Also, a small testing-machine is fitted, and the provision of a much larger one is in contemplation; but there is at present only a moderate equipment of machine-tools, and the purchase of several very necessary articles, such as milling and planing machines, is postponed for lack of funds. An optical method of testing with means of testing photographic lenses and with a photometer is under consideration.

## EXTENSIONS OF BANGALORE.

arely given us more pleasure, says *Indian Engineering*, to examine the plans of extension for Bangalore city. It is in a bold spirit of improvement they seem to provide every sanitary advantage. The areas which have been set out are situated in the north, south and west of the city. The one made was the Chamaragendrapet and occupies 120 acres. The main roads are 231 feet apart with a central lane of 15 feet between, thus allowing a depth of 100 feet for houses facing the main roads. There are five main roads and nine cross roads of 70 and 55 feet widths respectively. A frontage of 30 feet is reckoned as a unit, and one unit is permissible for a house site. Allotments of 1000 square feet have been made, which gives 5.26 houses per acre, calculating seven inmates per dwelling, thirty-seven per acre. A great feature of the drainage is that the sewer is separated from the sewage, the former being carried away by arched masonry oval drains and the latter by the sewage will be utilised on farms. The Bull Temple, or southern extension, is larger, and was made on the appearance of plague in the city. It covers 40 acres, and is in the form of a square with an open space of no less than 10 acres in the centre. There are four main roads which permit ready access to and from every part of the main thoroughfares are 100 feet wide, and are laid out with tram lines to run down their centre, and carriage traffic on the sides. The roadways are countersunk 3 feet, partly to protect the buildings, and partly to insure the houses from being damaged. As in the other extension, each row of houses has a foot wide behind it for drainage and conservancy, and

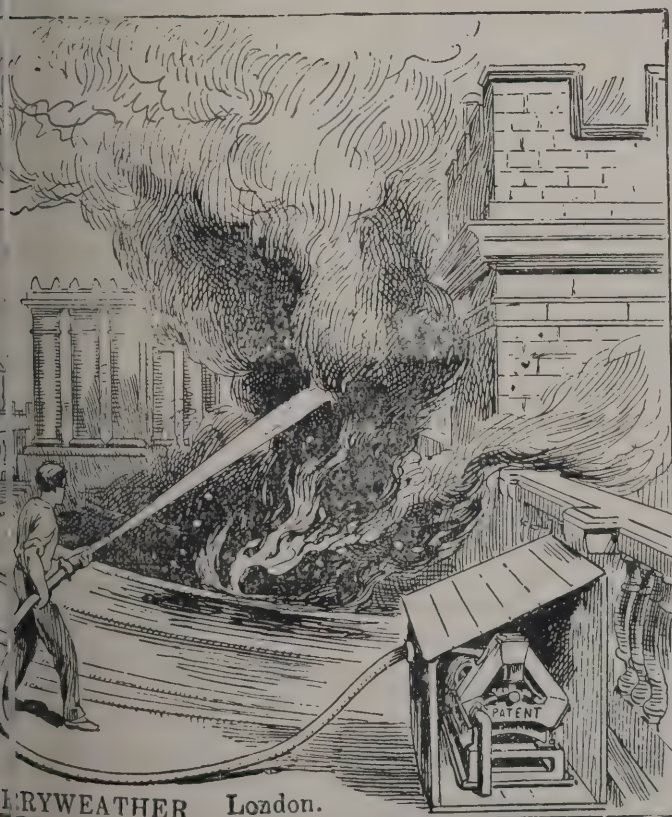
as these lanes are all connected the conservancy carts need not use any street or thoroughfare. This extension has been divided into eight blocks, each restricted to one of the principal castes. Retail bazaars are permitted along the diagonal roads only, and markets for grain, vegetables, meat and poultry have been provided for outside the suburb. The population is equal to a density of 31.8 per acre.

The northern or Malleswaram extension was started in 1898. It occupies an area of 300 acres. In this extension, which is occupied by Hindus, the main roads have been laid parallel with the meridian with the cross roads east and west, to allow houses to be built in the direction of the cardinal points. In the centre is a park. As in the southern extension, the leading roads will have trams along the centre with the carriage traffic on either side.

A few remarks must be made on the types of houses. For the mill hands and labourers there are blocks of houses built on sanitary principles. These houses are of two sizes, and will be available, either on a ten years' purchase system with payments of Rs. 7-12-0 and Rs. 1-9-0 per mensem, or for a monthly rental of Rs. 2-8-0 and Rs. 0-8-0 respectively. It is estimated that these rents will give a return of 3 per cent. on the outlay. The larger areas allotted to houses have permitted of types of houses being constructed suited to the official, trading and middle classes of Hindus.

These extensive improvements have necessarily cost money, but the expense has not been great, and it must be admitted that the money is well spent. The two latter or newer extensions are estimated to have cost 10,67,948 rs., but a part of this has been recouped from the sale of building sites. Considering the immense improvement and the very excellent way the various castes have been provided for, the expenditure is extremely moderate. For example, in the Malleswaram extension the Mohammedans have 109 house sites, the Hindus 204, the Brahmmins 349, the native Christians 50, and the Lingayats 150. These divisions are all united by cross roads. The number of houses on a given area has been distinctly limited, so that there shall not be overcrowding, the highest density of population not exceeding 37 persons per acre. In the papers to hand we are not told what provision has been made for water supply, privy or bathing accommodation, but of the plans for the extensions above described we can speak in the highest terms. This great scheme for Bangalore city is due to Mr. Standish Lee, sanitary engineer, Mysore Government. It is one that might well be copied by

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other cities. Why should not the suburbs of every Indian city be planned out like those of American cities are, so that extensions should be made on well-conceived lines? At present improvements in the hearts of Indian cities only drive the people into the suburbs, where there is no provision made for them, and by degrees the suburbs become as insanitary as the central portions of the cities.

Where municipalities fail the Local Governments should step in. We are not sure that the Local Governments should not require every municipality in their respective provinces to furnish plans of extension of every city, and the plans approved, extension should only be permitted on those lines. Take Calcutta for example. Here we have great schemes of improvement of the bustis going on, but no thought has been given to extension of building in the suburbs. The consequence is that many of the suburban bustis are as unhealthy and crowded as those in the city area, and there is no order or regularity as to the fresh construction of dwellings. The suburbs ought to be plotted out, the lines of new roads marked out, and areas for huts delineated, so that as the population grows it shall not be permitted to crowd into closely-packed buildings. It goes without saying that all this ought to have been done long ago, but it is not too late to mend, and the example of Bangalore might be copied by every city in India.

### LIVERPOOL INSTITUTE.

THERE is excellent reason to believe, says the *Liverpool Courier*, that the erection of the Liverpool Cathedral on St. James's Mount will not be the only great improvement in that part of the city which will shortly be effected. The Liverpool Institute as it has grown in popularity and usefulness among the rising generations of inhabitants has found itself more and more cramped for space, especially for playground accommodation. This has been lately impressed upon the managing authority by reports to bodies such as the technical instruction committee of the Corporation.

We understand that a scheme was laid before the Liverpool health committee of an extensive, indeed ambitious, nature. A generous patron of the school has bought the remainder of the leases of the property between the school and Sandon Terrace, which faces St. James's Cemetery, and consequently close to the site chosen for the Liverpool Cathedral, and presented this

valuable block of property to the Institute for extension. At present a street—Back Mount Street—is between the school and Sandon Terrace, a row of stable opposite the school.

It is proposed that the Corporation, who are the freeholder, should supplement the private benefaction by granting the reversion conditional on the continued use of the property for educational purposes connected with the Institute, and also assist in supporting the necessary application for the right to close Back Mount Street. There is every reason to believe that the health committee are favourably disposed to the proposal, whose effect will ultimately be to greatly increase the area of the school building and adjoining grounds. The leases purchased have only a few years more to run, and the work of demolition will begin almost immediately. There are half a score of large houses in Sandon Terrace, which is in Upper Duke Street, and runs from Pilgrim Street to Sandon Terrace, and among the present tenants are the Deutscher Club, Beaconsfield Club, Liverpool School of Pharmacy, Liverpool Chemistry, Liverpool Union of Women Workers, Ladies' Sanitary Association, Association of Training women, and University Club. The frontage of Sandon Terrace opposite St. James's Cemetery, is nearly 100 feet.

It may be mentioned that this is the oldest existing secondary educational establishment in the city, having been founded as the Mechanics' Institution nearly seventy years ago, the first stone being laid by Lord Brougham in 1835.

### ELECTRICITY EXTENSIONS AT BOLTON.

COLONEL DURNFORD, R.E. (Local Government Board) made an inquiry on the 13th inst., at the Bolton Town Hall, as to the application of the Corporation for sanction to borrow money for purposes of electric lighting, &c. There were present Councillors Panton (chairman of the electricity committee), Jno. Berry, J.P. (vice-chairman) and S. Rothwell, Esq. (clerk (Mr. R. G. Hinnell), Mr. A. A. Day (electrical engineer), Mr. G. Swainson (borough treasurer) and Mr. G. T. (architect).

The principal objects of the proposed loan were as follows: For new buildings, 29,616*l.*, including extensions of house, new boiler-house, cooling tower, reservoir extension, storage buildings, new workshop, &c. For machinery, including engines and dynamos, 29,000*l.*; Lancashire



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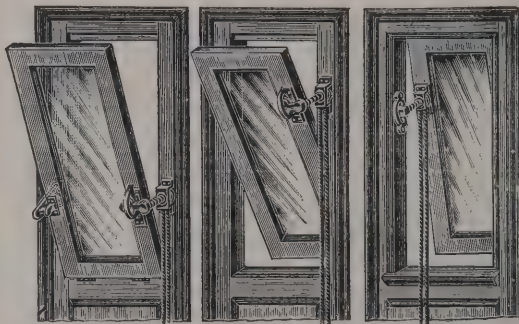
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5 " 28/-	
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4 " 42/-	
5 " 54/-	
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5753 Iron.	3 inch. 4/-
4 " 6/-	
5 " 8/-	
5754 Brass.	3 inch. 6/6
4 " 10/-	
5 " 13/-	
per pair.	



5355 Iron.	4 in. 21/-
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6 " 36/-	
356 Brass.	4 in. 35/-
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es and other apparatus, 24,705*l*. The sum of 22,550*l* part for extension of existing high and low tension connecting boxes, meters, sub-station and sub-station ard. It is interesting to note that the original cost of ricity works was 27,700*l*., and that of this amount a ess than 60*l* is now unaccounted for, 21,153*l*. having owed for depreciation, whilst there is still 962*l*. in The capital expenditure up to date is 175,000*l*.

own clerk, in opening the proceedings, showed that lation of the borough was 168,750, the area 15,283 d the rateable value for poor rate purposes 775,800*l*. as to outstanding loans on district rates showed that owing of 1,154,452*l*. had been sanctioned, that 997,248*l*. borrowed, 172,354*l*. had been repaid and the amount g was 824,693*l*. The amount already sanctioned for y purposes was 147,972*l*. (plus 50,000*l*. for the purposes e trams), and now 125,000*l*. was required for the a of the works which had been carried on at a profit ough.

led information regarding the necessary extensions a given by Mr. Day, the electrical engineer. The y included two 2,000 horse-power engines and two 1,200 amos; twenty 30 by 8 Lancashire boilers. steam pipes, ters, valves, mechanical stokers and shafting; hopper omiser with 4,000 pipes, switchboard extensions, con- achine cables for 2,400 k.w. generators, and sinking pump. Replying to the inspector, he said the demand r was largely increased, and there was every prospect ing at a still greater rate.

George Temperley, architect, produced the estimates s for the new buildings, the principal items being as -Extension to engine-house, new flues, manholes, er beds, &c., 5,060*l*; boiler-house, flues, cleaning out onomiser beds, dampers and boiler seatings, 10,863*l*; ower, 4,400*l*; reservoir extension, 1,375*l*; new work- veller and girders, 1,350*l*; new shed for cable drums, new tower foundations and roof round same, 1,250*l*; oor, stanchions, &c., 2,013*l*; and new boiler seatings, &c., 1,210*l*.

#### Encouraging Prediction by Councillor Panton.

illor Dr. Panton, chairman of the electricity com- id he had taken great interest in the works since mmencement in October, 1894, and he considered they a conducted in a very satisfactory manner. The

capital expenditure per 1,000 Board of Trade units was as follows:—

Year.	Amount.	Generated.	Sold.
	£	£	£
1896 . . . .	34,909	233	367
1897 . . . .	44,382	192	237
1898 . . . .	57,037	117	166
1899 . . . .	67,252	120	161
1900 . . . .	117,589	100	142
1901 . . . .	151,006	51	62

The average charge per unit was 5 84*d*. in 1895, and in 1901 it was 2 22*d*. In March of 1895 the consumers numbered 65, now they aggregated 1,053, and the number of candle-power lamps supplied had increased from 5,100 to 88,841. The number of motors now in use is 61. The following statement shows the gross profit and appropriation of same, with the amount voted in aid of the rates:—

Year ending	Gross Profits.	Interest on Loans.	Depreciation.
	£	£	£
1895 . . . .	945	956	580
1896 . . . .	794	1,013	834
1897 . . . .	2,296	1,295	1,103
1898 . . . .	3,160	1,443	1,410
1899 . . . .	4,536	1,598	1,731
1900 . . . .	5,902	2,439	2,012
1901 . . . .	10,554	3,815	5,881

Voted in aid of rates 1899, 1,000*l*; 1900, 1,000*l*; 1901, 887*l*. 18*s*. 1*d*.

When the extensions included in the present borrowing powers are carried out Bolton will have a capacity of 7,000 k.w., and the capital cost per k.w. will be 46*l* 2*s*. 9*d*., the lowest of the largest stations in the kingdom, Brighton coming next with 72*l*. 2*s*. and Edinburgh following with 73*l*. 4*s*. for 8,137 capacity. Councillor Panton ventured upon a prediction which will be hailed with a good deal of satisfaction. He prophesied that this year the cost of production would be one penny per Board of Trade unit, a reduction of 25 per cent. when compared with the 1 34*d*. last year. He further predicted that their output would prove to be 3,050,000, that the revenue would be 29,000*l*., and that the electricity committee would be able to devote 3,500*l*. to the relief of the rates, as against 857*l*. last year.

The inspector expressed satisfaction with the statement, and having satisfied himself that there was no opposition to

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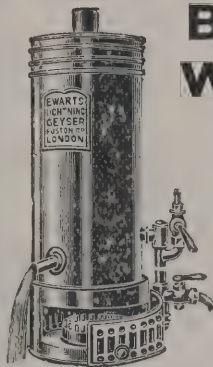
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the scheme he closed the inquiry with an intimation that he would proceed to visit the electricity works and the site for the extensions.

### STEEL CHIMNEYS.

CHIMNEYS built of sheet steel are common, says the *Engineering Record*, particularly in Pennsylvania and the middle west. They may be either self-supporting or held in position by means of guy ropes. To save expense it is not unusual for a considerable number of small-guyed chimneys to be used in place of one large chimney. Steel chimneys are said to cost less than those built of brick, but the market price of steel affects their relative cost considerably. Any steel chimney should be carefully caulked at the joints and the vertical lap-joints scarfed at the girth-seams. The leakage of air that would otherwise occur and which unfortunately does occur in many cheaply-built steel chimneys very greatly affects the draught. Self-supporting steel chimneys rest usually on cast-iron base plates, sometimes cast in sections and bolted together if the chimney be large enough to make this desirable. The base-plate is held down by foundation-bolts built in a brick or concrete foundation sufficiently heavy to prevent the chimney from overturning. The lower courses of a self-supporting stack are usually flared out at the base of the chimney in a conical or bell shape to give stiffness to it, the height of this cone or bell being from  $1\frac{1}{2}$  to 2 times the diameter of the chimney above the bell and of a diameter at the base equal to the height of the bell.

A formula for determining the thickness of shell that is used by a firm which has built a large number of large self-supporting steel chimneys is as follows:—

$$\frac{\text{Moment in inch pounds}}{0.7845D^2} = \text{stress per lineal inch.}$$

This assumes that the moment of the total wind pressure in pounds multiplied into the distance in inches of the section under consideration from the centre of pressure, divided by the diameter of the chimney in inches squared multiplied by 0.7854, is equal to the maximum stress per lineal inch in the shell. The total wind-pressure is based on an assumed pressure of 25 lbs. per square foot of projected area. A safe working stress is 10,000 per square inch, and this should be reduced by the efficiency of the rivetted joint. If the efficiency of the rivetted joint is 60 per cent., then 6,000 pounds per lineal inch would be a safe working strength

and the ratio of the stress per lineal inch, as found by equation, to 6,000 would be the thickness in inches of shell required at the section under consideration. Calculate the thickness of the shell should be made at the base of the stack, the top of the bell and several points between the top. The greatest strain occurs at the top of the chimney on account of deterioration that is apt to occur in the upper part of the chimney. This is due to the fact that it is undesirable to use shells less than  $\frac{3}{8}$  to  $\frac{1}{2}$  inch in thickness depending upon the size of the chimney. This is particularly true near the top where the greatest corrosion is apt to occur owing to the effect of the smoke that usually clings to the side of a chimney.

For about one-fifth or one-quarter the height of a self-supporting chimney it is desirable that the girths be double-rivetted. The lower edge of any sheet usually used at the upper edge of the sheet beneath it. For the sake of greater stiffness, the vertical seams at the bell should be double-rivetted.

The foundations for self-supporting steel chimneys should have such a base that the load caused by the weight of the chimney and base and by the wind-pressure on the half of the base does not exceed the requirements of the foundation. The weight of the lining, if there be any, is to be included. The foundation must have sufficient mass, so that the weight of the wind-pressure into the height of the foundation, the height of the steel shell, shall be equal to the weight of the shell, plus the weight of the foundation, into one-half the length of the base of the foundation.

If P is the total wind-pressure, Ws the weight of the chimney, Wf the weight of the foundation, all in pounds, then if the conditions as to stability are fulfilled when

$$P\left(\frac{H}{2} + h\right) = (Ws + Wf)\frac{b}{3}$$

The wind-pressure can be obtained by calculation. The height of the foundation can be taken at from one-tenth the total height of the chimney. With the weight of the chimney and the weight of the stack being known, the weight of the foundation can be calculated. As concrete weighs 140 lbs. per cubic foot, the volume of the foundation can be determined, and from this the area of the top and bottom of the foundation can be determined. Should the wind-pressure be too great a load along the leeward edge of the foundations, a foundation of less depth can be assumed to insure one of greater area.



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# The Architect.

## THE WEEK.

case FORD & Co. v. BEMROSE & SONS, LTD., lately came before the Court of Appeal, did not accord with the majority of those in which the accuracy of the bill of quantities is disputed. In the case in question there was an arbitrator of wide experience, Mr. ROBERT VIGERS, and the award was in favour of the plaintiffs; but the Court, consisting of the Master of the Rolls and Lords Justices of Appeal, and MATHEWS, came to the same conclusion as was established in *PRIESTLEY v. STONE*, *SCRIVENER v. BENTLEY*, &c. Messrs. FORD & Co. in 1895 entered into a contract to erect works in Derby in accordance with plans prepared by Mr. E. R. RIDGEWAY. There was a schedule of bills of quantities which was to apply to alterations or deviations from the progress of the work. Messrs. FORD agreed to complete the whole of the works required according to the plans and specifications for 10,559*l.* In April 1897 the works were completed. The architect gave a final certificate, showing that the balance owing was 1,530*l.* 13*s.* 5*d.* The contractors were dissatisfied, and sought to recover a larger sum. The Court left the arbitrator to decide on the following questions:—(1) Whether, in determining the value to be paid by Messrs. BEMROSE & Co. to Messrs. FORD, regard was to be had to the usage in the building trade. (2) Whether Messrs. FORD were entitled only to be paid the sum of 10,559*l.* mentioned in the contract, with deductions and additions as were by the contract to be made in respect of alterations or deviations from the original plans determined upon during the progress of the works. (3) Whether Messrs. FORD were to be paid the value of all the works actually done by them at the prices upon which the contract was made, and whether such value would be more or less than the sum of 10,559*l.* mentioned in the contract. The arbitrator found that the bills of quantities on which the contractors were invited were in material and substantial error, insufficient, and he also found that there was a usage in the building trade that where tenders were invited in accordance with plans and a bill of quantities furnished, the person tendering was not expected to furnish quantities himself, but had a right to assume that the quantities were correct. With these answers before him, Mr. Justice KENNEDY and Mr. Justice PHILLIMORE gave judgment for Messrs. FORD for 5,090*l.* The contractors appealed. The Master of the Rolls said it was for the builder to verify the quantities which had been prepared in order to enable him to understand the value of the work for which he was tendering. There was no usage in the present case that the quantities were correct, that they were insufficient was an innocent mistake. The Divisional Court it was assumed there was a hard case against the contractors, but it was open to them to prepare a new estimate. By relying on what was done by the contractors just as much backed the architect's bill as the owners. As there were additions Messrs. FORD said to be entitled to receive 2,303*l.* 10*s.*

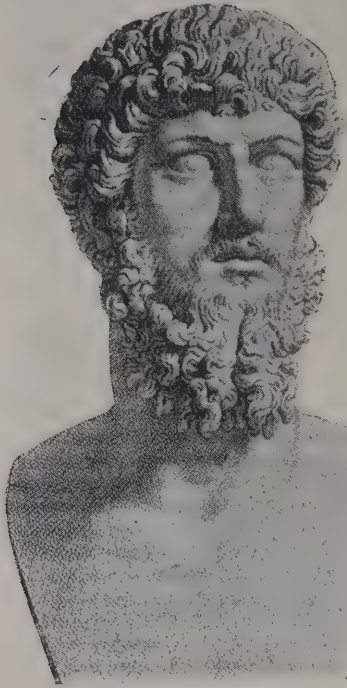
On noticing the proceedings before the Examiner on the Standing Orders respecting the London to Brighton Electric Railway, we concluded by saying, "Enough allegations have been sustained to make it doubtful whether the Bill will ever reach the stage of the first reading." We do not know the gift of prophecy; what we said represented the opinion of engineers who have had experience of the Bill in parliamentary procedure. The Examiner's report was conveyed to a committee of the House of Lords on the 11th inst. The agent for the promoters of the Bill said that the course taken by the opponents was one which for the first time had been deprecated by all public bodies, who, by relying on defeating a Bill on technicalities, had failed to have it dealt with on its merits. In our opinion we anticipated that statement, but we added that the Bill of opposing Bills on points of another class was not in favour of accuracy in the operations of the Bill. It must be admitted that the waste of money in preliminary work is a serious item. But if

blunders on surveys, sections and reference books are once tolerated there is no foreseeing to what consequence they may lead. The Standing Orders are not severe, and, in fact, every facility is given to promote economy by the use of Ordnance maps. At the same time, errors in Parliamentary plans much more trivial than those committed by the surveyors of the electric railway have led to expensive litigation. Parliament has a right to insist on its authority being respected, and unless plans and sections are as correct as is prescribed, there is no use in preparing or lodging them. The failure will be a lesson which was demanded in the public interest, and the only regret is that the promoters of the line will be compelled to pay for the neglect of those to whom important work was entrusted. Whether the attempt will be renewed in November is doubtful, for the London, Brighton and South Coast Railway profess to be prepared to adopt electricity as a motive power, and to bring in a Bill in the next session to obtain the requisite powers.

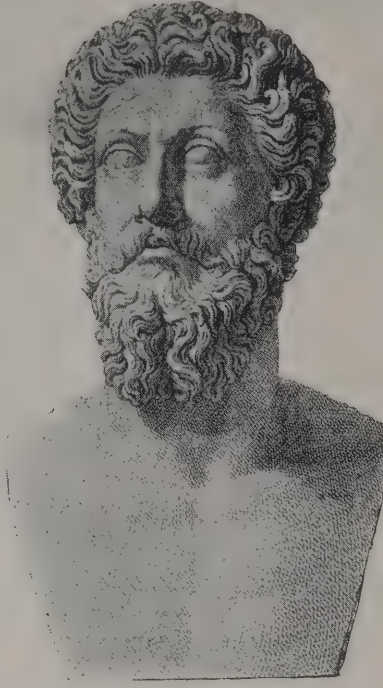
A CLERGYMAN has an advantage over laymen, for whenever he suffers from a local grievance he is able to invoke the sympathy of his congregation. A great many men have to pay smartly when new roads are made adjoining their property; but although they grumble, they are not likely to meet with people who will care to share the burden with them. The Rev. W. N. P. BEEBE, who is vicar of one of the Brighton parishes, has made the following statement:—"I have had a somewhat unpleasant surprise lately. The Corporation have made a charge upon me for 44*l.* 12*s.* 4*d.* in respect of road-making and paving. The facts of the case are these:—In 1885 the boundary walls of the church and vicarage were built, the land to the north-east of the church and vicarage being the well-known Queen's Park Cricket Ground. In 1894 the cricket ground was cut up into building plots, and a new road, St. Luke's Road, running north and south, was made, adjoining the blank east boundary wall of the vicarage. To this road I have never had any access, as my sole entrance is from the old road known as Queen's Park Terrace. The Corporation decided that my eastern boundary wall, some 80 feet long, constituted a side frontage to the new road. I appealed through my solicitors, but without success. It certainly seems a hard case that I should be subjected to the noise and annoyance of a side street, and should have to pay heavily for the making of a road which is of no use to me and which constitutes a very great nuisance." It may be hard for the clergy to be amerced by local bodies like ordinary ratepayers, but it would not be difficult for Mr. BEEBE to discover that all over the country similar annoyances occur, and they have to be borne silently.

WE lately commented on a case which turned on the right to obstruct the access of light and air to a glazed roof which had long been darkened in order to serve as a photographic dark-room. Another case somewhat analogous in character has been heard in the Chancery Division before Mr. Justice JOYCE. It was an application by the owner and occupier of an hotel in Portsmouth to compel the owner and occupier of adjacent premises to take down as much of a new building as obstructed or interfered with the access of light to the hotel. The defence was a denial that the plaintiff's lights were ancient or that the alleged obstruction caused any damage or annoyance to the plaintiff or seriously interfered with the use of the plaintiff's premises. Mr. Justice JOYCE on Monday dismissed the action with costs. His Lordship said the window which plaintiff alleged to be darkened by the act of the defendant was part of the roof of a conservatory of the hotel. In June 1873 the then owner of the hotel entered into an agreement with defendant's predecessor in title to pay one shilling a year for allowing the window to open on and overlook defendant's property. The right of light over defendant's property which was enjoyed was thus made by agreement, and the plaintiff had therefore not enjoyed the access of light for the full statutory period of twenty years. In the former case the plaintiffs succeeded, but there was no shilling a year agreement, and when an easement over a low building is desired a similar arrangement would be advantageous.

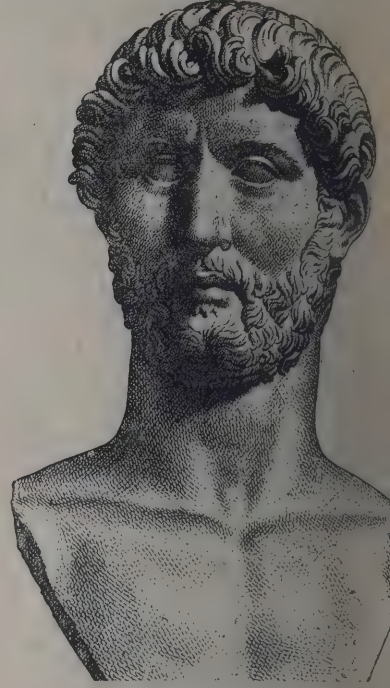




LUCIUS VERUS.



MARCUS AURELIUS.



HADRIAN.

### ROMAN BUSTS.

AN article on "Busts and their Identification" appeared in the first number of this Journal for the present year. The subjects selected were HOMER, DEMOSTHENES, EURIPIDES, LYCURGUS, ALEXANDER and PITTACUS. We endeavoured to explain to what extent they could be regarded as likenesses, although in no case could their veracity be accepted without misgiving.

We give this week six examples of Roman busts which are worth a comparison with the illustrations already published. At the first glance it will be evident that the Roman or Greek-Roman works, although less noble, present more individuality. This, no doubt, is partly owing to the practice which was avoided by the Greeks, but which was common with Roman sculptors, of marking the pupil of the eye in such a way as to suggest animation. Modern sculptors sometimes follow Greek precedents and sometimes Roman. It is, however, generally understood that for heads that are possessed of dignity it is wiser to follow the Greek manner. But apart from the treatment of the eyes, there is an absence of convention which helps to prove that the Roman busts were imitated from nature. There is also confirmation from coins and medals that the features have personal peculiarities. In the two busts which may appear to have a little correspondence, viz. those of LUCIUS VERUS and MARCUS AURELIUS, it will be observed on examination that the features differ, and any resemblance which exists is mainly caused by the arrangement of the hair.

AUGUSTUS was so supreme as a ruler, it would be strange if he were not selected as a model by contemporary sculptors. There must have been many demands throughout the Roman empire for his likeness. A bust now in the Vatican, which was found by the English Consul FAGAN during the excavations at Ostia in the beginning of the nineteenth century, gives us the appearance of the nephew of JULIUS CÆSAR in his youth, when he was recognised as the inevitable heir to universal dominion. OCTAVIUS was allowed to share in some of the labours of his uncle, and in the events which followed the mighty Roman's assassination he played his part with a craft which was remarkable. The "scarce-bearded CÆSAR" not only held his own position with triumvirs like MARC ANTONY and LEPIDUS, but eventually he established himself as the successor of the Dictator. Then, from the bust we have reproduced and others resembling it, we can see how supreme authority exercised for many years wrought its influence on the countenance. As a stroke of policy it is at the same time suggested by means of the crown of oak leaves that AUGUSTUS had not lost his respect for civic honours. There also exist busts of the Emperor in his old age, and the three combined are like the work of a biographer. They

reveal the life history of a ruler in one of the most troublous periods which the world has passed through.

He was a man who evidently believed in progress at a time when so many Romans were eager to make the attempt of restoring the severest republican simplicity. AUGUSTUS sought after intellectual refinement. Artists' literature obtained favour of a kind which under the public was unknown. He boasted that he found Rome of brick and left it of marble, and the utmost that can be said of any later period in which literature has flourished is to describe it as an Augustan age. HORACE and VIRGIL have celebrated the Emperor, and it was the intention of the latter to have made AUGUSTUS the theme of a poem. But the imperial patronage was not without effects on both of them, for there are passages in their writings which suggest a desire to imitate the manners of courtiers. The house of AUGUSTUS was remarkable for its unobtrusiveness, but in it he maintained the dignity of office, and SHAKESPEARE was not yielding to fancy when he made AUGUSTUS condemn the soldier-like conviviality of ANTONY in Egypt:—

To give a kingdom for a mirth; to sit  
And keep the turn of tippling with a slave;  
To reel the streets at noon, and stand the buffet  
With knaves that smell of sweat.

He would also object to the return of his sister OCTAVIA "as a market maid" to Rome, instead of being met at every stage by troops and all the gratification which could be expressed by ostentatious display of power.

Over a century elapsed between the reign of AUGUSTUS and that of HADRIAN. By that time imperialism was solidated. HADRIAN was a typical emperor; every soldier knew of his courage, and a great many Romans could testify to his generosity. He was not satisfied with battles which he was successful. In his eyes the builders' work was as useful as the sword and spear. Everywhere he utilitarian works constructed. Among his Roman structures was the Temple of Venus and Rome, in which the genius of the city was put on a level with the mother of the gods, JENES. It is in connection with that building that is told of the fate of APOLLODORUS, the architect. His plans, it is recorded, which were prepared under the Emperor's direction in Rome, were sent to the Greek cities for approval. He considered that the building would be small if compared with the statues of VENUS and ROMAN. The two seated figures could not stand up or find a door high enough to allow of their exit. The critic was banished for so frank an opinion, and afterwards, some suppose, murdered. But a single life counted for little in imperial Rome. Among all the Roman emperors there was not





ALEXANDER-SEVERUS.



AUGUSTUS.



CARACALLA.

owed as much enthusiasm for building as HADRIAN. e seen from the bust that he was a vigorous man, uld be fond of having his own way in all things, but uld be generous. The bust confirms the statement was the first of the emperors who allowed his beard in order to conceal some natural defect or a wound in early days.

us the intention of HADRIAN that LÆLIUS VERUS uceeded him. LÆLIUS died two years afterwards, his choice fell upon TITUS AURANIUS ANTONINUS, ondition that he should adopt LUCIUS VERUS, the LÆLIUS. ANTONINUS is known not only in the of Rome, but in the history of philosophy as AURELIUS. He was a Stoic, and his "ations" will never be allowed to die. Throughout he found opportunities every day to put his ay into practice. The name of his wife FAUSTINA ned an unenviable notoriety. LUCIUS VERUS, who associate in sovereignty, devoted himself to rather than to government. He was a fop, and an soldiers who were placed under his command n have had difficulty in restraining their temper at g of a man who was always defeated. He was his hair, and it is related that he used to have it rl with gold dust in order to give it more effect. ose his face was brought into keeping with his the aid of paint. The bust is not, however, e of debauchery or cruelty, and as long as MARCUS as was near him LUCIUS VERUS appears to have rifferently well. His belief in his own beauty was ver, an advantage for an emperor, unless he took public affairs, and it was fortunate for Rome that efore his co-partner in the Government.

xcuse on the plea of vanity can be made for ALA, who began to reign about fifty years after AURELIUS. There is no doubt that he possessed defects, and, like ALEXANDER POPE, the English was, on account of them, compared with ER THE GREAT, for "AMMON'S great son one had too high." His father, SEPTIMIUS SEVERUS, him on the throne, and when they were both in is related the son conspired against his father and ced to murder him. CARACALLA, or BASSIANUS, s uld be called, with his brother GETA, were in when their father died at York. The two brothers d to Rome, and it was not long before GETA'S ken at the instigation of BASSIANUS. Unquestion- as one of the worst of the Roman emperors. n the peculiar look which the sculptor imparted to is allowable to conclude that he was a mono- It must be recorded to his credit that he enriched a baths of a splendour which was unknown before and has not been since surpassed. The dome g at hall must have exceeded in size and height t: Pantheon. He reigned no more than six years,

and if he had lived he might have atoned for his early excesses.

His brother GETA had little opportunity to exercise power for good or evil. He is described as a handsome man, who loved to be tranquil and who was not disposed to shed blood for trivial offences. It is possible he would have served as a compensatory influence if he had outlived CARACALLA; but as he was murdered when he was little over twenty, it would be unavailing to speculate about his future conduct.

ALEXANDER SEVERUS, if we may judge from his bust, was ill-adapted by nature to control an army that had become tumultuous, or to cope with Eastern monarchs commanding nations of troops who had resolved on the downfall of the Roman Empire. We can well understand that so characterless a personage was not fitted to go through the rigours of the campaign against the Germans in their wild forests, and that he preferred buying peace to fighting for it. He was destined to be killed in a mutiny. Like CARACALLA, he expended money on the adornment of Rome, and he erected costly thermæ. It is evident from the bust that in the third century portrait sculpture had reached an advanced stage in Rome. The desire to increase the expression of the eyes does not, according to modern ideas, increase the value of the work, but with that exception the execution is perfect, and the bust has a right to be esteemed as one of the treasures of the Louvre.

Roman busts, and more especially if they bore the names of emperors, were long prized in England. Apart from any merits they might possess as works of art, they were considered to be appropriate as indicating the taste of the owners. In many cases they were memorials of the Grand Tour, in days when a journey to Rome was a costly event which was thought to work a revolution in a gentleman and to give body and consistency to the education he had received in one of the universities. Besides, it may be said that the influence of Rome was never entirely absent from this country. The Roman missionaries can be regarded as the successors of the Roman soldiers. The Saxon invaders no doubt gained far more power in England than was ever acquired by the Roman legionaries, but the mythology, legends and poetry of the north were quickly forgotten. The books which were read in monasteries took no heed of the legendary lore which in one form or another was to be found not only in Germany, but in Denmark, Norway and Iceland. What has long been known as culture was based on the literature of Rome, and it was only in modern times that people became aware of the existence of an Anglo-Saxon literature and of northern compositions, which had as much claim to be classed as epics as any Greek or Roman production. It was a tribute to Roman power when busts were seen on pedestals in galleries within English mansions or in circular recesses on the exterior of them.



## APPLIED PERSPECTIVE.\*

IT was thought to denote judgment on the part of JAMES MILL when, in treating of sensation in his "Analysis," he advanced from the simple to the complex by placing smell and hearing before sight. We cannot consider sight as we do the other senses. For, as MILL said, "so many things appear to be seen, which are only suggested by the feelings of sight, it requires the knowledge of other elements of the mental phenomena to explain." If what we suppose we see is partly owing to a process of reasoning, then vision is more than the impression on the optical apparatus. The saying so often repeated about the eye seeing what it brings the mental power to see is a testimony to the fact that something else is needed in perceiving an object than the mere opening of the eyes.

From time to time circumstances arise which, if at first a surprise to us, demonstrate the difference between things as they are and as they are supposed to appear to the sight. A marked instance was exhibited in the photographs which Mr. MAYBRIDGE, the American, produced showing animals in motion. They were at once ridiculed by painters and sculptors for inaccuracy, but later experience, aided by moving photographs, has made people less positive about the truth of the representation of motion of all kinds. Fixed subjects also present surprises. A great many photographs, especially of a cheap kind, are to be seen, in which, from the disregard of aerial perspective, backgrounds are as clear as foregrounds, and except that there is a diminution in the size of the parts of the plate in proportion to their distance from the lens, the representations are on a par with those of the old "willow pattern plate." The Chinese artist who designed that well-known work with all his scenic ability probably was ignorant of rules of perspective, and if so, he did not differ much from a great part of the human race at all times. Ask an ordinary man who knows nothing about the science to give a suggestion of a street, and it will be found that he does not recognise at first the principle of lines sloping either downwards or upwards to meet a remote if not invisible point. It is also difficult to make a blind person realise that while vertical lines remain true, horizontal lines have a tendency to converge in a point as if to form angles.

The history of art shows that when men once understood what is to be gained by vanishing lines, they were disposed to make an excessive display of their new knowledge. Some of the exercises which were found on the walls of Pompeii suggest an almost childish vanity. The noble work of MANTEGNA at a later time also suffers from the same weakness, for he became more anxious about science than beauty. It is related of BRUNELLESCHI that he invented or rediscovered rules of perspective, a statement which applies to a great many Renaissance artists. In a drawing of the Baptistery at Florence, as we are told by his contemporary, MANETTI, in order that the spectator should not mistake the point of vision, he made a hole through the thick panel, one end being wider than the other. The spectator had to hold a mirror at arm's length facing the picture, and in that way he saw a reflection of the building. "You seem to see it in very truth," says MANETTI, "and I have had it in my own hand, and I have seen it several times in my days, so I can bear witness to it." But in a picture which he made of the Palazzo Vecchio there was neither sight-hole nor reflector. "One might ask," says MANETTI, "why he did not make for this picture, which was equally drawn in perspective, that little sight-hole, as he did to that of the Baptistery. This is by reason of the picture being so large—there being so many things to represent in it—that it would be impossible for a person to hold the picture with one hand. Nor would the arm of a man be long enough to get the mirror at the right distance to reflect it, nor strong enough to hold it steady." There was a little of charlatanism about the arrangements, but as there was success we cannot blame the showman.

BRUNELLESCHI having to present his view to Florentines, all of whom knew more or less about art, it was allowable for him to make elaborate preparations for puzzling them. But with the generality of people in modern times, it does not take much knowledge of

perspective to produce effects which are thought wonderful. Very little science is needed, to take a simple case, to make painted letters appear as raised solids. They are, however, looked upon as such evidence of skill that in their announcements sign-painters largely employ them. The devices of the kind were at one time more prized than an outline drawing. But owing to the commonness of photographs the old mystery attached to perspective is vanishing. They manifest that horizontal lines when seen in perspective become different from front or back views, and expected that anyone who will represent things will be able to make arrangements which will produce the same effect. For writers on perspective, photographs have become valuable aids, and they have done much to overcome the notion that perspective was a branch of geometry, and that a limited number of propositions in it were tenable. The assistance of a small camera a student can discover. A comparatively simple object can be made to present a variety of appearances, all of which will be alike true.

In Mr. LONGFELLOW's new book on perspective, employment has been made of photographic illustrations than is usual. But they do not interfere with the introduction of very numerous diagrams, which have been prepared the ordinary way. The work is intended mainly for students of architecture, but as painters have also to depict buildings and other classes of construction, what is said will be suggestive to them also. At the beginning the author tells a story which to English people will suggest that SAMUEL JOHNSON, the Clockmaker must, owing to the progress of education in America, have turned his attention to scientific applications. The moral drawn from the circumstance will enable anyone who have not Mr. LONGFELLOW's book before them to understand his proposition:—

Years ago a wanderer appeared at Harvard College, tried to introduce an apparatus and a process by which anybody could sketch without learning. The apparatus consisted of a sheet of glass slipped into an upright frame, and a fixed eyepiece, which was simply a wooden standard with a hole at the top. The process was to set up the apparatus before the view to be traced, the picture by a pen and ink, with which he could draw lines on the glass, keeping the eye at the eyepiece to maintain the point of view. The contrivance helped one to draw, but it was a good illustration of the undervalued process of perspective or of sketching, which is drawing in perspective. For a true sketch or perspective drawing is a copy on paper of such a tracing or projection as is made on the glass. The fixed eyepiece marks the station point of the observer, which must not be changed, for the view will change with the position of the glass plate represents the surface on which the picture is thrown, which must also be immovable, or the representation will alter both in shape and position on the paper. The scene or object that is drawn is projected—that is, cast upon a flat surface as if by such a process as this. When we see something which is before us we practically look upon it as seen through a window, and transfer to the paper on our table or to the sketchbook on our knee the projection of the scene upon the glass of the window. This process of projection is in most cases unconsidered, but it is really behind what we are doing, and to recognise it adds clearness to our sight as to our understanding. In studying perspective we should consider that we draw things as they are seen again on an imaginary plane set up in front of them, and that our eye only repeats what is thrown as by a camera upon this plane.

Mr. LONGFELLOW from this introduction proceeds by step in his instructions. He keeps steadily in view that the reader or student is not in search of mathematical problems, but of power which can be utilised, and that the diagrams and explanations are only preparatory to exercises in drawing. The student in this way can measure his rate of progress. In perspective problems applications are indispensable, otherwise the student is apt to forget his diagrams. TURNER, we suppose, was not when he taught perspective in the Royal Academy, but he attempted an outline of his *Ulysses and Polyphemus* which would have seen that his gorgeous Greek vessel could have passed through the opening which is shown in the picture. In many cases Mr. LONGFELLOW's conclusions are tested by the photographs. One case is the clock of the Broletto in Como, and all who look at it will say incorrectly that the perspective ellipse of a vertical circle is only a straight line when the centre of the vertical circle is on the horizontal line and that of the horizontal directly over or under

\* *Applied Perspective for Architects and Painters.* By William P. P. Longfellow. (Boston and New York: Houghton, Mifflin & Co. London: Gay & Bird.)



the centre. In other positions the axis is inclined towards the centre. The clock seems to be distorted not in outline but on its plane. We are informed that it is an example out of many to prove to us that nature is full of things which do not look well in pictures.

The second part of the volume deals with subjects that are puzzling to young draughtsmen, such as oblique planes, circles in oblique planes, points and tangents, centers and axes, shadows, tri-conjugate vanishing points, polygonal pavements, octagonal pavements, broach spires, gables, pediments, entablatures, arcades, vaulting, &c. The volume is essentially one for drawing-offices and studios. It suggests the class of problems with which the author has most often to deal with, or which gave rise to delay in drawing. It will therefore have utility in a number of cases where the ordinary treatises on perspective could not be made to serve.

## EARLY RENAISSANCE BUILDINGS IN ENGLAND.

Thursday evening, March 20, a lecture, in connection with the Carpenters' Company, illustrated by lantern slides, was delivered on the above subject by Mr. J. Alfred Spence, who was introduced to the large audience by the chair-Lord Avebury.

Architecture, said the lecturer, in common with other things, runs under the observation of mankind, shows a tendency to change. No sooner have forms become established and carried towards perfection, than they are supplanted by others, which in their turn linger just long enough to give their character upon the period, and then give way to others. Just as in Ariel's song, every part of the drowned world change "into something rich and strange," so in the history of architectural ornament, no sooner is one form established than it melts into something else equally rich but less strange. In England this process of evolution went on uninterrupted for four or five centuries, from the time when we may be first said to have possessed a national architecture down to the end of the fifteenth century. The various phases of this process have been named Norman, English, Decorated and Perpendicular, and each such phase was suggested by something that went before. A new growth sprang from another that was already established. But at the beginning of the sixteenth century, in the reign of Henry VIII.'s time, the conditions underwent an alteration; came an outside influence to affect our English development, and certain forms and features crept in which had their origin not in the severe grey atmosphere of England, but in the sunny air of Italy. In other words, English architecture felt the touch of the Renaissance.

As the earliest effects of this new influence to which we had desired to draw attention, and to the manner in which those foreign forms were at first received. In course of time they established themselves firmly, and, invaders as they were, they ousted the natives of the land from their ancient positions. But in the beginning their foothold was somewhat precarious. They effected a lodgment here and there, not all over the country, in this feature and in that, not over the whole structure. But fashion was in their favour, and gradually, with increasing celerity, they spread hither and thither to displace the whole of the ancient forms. The struggle went on throughout the whole of the sixteenth century and well into the seventeenth. At length, under the leadership of Inigo Jones, the invaders finally triumphed.

In reply to the question, What is the Renaissance in architecture? the following are a few of the facts. In Europe there have been two main styles of architecture—the Classic and the Gothic. Greece and Italy are the homes of the one, the countries of Western Europe are the homes of the other. The many and gradual changes from one to the other are of great interest, but the chief importance is that by the end of the fifteenth century all conscious connection had long ceased, and the men of the Gothic buildings had no notion that there was any connection with their own of dealing with a building and ornamenting it with ornament.

In the history of the Renaissance in Italy it was considered superfluous to go, but so far as architecture is concerned, it should be borne in mind that many of its masterpieces were well advanced in years before English work could show the slightest trace of Italian influence. The influence of the Renaissance had dominated Italian work long before it came to us from France to our shores. It was our countryman, Christopher Columbus, who bridged the Channel for its passage, and who brought Italian artists to come over to this country—among them Bramante, first in rank, the object of whose visit was to design a splendid tomb for Henry VII. He was

followed by a few more Italians of great skill, although much of Italian-looking work was executed by English workmen.

Mr. Gotch proceeded next to illustrate his theme by a number of examples:—1. Examples of Gothic; 2, examples of Italian Renaissance; 3, examples showing the manner in which the forms of the Renaissance obtained their footing in English architecture. Almost the whole of the examples, except the Italian, were taken from work executed between 1500 and 1545. Some of the tombs, however, were earlier than 1500, and some later than 1545.

The illustrations thrown on the screen comprised, first of all, the roof of Henry VII.'s Chapel, the foundation-stone of which was laid in 1503; details of the end of side aisle and Islip's chantry, all Gothic. Next followed "Doorway at Genoa," "Choir Stalls, Certosa di Pavia," and drawings of some details executed by Italian workmen.

The succeeding views were of two tombs at St. Croce, Florence, executed in the fifteenth century; tomb at church in Arundel, Sussex, late fifteenth-century work with Italian characteristics; tomb at Lowick, dated 1520; Henry VII.'s tomb, executed by Torregiano between 1512-18, but the heraldry thereon is by English hands, showing that English craftsmen worked in collaboration with the Italian master. Then came the "Duchess of Richmond's tomb;" "Tomb in Stanford Church," dated 1588; "Sir George Vernon's tomb in Bakewell Church," dated 1567; the "Salisbury Chantry" at Christchurch, Hants, dated about 1529, with details thereof; "Draper's Chantry" in Christchurch, dated 1529, and "Sir John of Basing's tomb" at Basing Church, dated about 1570.

The wooden panelling of a house called "The Wyne" in Hampshire, executed previous to 1530, was next illustrated and described. The beautiful panelling at Magdalen College, Oxford, dated 1541, was also introduced, and the accounts for this which are still in existence show that the wainscot was bought in London and brought by a man named Fisher to Henley, and from thence to the College by Richard Weston. Paulyn sawed it up, John Carver provided the glue; Aldrich, White and Hobbs were the masons who prepared the hall; John Hanson provided fifty-two rods of panelling for the hall; Henry Bolton and Frost were the two principal joiners employed and they did the carving. Of these men Hanson took 8*d.* per day, Bolton 8*d.*, Frost 7*d.*, while the ordinary labourers were paid 6*d.* The total cost of the panelling was 29*l.* 12*s.* 5*d.* All this tends to show that the work was done by ordinary English workmen.

The succeeding views were of "Deene Hall, Hants," showing how Italian influence had spread; the "Panelling from Dining-room at Haddon Hall," dated 1545, revealing certain Italian features, although the general treatment is Gothic; the "Panels from Foxton Church in Northants," a very excellent example of Anglo-Italian work. Then came the finest example of Italian in England, viz. the "Screen of King's College, Cambridge," dating between 1532-36.

The lecturer next turned to some of the "great houses," and first of all gave an illustration of the house, or rather palace, which Cardinal Wolsey built in order to be near London without being in London, viz. Hampton Court. Commencing with the entrance, which is Gothic in design, and dating between 1514-15, there was shown to be a slight touch of Italian work in the arms over the gateway, while the roundells, ten in number, are the work of Giovanni da Maiano. The beautiful ceilings inside were also evidently of Italian design. When Wolsey died in 1530 Henry VIII. took possession of Hampton Court and enlarged it. He built anew the great hall, of which the roof is one of the finest pieces of timberwork in England. A view of this was shown, the conception in general being Gothic, but some of the ornamental and carved work is Italian in character. All the work was done by Englishmen. John Wright, freemason, carved the corbels; Richard Rydge carved all the wood pendants, and Michael Joyner did some small part of the ornamental woodwork. The hall door was Gothic, although the spandrel was of Italian design, and alongside the Gothic chapel doorway there was an Italian panel commemorative of Jane Seymour, dated 1536-37.

After alluding to Nonsuch Palace and Cowdray Court, the lecturer went on to say that while Hampton Court was being built by the great Lord Cardinal, other favoured servants of the king were building smaller but still remarkable houses, such, for instance, as Marney House in Essex, built by Sir Henry Marney, 1520-25; Sutton Place, near Guildford, built 1523-25, by Sir Richard Weston; and Laycock Abbey, which belonged to Sir Wm. Sharington, who was lord of the manor in 1540.

These examples served to show how fitful the new fashion was in its appearance, for if a blank map of England was taken, and only those places were marked on it which can show matured specimens of the style, it would be only the southern and eastern portions which would have any writing on them. The whole space north of Oxford and west of Cambridge would be practically clean. The other point which they tend to bring out is that, in spite of the Italian character of the detail, much



of the work was executed by English craftsmen who must have caught the foreign trick from Italians, Frenchmen or others who came to our shores partly by express invitation and partly in order to escape the tyranny of circumstances in their own native lands.

Lord Avebury proposed a very hearty and cordial vote of thanks to Mr. Gotch for his interesting lecture. This was seconded by the Worshipful Master of the Carpenters' Company, and carried unanimously.

## THE SEPULCHRAL MONUMENTS OF THE GREEKS.

ON the 20th inst. Mr. John F. White, LL.D., Dundee, delivered a lecture in the Art Gallery, School Hill, Aberdeen, says the *Aberdeen Journal*, to a large and most appreciative audience on "The Sepulchral Monuments of the Greeks."

Dr. White prefaced his lecture by a few preliminary remarks. Science in its application to industry, he said, was of the very first necessity for this nation in order to keep abreast of the other nations who were trying to outrival and outstrip us, but he thought they would be wrong if they did not include the other side of education—the spiritual and humanistic—because no nation had reached the highest civilisation simply by science. It was rather by a widespread, large acquaintance with everything that formed the individual. Culture was to the individual what civilisation was to the community. In choosing as the subject of his lecture "The Sepulchral Monuments of the Greeks," one might be at once confronted by the question, What had the manners, customs and monuments of the Greeks to do with them and their Christian religion? The answer, he thought, was very easy. For hundreds of years sculptors and workers in monuments had adopted many of the forms of the Grecians. Mentioning many of the world's most famous monuments and sculptured memorials, the lecturer, who spoke in an easy, conversational style, and treated his subject in an unconventional and very interesting manner, went on to say that the whole history of art led them to believe that the experience and knowledge which could be gained by a study of the methods and high perfection of the ancients should surely be useful to those who were working in the same line of monumental art, in order that fresh ideas might be arrived at, for free contact with that which had been well done before should be the very means of inspiring to higher work on the new lines on their own basis. He introduced the subject with great pleasure, hoping that he would be able to show what they could do to carry the education of the people—the education of the artisan, and the education of the artist—on these lines. Proceeding, Dr. White remarked that ceremonies in connection with the burying of the dead had occupied and would occupy the attention of every student of human nature, connected as it was with the most eventful period in a man's life, with the beliefs of the people with reference to the unseen world, and also the beliefs of the people in regard to a God or to gods. Therefore, it was not to be wondered at that students of comparative religion had taken a great interest in all those ceremonies connected with the burying of the dead; and they found, perhaps, that there was more instructive information to be got from comparatively uncivilised people. It was not with the religious aspects of this question that he was to deal, however, but rather with the monuments that had been raised to the memory of the dead. Of all the great nations of antiquity which had left great monuments to the dead Egypt and Greece stood out most conspicuously. Egypt, the elder by many thousand years, had left monuments of most colossal proportions unimpaired for our observation—monuments which struck us by their magnificent conception and by their grandeur. What, in this respect, could compare with the Pyramids and with the gigantic effigies of the kings of Egypt? After rapidly sketching the characteristics of ancient Egypt and its inhabitants, whom he described as having no individuality and no sense of citizenship, and who had no dignity in manhood, the lecturer went on to deal with the gods of Egypt—the deified forms of animals—and from them turned to the Greeks, whom he showed, by comparison, to be a free people, self-governed, proud of their citizenship, enterprising in every point, who imported ideas from all sides—from Egypt, Phœnicia, and other places—assimilating that which they imported and giving it their own form, and who rose to a higher form of worship, making their gods in the finest forms of manhood and womanhood. The progress in the sculpture of their gods was steady, and by the middle of the fifth century before Christ had attained absolute perfection at the time Phidias appeared. Dr. White then, with a fulness of knowledge that showed how deeply he had studied the subject, sketched rapidly the Greek ideas as to the world beyond, from a period 1,500 years before Christ, and showed a gradual rise in the conceptions as to the fate of mortals

when they left this life. In the earlier period the spirit worshipped, and oblations were made in order to gain some benefit or avert evil. In Homer's time the shade was supposed to carry on in a dreamy, shadowy sort of way the life of the earth. Once in Hades the shade troubled the world no more. At a later period there was a higher conception of state of existence beyond, and instead of life being a dream and shadow it was a life that was to be made better by a process of purification. A vivid and lifelike representation of leading ideas which animated the Greeks was shown in a series of beautiful slides, beginning with a fine slab, having a figure of a dead man seated and attended by his wife, a being slain for an offering, and a procession of figures with uplifted hands, in token of reverence, the idea present being the worship of ancestors. The same idea was illustrated in a number of other representations of slabs with figures, showing a high degree of artistic power. Even finer was a picture of slabs from the Parthenon representing Jupiter and other gods, which it was not a great stretch to associate with the name of Phidias as the sculptor. It was followed by another magnificent slab from the Parthenon representing knights on horseback. This was followed by a vivid picture of a street in Athens, discovered in 1861, showing numerous monuments of a striking character, called the Street of the Tombs. The street had been covered by a mound, but in clearing it the contractor, a man named Davidson, whom the lecturer hoped, was not a Scotchman, in order to make the street straight destroyed many of the finest monuments which had adorned it. A number of these remarkable monuments were exhibited on the screen. All of them were a very beautiful character, the figures being generally those of young men, the lecturer remarking that the young man was of Grecian type more so than women. The figures were more ideal in form, and not portraits, as portraiture did not come into the art of the Greeks until the time of Alexander the Great. Dr. White also directed the attention of his audience to the fine expressions of the sculptured figures, which, he said, depicted a strong characteristic of the Greeks, namely, the care which they guarded against any manifestation of feeling, also the care which they took to depict a Greek with calm cheerful countenance in the face of death. The lecturer then threw on the screen a picture of the finely carved head of a stele or tombstone. He was sure they would all be struck by the beauty and possibility of such work. It was, he said, quite possible from this and similar examples of Greek art to arrive new form to the ideas of the monumental sculptors of Aberdeen, making sculptured monumental work a new feature of the town, and to carry it on and make it world-wide.

## SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

THE ordinary monthly meeting of this Society was held in the lecture hall of the Literary and Philosophical Society, Leopold Street, on the 13th inst. Amongst those present were Messrs. T. Winder (in the chair), H. L. Paterson, C. Innocent, W. J. Hale, C. Gibson, T. Swaffield Brown, W. P. and W. C. Fenton (hon. secretary).

Several gentlemen were nominated for membership, Mr. H. C. Brameld was elected an associate; Messrs. W. Hale and W. Potts were elected auditors.

The City Council having agreed to the nomination of a member from this Society to sit upon the school of art committee, Mr. E. M. Gibbs was chosen as representative for the Society.

A vote of thanks was given to Mr. A. H. Holland for his kindness in letting the Society have the use of the Howarth Art Gallery for the recent exhibition of the R.I.B.A. drawings.

Mr. F. W. Troup, of London, then gave a lecture on "Leadwork." He said few people realised to what an extent lead was formerly used in the art of building. The ease with which the metal can be reduced from the ore made it so possible with the rudest of appliances. Once reduced to metallic state it is one of the most imperishable of the metals. It is, at the same time, the easiest of them all to melt, to cast, or to fashion into various shapes, either in the molten or solid state. This country has always been famous for its lead. A French writer of the seventeenth century says:—"The greater part of what we get here comes from England in the form of ingots, called 'Samnous,' weighing 400 lbs. or thereabouts. Germany also sends us some lead which is in squares. 'Samnous' of 120 lbs. weight, but the latter is short and less pure than that from England." Again, Harrison in his "Description of England," says:—"There were mines of lead somewhere in Wales, which endured so long till the people had consumed all their wood by the melting of the same." We find examples of lead having been used in Babylonia, Egypt, in Greece, and extensively in Roman times. There



examples of Roman coffins and cists and ingots in the museums. In the crypts of St. Paul's Cathedral he had Roman water-pipes lying stacked in heaps of old lead. This is not to be melted down when required for new sheathing for some or other parts of the roof. In Mediaeval times lead was used for covering the roofs of the finest buildings, also for lining and decorating spires of churches and cathedrals. London churches particularly were noted for their fine lead-covered spires, chiefest of them all that on Old St. Paul's. Yet with all this the work was often all done on the site of building. No elaborate machinery or complicated tools were needed. The plant consisted of a frame some 4 feet to 6 feet wide and 12 feet or more long, on which a sand bed was laid. Besides this little more was wanted, except a furnace in which to melt the lead. The molten metal was flooded on the levelled bed of sand, and from the sheet so cast every-thing could be wrought, bossed and beaten up, whether it were sheet for roofing or a crocket on a spire, or a lead-covered finial on a pinnacle. Various parts were cast in the same mould, and by imprinting moulds or patterns and running the lead into them, but the great mass of the work was done up from the flat sheet, and the great art of the plumber consisted in fixing, laying or hanging his lead in such a way as to cover and protect the roof or spire from wet, and yet keep it soft and ductile metal from slipping or dragging itself off. It was taken that the sheets should not tear or crack by contraction of the metal at night, after being beaten on by summer sun, there was no reason why the material should not last for ever, none at least except fire, from which no metal is safe that rests on a wooden substructure. Gradually the use of lead for anything but the most utilitarian purposes went out, and now "plumber" and "sanitary engineer" are convertible terms. The "leadwork" of a building comprises pipe casings or the grand display of sanitary waste-pipes and ventilators, culminating in the inevitable gully that tells of modern sanitation. There is, however, no reason why lead should not be restored to its ancient prestige, and be used once more as a pleasant and sightly material, and in which the workman can display his fancy and lavish his labour of love.

The motion of Mr. Paterson, seconded by Mr. W. J. Fenton and supported by Messrs. W. C. Fenton, T. Winder and others, a hearty vote of thanks was accorded to the lecturer.

#### CHRIST'S HOSPITAL SCHOOLS, HORSHAM.

In a few weeks Christ's Hospital Schools will be completed, and soon the Bluecoat Boys, says the *Sussex Daily News*, will occupy the magnificent buildings at West Horsham. Now the schools are practically finished their grandeur and beauty are strikingly manifest. Though there may be some feelings of sadness and regret at severing long-cherished associations with the ancient historic buildings at Newgate Street, they cannot fail to be impressed with their new quarters, and as they are with all the latest modern improvements, plenty of light and space and situated on an invigorating site commanding an extensive view of the beautiful Downs of Sussex and the picturesque Surrey hills. The quadrangle is approached by two drives; the western drive leads to Horsham, and the quadrangle is entered through a porch which bears the schools' coat of arms and the words, "Fear God, Honour the King." The eastern drive leads from West Horsham station, which is now nearly completed, and is proposed to be opened on May 1. The porch at this entrance bears the inscription:—"This cloister and east range and ranges, rebuilt by public munificence, were completed in the year of our Lord, MDCCCXXXVI., William Thompson, Esq., M.P., Chairman; Richard Hotham Pigeon, Esq., Treasurer; John Shaw, architect." There are also the words, "God. Honour the King."

The cloisters, built of brick and stone groin, on the eastern and western sides of the quadrangle are finished, and comprise a wide promenade 323 feet in length. The extensive quadrangle is being prepared for the laying of the turf. In the centre will be erected a fountain, which will be surmounted by a statue. With this latter exception, all the statues have been placed in their specified positions, a task which required a considerable amount of care and skill. This was very successfully accomplished, not the least damage being done to a single stone. The headmaster's house and the various boarding-houses are being scrubbed out, a numerous staff of women from the West Indies being engaged. When this process is completed the boarding-houses will be ready for occupation. The headmaster is expected in residence on April 10. Around the quadrangle the art school, library, school hall, infirmary, sanatorium, kitchen and the commissariat buildings, with their numerous offices, and quarters for the matron and their assistants, are all completed. The sanitary arrangements are the most perfect in existence. In a few weeks the science school, school hall and chapel will be

completed, as well as the gymnasium, swimming bath and laundry. A feature of the school hall is the beautiful, artistic roof of Oregon pine. There is also a fine roof of Oregon pine in the chapel.

The school's famous picture will be hung in the dining-hall soon after Easter, and it is expected that ten other paintings will also occupy positions in the grand hall. Some buildings which formerly belonged to the Aylesbury Dairy Company are being converted into a gymnasium and swimming-bath. The gymnasium will be fully equipped. The bath, which is in an adjacent building, is 88 feet by 25 feet, while the depth at one end is 7 feet and at the other end 3 feet. There is also a smaller bath, 34 feet by 25 feet, with a depth of 7 feet 6 inches and 3 feet. At one end is a gallery and around the bath are the dressing-boxes, over which will be erected another gallery. The building is admirably adapted for the purposes of a swimming-bath. The electric installation is completed and a thousand lights have already been switched on; when the schools are in use there will be 4,000 lights. The grounds are being laid out from artistic designs, and will include ornamental enclosures and flower beds, and present a very picturesque appearance with the circuitous walks. There are extensive playing grounds, and that portion allotted for cricket is being rapidly prepared. The whole of the work is being carried out under the direction of Mr. H. W. Tingley, manager of the works, and Mr. Proudfoot, clerk of the works.

#### ADVERTISEMENT REGULATION IN PRUSSIA.

IN a letter to the *Times* Mr. Richardson Evans writes:—

A Bill which has been introduced by the Government in the Prussian Diet deserves the attention of English statesmen. The object of the measure is, in brief, to enable local authorities to prohibit the erection or maintenance in any prominent position of advertising boards and notices, with especial reference to the impairment of the beauty of rural scenery.

It has become a commonplace to contrast the practical instinct of the German people with the sluggishness of our British intelligence. But in this instance the only difference will, I hope, prove to be that the Ministers of King William II. have shown more promptitude in giving effect to the prevailing wish of their people than circumstances permit the advisers of our own Sovereign to display.

Up to the present the history of the question in the two countries has been very much the same. On the Rhine, as on the Thames, efforts have been made to use the powers given by law to municipal bodies for securing "safety" and "good order" in public places as an instrument for suppressing affronts to the eye. But the courts have held—as they were bound to do—that the intention of the provisions relied on was confined to the protection of life and limb and health. The duty, then, of the Legislature is manifestly to supply a missing element in municipal jurisprudence. Had the practice of "catching the eye" prevailed when the lines of municipal administration were first laid down, it would have been an obvious thing to arm the elected representative bodies with appropriate powers of control. This must be done speedily if even graver mischief is to be averted.

The Prussian Government bases its proposal on the fundamental principle that scenery is a national asset of inestimable value; that it is the duty of the State to intervene to save it from wanton destruction, and to "foster the love of natural beauty" in the people.

The appeal is not so much to sentiment as to common sense. Everyone who in Parliament or outside it approves of the expenditure of public money in laying-out parks and gardens, and in constructing sumptuous edifices and stately monuments, must be inconsistent with his reasonable self if he treats with indifference the wholesale havoc which the multiplication of advertising eyesores does to that absolutely costless source of delight—the aspect of our land.

Nor is it a question of hampering commerce and industry. Those who wish to compete for custom by advertising can find channels as convenient to themselves and less unjust to their fellows. In tourist tracks it is sheer stupidity to tolerate blots on the landscape. The owner of a field or a house may get a dose—greater or less—for surrendering it to a vile use. But the judicious traveller will carry his custom to inns in more fortunate regions when he finds that disfigurements kill the charm.

Let me express a hope that a patriotic House of Commons will soon invite a sympathetic Administration to save the honour and the true riches of our land, and show that in this department we can, indeed, "compete with Germany."

The Following Gentlemen were elected members at the last meeting of the Society of Architects:—Mr. G. E. S. Streetfield, of 26 York Place, W., and Mr. G. Ratcliffe, of Sheringham, Norfolk.



## NOTES AND COMMENTS.

THE builders of Sydney have some reason to be dissatisfied with their Government. The bricklayers went on strike because the hours of working were not reduced from 48 to 44 hours per week, and the wages increased from 10s. to 11s. per day. As the time selected was most inconvenient, the men's demands had to be accepted by the majority of employers. It is objected, and we think with reason, that the Government facilitate strikes by giving employment to men as labourers. An appeal was therefore made to Mr. PEACOCK, the Premier of Victoria, by the master builders, stating that they considered the strike was merely an endeavour to overthrow the established eight-hour system, and they asked that the Government would not make any alteration in the number of working hours. It was also stated that when a similar request was made to the railway department, which is a Governmental body, the builders were informed that the department would not interfere in the question of wages, its policy being to pay the rate that was conceded by private employers. That reply is considered as being an encouragement to the men, for it is equivalent to saying that if they can force the hands of private employers the Government will submit. The Government, by allowing the men to continue working, provides the funds to support the strikers while fighting the employers. As the Government are employing so large a percentage of the labour, it is felt to be necessary to deal with the matter rather than to quietly submit to demands which are forced from private employers under such unfair conditions. The Government, however, maintain that they are absolutely impartial, and the course that they have adopted cannot be departed from.

WHILE English explorers have been endeavouring with most inadequate funds to discover remains of classic times in Crete, the Venetians have not been forgetful that the Republic formerly possessed the island for nearly five centuries. The Royal Institute of Science and Art have sent a party of inquirers, under the direction of Dr. GERSTA, in order to ascertain how far evidence had survived of Venetian dominion. In the southern provinces they have met with ruined walls, cloisters and churches which were erected by their countrymen. The arms of many Venetian families and repeated examples in relief of the Lion of St. Mark were discovered, as well as frescoes which record the magnificence of the Venetian authorities in Crete and their families. The paintings recall the style of PAUL VERONESE, and will be especially valuable for the portraits and details of costume. A great many casts of various Venetian works in sculpture have been already sent to Venice, and the finds will have the effect of inducing scholars to investigate the subject of Venetian sovereignty in Crete more fully.

A FOREIGNER who makes a serious study of English ways must be puzzled when he reads the correspondence between the Education Department and the London School Board on the size of schools, and compares it with the speech of the First Lord of the Treasury a few days afterwards announcing that School Boards were to be abolished and the subject of building was to be dealt with in a manner entirely different from that which formerly prevailed. The foreigner would take it as the latest instance of the war between official departments which never ceases in this country. Vast sums of public money are wasted in consequence, but there is the satisfaction of knowing that somebody has profited by the expenditure. The School Board of London, though doomed to dissolution, have been informed that the Education Department consider that a school should not, as a rule, contain more than 1,000 children arranged in three departments of 300 boys, 300 girls and 400 infants, or 300 senior mixed, 300 junior mixed and 400 infants; and that only in exceptional circumstances could a school with three departments and a total of 1,200 be sanctioned, though, with an additional junior mixed department, a larger total might sometimes be accepted. Plans in the future must show that the recommendations have been followed, and the purchase of sites allowing of more accommodation will not have any influence over the department's decisions. The School Board of London in reply say the subject requires serious consideration. But

they "desire to express the most earnest hope that, with prejudice to the general consideration of the question of future provision on new sites, the School Board may rely on the Board of Education not making this new proposal of theirs retrospective so as to affect sites bought already by the London School Board with an area suitable for the large schools they have hitherto been in the habit of erecting, with the concurrence and in many cases at the suggestion of the Board of Education, nor in the case of the numerous schools planned by the London School Board for enlargement, and with the plans approved by the Board of Education showing plainly this intention and the necessary adaptation of plans of the portion of the school erected in the instance to those intended enlargements." The ratepayers of the Metropolis may well ask why the Education Department did not arrive at their conclusions several years ago. The Act has been in operation for thirty years, and when it is about to be superseded it seems not only absurd but prodigal, to revolutionise the arrangements, and to allow sites to fall into the dearthiness of vacant land in London.

It is gratifying to learn that Mr. ARTHUR EVANS has begun his third season's excavations in the Palace of Knossos with encouraging results. In a report to the Cretan Exploration Fund, dated the 13th inst., he says "Progress has been slow but satisfactory. South of the hall of the double-axes important rooms are opening. One of these, apparently containing another 'bath' with a parapet, shows a high dado of fine gypsum slabs with a fresco frieze—spiral pattern—still partly in position above it. In the adjoining room also a good deal of fresco has been found, quite an aquarium of fish, and the upper part of a good female figure. A very interesting magazine has come to light—closed since the earliest palaeolithic period—containing vases of the Kamares class, some with beautiful lily designs in white. A very remarkable find is a kind of domestic shrine at the end of a room with a small painted female image in position, with a dove on her head and a male votary holding out a dove. Deposits of inscribed tablets are also continuing to appear; one refers to the armoury, and the tablets show pictures of swords." The great obstacle to progress is a financial one. A sum of about 1,100*l.* has been obtained in response to the late appeal, but the revealing of the palace it is estimated will require at least 2,000*l.* It would not be creditable to lovers of archaeology and of ancient Greece to allow operations to come to a premature end and for the representatives of another country to resume them and, through some remarkable discovery, obtain renown for the whole enterprise. Subscriptions can be sent to Mr. GEORGE MACMILLAN, at Martin's Street, London, W.C., or direct to the account of the Cretan Exploration Fund, at Messrs. ROBERTS, LLOYD, BOCK & Co.'s, Lombard Street, E.C.

## ILLUSTRATIONS.

MERSEY DOCKS AND HARBOUR BOARD, HEAD OFFICES, LIVERPOOL.

CATHEDRAL SERIES.—RIPON: THE ROOD-SCREEN BETWEEN NAVE AND CHOIR.

THE old fabric-roll of Ripon Cathedral is evidence that a rood-screen existed in 1408. But whether it forms part of the present structure is uncertain. The style now visible is of a later time, and it was the opinion of Sir GILBERT SCOTT that the screen was executed about 1450. It forms a very massive wall, although adorned with niches and sculpture. In 1450 the central tower collapsed, and in consequence part of the south transept and choir had to be rebuilt. The old screen must have suffered as a consequence of the accident. The massiveness of the screen may be due to a desire for protection. It must have offered a more remarkable appearance when the niches were occupied by statues. Over the doorway within the rood is a representation of the Trinity. The shields were once emblazoned with the arms of benefactors, and the whole work in the fifteenth century no doubt presented a gorgeous sight to all who entered the building.

THE BIRKBECK BANK, SOUTHAMPTON BUILDINGS, LONDON, W.

LONDON AND PROVINCIAL BANK, GREENWICH.

PREMIERS, LONG ACRE, W.C.



# THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. W. H. Seth-Smith, president, in the chair. Messrs. A. W. Heath, R. D. Wells, and C. H. Wheeler acted members.

Following donations to the New Premises Fund were received:—Mr. C. E. Bateman, 5*l.* 5*s.*; Mr. Noel F. Barlow, 4*s.*; Mr. W. J. N. Millard, 2*l.* 2*s.*; Mr. D. T. Fyfe, 4*s.* Total subscriptions to date, 3,936*l.* 7*s.* 6*d.* W. H. LEVER read a paper on

## Villages Erected at Port Sunlight and Thornton Hough.

When your Association did me the honour to invite me to read a paper on "The Villages of Port Sunlight and Thornton Hough," it appeared to me to be necessary before accepting the invitation that it should be clearly understood to be outside of my ability to treat the subject from the standpoint of the architect.

I was good enough to repeat your invitation after giving this explanation, and now, if you give me your kind notice, I will endeavour, in as few words as possible, to give an account of the building, planning and laying out of the villages, and of the partial rebuilding of the village of Thornton Hough.

When Port Sunlight first, its history is soon told. Our works were started in Warrington in January 1886, and in the autumn of the same year the site being found to be too small for our rapidly growing business, it was decided that the best course would be to move entirely to some rural district where ample acreage was secured adjacent to both rail and water transport, with ample facilities for obtaining the necessary supply of water.

To provide this a decision had first to be made as to what part of England was best suited to the particular nature of the business it was intended to carry on. Rightly or wrongly, Mersey was selected as the best for our business.

In making maps of the district, I next proceeded to examine, by walking, partly by taking train, the most likely sites, and finally settled on land on the Bromborough Pool, about five miles from the centre of Birkenhead, and seven miles across the river from Liverpool Town Hall. The intention was to build works and village. The village was the scheme from its very inception. Our first purchases were 56 acres of land, of which 24 were intended for the works and 32 for the village. From time to time more was added to by purchase as opportunity offered, until the area is 230 acres, of which about 90 acres are devoted to the business and 140 to the village.

90 acres devoted to the business are of no interest to the architect, and therefore we will dismiss them and the buildings thereon from our thoughts and confine our attention to the 140 acres devoted to the village.

The ravines or gutters up which, to a greater or less extent, the tide used to flow, we have filled up, and the land at the bottom of the ravines, but only so as to bring it above high-water mark. This leaves the ravines available for use as parks and recreation-grounds, and so treated will become the feature of the village. At the junction of Bromborough Pool a dam is in course of construction, which will cut these parks off from the incoming tides, and also carry a road at that point across the pool.

The roads have been so planned that, whilst making direct routes to important points, such as the railway station, the ferry, the tramway terminus, and to the office and shops, they shall still form wherever possible curves and follow the lines of the ravines.

Another object aimed at in the laying-out of the village has been that none of the houses should have their backs to the sea. It is remarkable how little this is thought of in the building land adjoining railways, and yet I know of no estate of such an extent that ought to have more careful consideration, both on the grounds of the financial success of such a scheme, and also in the interests of the public using the land.

The general width of the roads has been fixed at 12 yards roadway and 8 feet each for footpaths, but the widest road is 12 yards for roadway and 12 feet for footpaths. I don't know whether it is a recognised rule to make footpaths as many feet wide as the roadways are yards in width. I have always found this to give a most excellent result. In order to realise the intention of leaving the parks and recreation-grounds, and at the same time to get the directness of the roads to adjacent localities, the ravines had to be spanned at several points, and in some cases where bridges have been built this has been done by means of banks of earth. In building these bridges the intention has been to add distinct objects of interest to the village.

The first of the two bridges is the one near the schools, and the park at that point. It was designed by Messrs. J. A. & Fordham, of Chester, and forms one of the most

charming features of the village. The second bridge carries Bolton Road across the ravine to its continuation to New Chester Road. This bridge was built from the designs of Messrs. William & Segar Owen, of Warrington, and it would be difficult to imagine anything more solid and strong, yet light and graceful. It is an ideal structure for the purpose for which it was designed. At the time the bridge was built we did not own and could not then readily acquire the land bounding the north-western buttresses of the bridge. The ravine therefore, for many reasons, could not be spanned by an embankment. The necessity for the continuation of Bolton Road to New Chester Road was an urgent matter that could no longer be delayed. Hence the only solution of the difficulty was the building of the bridge, which gave us the outlet we required and rendered us independent of adjoining landowners, with the result that we were able later to purchase whatever land we required to the north of Bolton Road. Whether this would have been possible without the independent outlet being first created I cannot say, but if that had appeared to us to be possible, the bridge in all probability would not have been built, and the village would have lost one of its most striking features. The total area occupied by ravines is 121,000 square yards, or about 25 acres. Adjoining one of these ravines we are erecting a gymnasium, using wood as the building material. In another, we are erecting an open-air theatre, which for want of a better name will be called the auditorium. The sloping banks of the ravine allow of a perfect arrangement of seats somewhat on the lines of the classic Greek theatres. Of course, I know it is somewhat risky to build an open-air theatre in this uncertain climate, but the view taken is this, that we may possibly rely on four months during which we shall find this theatre extremely useful, and as the cost of such an open-air theatre is certainly not more than one-quarter that of a fully-enclosed building, it appears to be a fairly economical arrangement. In addition, is it not desirable to cultivate more the capacity of our English climate for open-air summer amusement?

However, in any case it will be an interesting experiment. Adjoining another of the ravines and occupying a triangular piece of ground that otherwise could not have been profitably used, an open-air swimming-bath has been made. The shape of the bath is oval—length, 100 feet; breadth, 75 feet; 3 feet deep at one end and 7 feet 4 inches at the other; with wooden dressing-rooms placed in convenient positions.

What I may call the first public building to be erected at Port Sunlight was the Gladstone Hall, opened by the late Right Hon. W. E. Gladstone, in November 1891. This, in my unprofessional opinion, is the most appropriate village hall we have. It is simple and unpretentious, admirably adapted for the purpose for which it was designed, and most suitable and appropriate for erection in a village. The tendency at Port Sunlight has been during the last few years for our architects to become more and more elaborate in architectural design, and more and more extravagant in the use of costly building material. Although this has been done with the most happy results in the majority of cases, I rather look upon such buildings as teaching merely what can be done with unlimited money, and whilst this is very right and proper in its own way, it does not teach us so useful a lesson as the more difficult one of planning and designing simple, beautiful and inexpensive buildings suitable to village life and village means.

But Gladstone Hall has for long been too small for the needs of the village, and therefore an additional dining-hall has been built, at present devoted entirely to the use of the women and girls of the works and village. This hall is called Hulme Hall, and I certainly feel a little more at liberty to criticise it, since it was built from the designs of the same architects who designed Gladstone Hall, Messrs. William & Segar Owen, of Warrington; than whom no one has been more happy in their work at Port Sunlight, to whom also we are indebted for the quiet grace and beauty of the earliest buildings in the village which have given to it its distinctive English village character. Probably the difficulties connected with the size of Hulme Hall were greater than appear at first sight, the problem being to provide dining accommodation for not less than 1,500 people seated at small tables—say six persons at each table. The effect produced on one's mind by Hulme Hall is not that of a village building, but rather that referred to above as showing what can be done with unlimited money lavishly spent, which is perhaps the least useful lesson village architecture should teach. However, the hall answers its purpose most admirably, and should prove to be a centre of life for the village as long as it is in existence. The cooking arrangements are most admirable and perfect. A happier or brighter spectacle than the hall at noon, with the hundreds of healthy, bright girls seated at the clean, neat tables it would be difficult to find.

At about the same time that we built the Gladstone Hall we built a block of cottages, with a shop at one end of the block. This shop is now used as the village post and telegraph office, and is well worth attention. The half-timber work in this shop is solid oak, employed, as nearly as the



modern Building Acts will allow, in exactly the same way as it would have been employed had the shop been erected 300 years ago. The same remark applies practically to all the half-timber buildings at Port Sunlight, although there are, I think, one or perhaps two cases where this has not been strictly adhered to. The village stores used to be at this shop, but the growth of the village soon rendered it too small, and therefore large central shops were built from the designs of Messrs. Douglas & Fordham, of Chester. The site selected is at the corner of Bolton Road and Bridge Street, and the group of shops consists of grocery and provision shop, drapery and millinery shop, and butcher's shop. These stores are managed by the employees themselves entirely, and whatever capital is employed is provided by themselves, and whatever profits are made are divided among themselves.

Over the entire area of the three shops is the Girls' Institute, with large central hall and side classrooms, the latter formed by movable wooden screens, so that when required they can be thrown into the central hall. This is the girls' club of the village, and one of our most useful institutions. Sewing classes, ambulance classes, &c., are held here during the winter months, and in a lesser degree also during the summer. This institution does not quite correspond to the Men's Social Club, being a more educational institution than the men's club. This latter was built from the designs of Messrs. Grayson & Ould, of Liverpool, and has proved a most useful and successful building for its intended purpose. It contains the usual accommodation for billiards, games, reading, &c., inside, with a full-sized bowling-green adjoining. Opposite the men's club is a range of buildings with a "past." Its present use is as an addition to the school accommodation of the village. Prior to that it was used as a girls' restaurant on the first floor, with small confectionery shop, estate office and caretaker's rooms on the ground floor. Earlier, again, the first floor had been divided, as in those early days one-half was found to provide ample accommodation for the girls' restaurant, and the other half was available for and was used as a junior social club. None of these uses, however, is the original one for which the building was designed and built, which was to provide a series of four homes, each with twelve cubicle bedrooms and with bathrooms, parlour, living-room, kitchen and all the necessary equipment for accommodating a total of forty-eight girls, being twelve girls in each of the four homes, with provision also for matrons and staff for each house. The charge for this accommodation was 2s. 6d. a week for each girl, and this included everything except washing the girls' wearing apparel and cost of food. This charge was based upon the cost to the girls of the cheapest and usually very inferior lodgings to be obtained in the worst and most crowded adjoining districts. However, the girls objected to the idea altogether. The homes never attracted more than a dozen girls at one time. Finally they had to be closed and adapted for other uses. I believe the girls' objection was due more to the suspicion they had that they were being asked to live in what appeared to them an institution, and probably also to the ridicule of other girls, than to any other cause. They were making a respectable living, and their womanly pride preferred to be independent and to find their own lodging accommodation with some working man's family.

But the buildings of which we are most proud at Port Sunlight, both architecturally and otherwise, are the school buildings, built from the designs of Messrs. Douglas & Fordham. All the social work of the village centres round these buildings. Undenominational Divine services are held here on Sundays by our resident minister, the Rev. S. Gamble-Walker. They are used also as Sunday schools on Sunday afternoons and as day schools on week days. In addition they are in constant use for social and educational functions on week nights. Additional schools are now in process of building from the designs of Messrs. Grayson & Ould, which, when completed, will raise the school accommodation to a provision for over 1,500 scholars. A church is also being built from designs by Messrs. William & Segar Owen. I would like to describe this church to you, but I am afraid that if I attempted to do so you would be wearied by my inability to clearly convey a correct idea of it to your minds. I can only say that the aim and intention had been to produce an honest piece of work, worthy of the purpose for which it is intended, with every detail, both inside and outside, speaking of thoroughness and truth, and with such ornament only as would add dignity to the building and produce a feeling of reverence in those worshipping within or viewing it from without.

I must not forget to take you to our village inn—called Bridge Inn—built from the designs of Messrs. Grayson & Ould. It is unlicensed, and it is not intended to apply for a license for the sale of intoxicants, and it is one of our most successful and useful buildings, providing easily day accommodation for many hundreds of visitors, with a few bedrooms sufficient to meet all the demands of visitors requiring to make a longer stay in the village. Considering the difficulties to be overcome in securing all that was demanded of the architects at a cost

within the means placed at their disposal, this is certain of the successes of the village.

And now, before leaving Port Sunlight and proceeding to the little village of Thornton Cough, let us examine the types of cottages built at Port Sunlight. We have realised standard types only—the cottage and the parlour house, although we have some half-dozen cottages which have accommodation than the standard type of cottage, and a dozen houses, occupied by our clergyman, doctor, master, managers and heads of departments, which are specially for those they were designed and built to accommodate, and present no special variation from the usual moderate-sized family house.

We will therefore pass these exceptions over and ourselves to the consideration of the standard type, which really is the type for ninety-seven out of every hundred. In planning the standard type the idea has been, firstly, to provide a garden as foreground to the cottage and screen the road. These front gardens are in every case kept in order and cared for by ourselves. We have found experience that no other plan is successful in securing a charm to the village and avoiding the unsightliness of here and there the obtrusion of neglected plots of garden which would nullify the whole effect. This care by ourselves of front gardens effected at a cost of 3d. per garden per week. In addition these front gardens we have also allotment gardens to each block of cottages. These allotments the tenants cultivate themselves as vegetable gardens, or properly fence and plant with poultry, &c. These allotment gardens are placed as near as possible to each cottage, and are the very safety-valve of the village. Their use and appreciation by the villagers speaks eloquently than any words of mine could do of the absolute need for such means of healthy recreation.

The accommodation in the cottage type provides for bedrooms upstairs and living-room, kitchen, scullery, room and larder on the ground floor, with enclosed yard and usual outbuildings. Our experience leads us to believe that any variation from dimensions chosen has not been popular with the villagers. If the rooms are made larger it costs more work on the wife than she is able to devote to them, and therefore the house soon loses its tenant. On the other hand, if the rooms are smaller, they will not accommodate necessary furniture, with a like result. In fact, a work cottage must fit like a glove the wants of a tenant if it is to be a successful attempt to provide for the happiness and comfort of himself, wife and family. Having settled by experience the most suitable type of cottage, it has been adhered to in all the cottages at Port Sunlight and Thornton.

The parlour cottages differ from the ordinary cottages, having an additional bedroom on the first floor and a parlour on the ground floor. In a few cases the scullery in the parlour houses has been fitted with a kitchen grate, so that cooking could be done there, leaving the kitchen to be used as a dining-room. The general type adopted for the parlour houses has proved popular, and therefore has been settled as permanent.

The financial aspect of the village at Port Sunlight is easily told. The capital it has taken to buy the 140 acres of land to build the cottages, houses, schools, shops, institutions, &c., and including making the roads, laying out the parks has been over 350,000l.

Our standard type of cottage thirteen years ago cost 200l. each to build, and identically the same cottage in 1907 cost us 330l. to build. The parlour houses cost us then 350l. each to build, and now about 550l. each.

Upon this 350,000l. Lever Brothers, Limited, receive interest or return whatever, the rents being fixed at such amount as only to pay for rates, taxes, repairs and maintenance. The rents have had to be increased from 3s. per cottage per week to 5s. per cottage per week, owing to increased cost of maintenance of parks and roads and of the cottages themselves. The cost of repairs has gradually grown to extravagant proportions, owing to the fact that every tenant has been allowed practically any repairs he asked for. This was all because the tenants as a whole paid the total cost of repairs and maintenance; but this system does not bring it so close home to individual tenants that extravagance in requests for repairs to skilled workmen for trivial repairs is expensive. There are clear indications shown by the reduction in the number of requests during the last six months that the last raising of rents is having a good effect. From our experience, therefore, it appears that with the most economical expenditure on repairs and maintenance the rental of a cottage to cover rates, taxes, repairs and maintenance only would be 3s. 6d. per week, and of a parlour house 5s. 6d. per week, and that on such rental nothing would be available as interest on capital outlay.

Taking the value of the land at 240l. per acre, and taking ten cottages per acre as the maximum number possible on an acre, after allowing the proportion of each cottage for parks and recreation-grounds, we should have a total cost for cottage



of 354*l.*, which at 4 per cent. interest and 1 per cent. depreciation (in addition to cost of maintenance already provided for) is, say, 17*l.* 14*s.* per cottage per annum, or, say, 7*s.* per cottage per week. Adding this to the cost of rates, repairs and maintenance, we have a rental of 10*s.* 4*d.* per week as the letting value of the cottages of Port Sunlight on an ordinary commercial basis. Taking the rate of interest at 3 per cent. and of depreciation at  $\frac{1}{4}$  per cent., the 4*s.* 9*d.* per cottage per week would be sufficient to meet and consequently a gross rental of 8*s.* 3*d.* per cottage per week would be sufficient.

My object in mentioning this is to draw attention to the fact that to build a village such as Port Sunlight is not commercially possible at the present time. To ask either of the above would be to place the possibility of living in such a village out of the reach of ordinary village tenants. How can this difficulty be met? There are only two possible channels of action—cheaper land and less expensive buildings. The cost of the land for cottages is fixed by the number of cottages which can be built upon it. If the legal maximum were 12 cottages per acre, as it ought to be, it would be possible for land for cottages to reach a higher value than the present cottages would bear. The present Building Acts allow 12 cottages being crushed like sardines in a box on one acre of land. The effect of this absence of proper restrictions is in all cases to the raising of the value of the land. In Liverpool this is seen by competitions amongst builders for the best cottages, who elevate to the level of a fine art the study of how many cottages can be squeezed upon a given area. The present builder who can see his way to squeeze the most cottages on a given plot of land sees his way at the same time to the highest price for the land and so to secure it. The remedy is the restriction of the number of cottages to be built upon a given area of land—to say, twelve cottages per acre.

This will allow 400 yards of land for cottage and garden, and proportion of roads and open spaces for parks and recreation-grounds. This is the maximum limit possible for the maintenance of healthy life. A limit of ten cottages per acre, 400 yards per cottage, would be better.

The next consideration is the cost of building, and I venture to suggest that there is here a magnificent field worthy of the attention of our best architects. This subject should not be left to the unaided efforts of what we often call the jerry-builder, a man who is, in my opinion, a useful member of society—more sinned against than sinning.

The so-called jerry-builder has to make the most of the most impossible position—to satisfy the demands of the market for cheap dwellings, regardless of consequences—and I think that, building upon dear land, he does all that can be done with the materials at his disposal. If our best architects only come to his assistance by studying the present-day requirements to be provided for in dwelling-houses, the cheapest materials for the purpose, the preparation of the same machinery, as far as possible, rather than by hand-labour; by the saving to be effected by the erection of dwellings in large masses rather than singly, and to do so with effect and less monotony than by building as at present; in fact, to raise architecture in relation to the dwellings of the masses on to broad, comprehensive lines, so as to rest upon the only true basis that architecture can ever occupy—the logic of the requirements of the age with economy, simplicity and character. Modern domestic architecture requires to put itself to the requirements of the twentieth century, in the same way that naval architecture has done in shipbuilding—to accomplish as much by disregarding traditions, as to building materials, in supplying the demand for dwellings for the masses of the people, as naval architecture has done by disregarding traditions, as to shipbuilding materials, in supplying the present-day demands for ships.

We know that for certain buildings which must be monumental and important, we are not likely to discover better materials than stone, granite, or marble. But dwellings for the masses of the people need not be monumental. They can be inexpensively built to stand absolutely sound, fire-proof and sanitary for, say, fifty or sixty years, they can better supply the present-day requirements than if, by the added cost, they were built to stand good for 300 years. The changing life of our citizens, the necessity that is laid upon them to follow their employment wherever it may lead them, the fact that our experience teaches us that in fifty or sixty years the site of cottages may in all probability be wanted for other purposes—all point to the present-day requirements in building being not for cottages to stand hundreds of years, but for cottages to stand fifty or sixty years. Understand, I am not speaking of the building of mansions, say, from 70*l.* a year rent and upwards. I am speaking of cottages, and what for want of a better word I call "parlour houses," the rentals being from a few shillings up to say 30*l.* or 40*l.* a year. I know of no greater service than the designing of economical cottages and small houses, unfettered by tradition as to material to be used, and

guided only by the wants of the age for economical, sanitary, healthy houses, to endure for fifty or sixty years only.

We will now pay a short visit to the village of Thornton Hough. Here the problem was not how to build an entirely new village, but how to rebuild an old one. The exteriors of some of the old cottages in the village were very picturesque when seen in fine weather, but unfortunately, the more picturesque the exterior appearance, the more dirty, dark, damp, unhealthy, and at variance with all ideas of common decency was the interior. The villagers in many instances, but not every one, were attached to these old ruins. I well remember one case where the tenants, a farm labourer and his wife, had brought up a family of ten children in a cottage with one bedroom only. The thatched roof was falling in and the walls were bulging out. A son-in-law of the tenants was the village carpenter, and I referred the old lady to him to satisfy her that nothing but pulling down was possible. He expressed his inability to do anything, saying in his own emphatic way, "If yer touch the roof ye'll push the walls out, and if yer touch the walls ye'll have the roof down."

This unwillingness to move did not apply to all cases. I remember one tenant, a widow woman with one son, asking me if I could not build her another bedroom to her cottage, as her lad was growing up now and they had both to sleep in the same room. She then proceeded to inform me that he was over twenty. There were other cases even worse than this as far as mixing the sexes in single bedrooms was concerned, and cottages worse than the one with roof and walls falling down. Such cottages were the most picturesque externally. However, all difficulties in the end were overcome. Only the irreclaimable cottages were pulled down and new cottages built in their place. Cottages offering the slightest possibility of reformation were altered, repaired, and adapted to modern requirements. The new cottages were not always built on the site of those pulled down, but as far as possible this was done, so as to preserve the general outline of the village.

A score or more of additional cottages have been added to the village to supply the growing need of the agricultural and farm labourers of the parish.

I have confined the tenancy of the cottages to the village labourers, and in consequence have only about 1 per cent. of direct return on the investment. I have, however, the satisfaction of knowing—if that is any satisfaction—that under present building possibilities however "jerry" and however plain and ugly I might have built, at the rentals which village labourers can afford to pay, the result as an investment would have been little different. To raise the rents would, in the majority of cases, be to force the original village population away, and to replace them with a different class of tenant entirely. But, indirectly, I believe I have full and ample return, partly in the value of the farms I have in the parish, which would be seriously depreciated if farm labourers could not be housed in the village; and, secondly, in the pleasure it has given to me to do what it appeared to me ought to be done for those living in the village.

Messrs. William & Segar Owen, of Warrington; Grayson & Ould, of Liverpool; and Douglas & Fordham, of Chester, are the architects I was fortunate enough to secure to design and carry out the work. The same general plan or type of cottage has been adopted at Thornton as at Port Sunlight, and the same provision for gardens and recreation-grounds has been made.

And now allow me to explain, in order that you may understand my position and work better, that I have always wished that I had been an architect. I have been building since when, at nine years of age, a lean-to rabbit-hutch absorbed all my spare time for that year. The following year this rabbit-hutch appeared to be capable of extension, and it was pulled down and rebuilt on a more extensive scale, allowing a number of small boys to stand upright inside the hutch. The third year saw a further development in carrying out a startling idea—that of covering the roof with soil to the depth of about six inches and planting oats therein, with the object of raising food for the ever-increasing stock of rabbits. But, alas! "the best laid plans of men and mice gang aft agley," to say nothing of those of architects and builders; for although the corn grew luxuriantly in the early spring, it all withered away in the summer heat; and so this economy of space, which, had it proved practicable, might have done so much for distressed agriculture, had to be abandoned. Nothing discouraged, as far as my building instincts were concerned, the year following I built a pigeon-cote; and so on, each and every year finding me engaged in some building operation, right up to the present time.

Gentlemen, there is no career that opens up such immense possibilities for influencing the world in which we live as that of the architect. The best and most reliable records of the earliest stages of civilisation in the world are architectural. It is true we have the stone and flint implement age, but although they teach us that their users were able to protect themselves from foes, we learn little of their higher or home life. In the



case of the cave-dwellers the incipient craving for buildings does show itself, it is true, but only very slightly. It is not until the first architect appears on the scene that man comes within the reach of a higher life. There can be no possibility of doubt that the architect was the first and most important link in the chain of art workers that have raised us to our present state of civilisation. The art of the painter is a most important one, but it is clear that until there were suitable buildings in which to place them paintings on walls or canvas were impossible. And yet architecture is one of the least remunerative of the professions. If an architect does his duty to himself and client and supplies full necessary detail drawings to the builders, if he carefully and conscientiously supervises the progress of the building during erection, he will have a very small sum left for his own personal remuneration after paying the salaries of draughtsmen and assistants. And it is to the credit of the architectural profession that it does contain a body of men who maintain a high level for their profession, as free as the requirements of life will permit from unworthy thoughts of personal remuneration. And, with a very few exceptions, this appears to have been always the case with architects in all countries and all ages.

Why it should be so I fail to see, yet it does appear to me from my own observation that, attention once directed to money-making as an aim and object, art vanishes. No, if money-making is to be the aim and ambition of life, then leave architecture and become soap-boilers, sugar-boilers, cotton-spinners, manufacturers, bankers, shipowners, merchants—anything and everything almost. It is true many of these latter reach the Bankruptcy Court; and I hope few architects arrive there. Still, if money-making is the highest aim of life, then architecture is not the calling to follow. But money-making is not the highest object of life, but service to our fellow-men; and in my humble opinion an architect's career is one of the most serviceable in the whole range of honourable callings.

Since it has not been my good fortune to be trained to the honourable profession of an architect, and since my instincts all lead me in that direction, I have had to be content to follow, but at a most respectful distance, in the company of architects, and to build under their guidance and direction what little building I have done. No doubt I have led them into many errors by insisting on my own way being followed as against their trained and mature judgment. None the less on that account I hope to remain always on the most friendly footing with all architects, and that my love of the profession, with a lifelong devotion to its aims and ambitions, will make them

To my faults a little blind,  
To my virtues ever kind.

For myself, I thank most heartily and sincerely every architect who has carried into effect, and freed from their native blemishes and defects, and made beautiful my own crude and untrained ideas.

Mr. G. H. FELLOWES-PRYNNE, who proposed a vote of thanks to the author of the paper, said it was refreshing to hear a layman discourse on possibilities in architecture. Both Mr. Lever and his architects were to be congratulated on their work. The dwellings in Port Sunlight were admirable. The general scheme showed that the pleasures as well as the living needs of life had received attention. The allotment gardens must prove a great attraction to the men after their daily toil. The innate love of flowers and the care necessary for their cultivation must tend to raise the higher instincts of man. There must have been great difficulties in the scheme, and to-day the increased cost of material would make such a development still more difficult. Of late it was almost impossible for an architect to give an approximate estimate of cost. From the commercial aspect it would seem that any similar undertaking would be a failure. In the spirit of philanthropy success would be certain. Mr. Lever's advice regarding building for only sixty or seventy years few architects would agree upon. In the planning of cottages architects felt it was necessary to build to the best of their ability, and their work would endure longer than seventy years. They must all have felt grateful for his kind words and his appreciation of the art of architecture and the work of his own architects.

Mr. H. T. HARE, who seconded the vote, said Messrs. Lever Bros. appeared to have had a magnificent opportunity in the development of Port Sunlight. The piece of ground certainly lent itself most admirably for picturesque treatment. The scheme in every way was far ahead of any other that had been undertaken in a manufacturing district. The promoters had the foresight to see that it was not necessary for each building to pay 5 per cent., and although they had not the satisfaction of an adequate return directly from the letting of the houses, yet they must feel very greatly the benefit of their workpeople living in good and sanitary houses. Such dwellings must attract better workpeople.

Messrs. S. VACHER, ANDERSON, GRAHAM, W. B. HOPKINS,

F. G. HOOPER, H. A. SATCHELL, J. T. ARUNDEL and BOLTON also spoke.

Mr. LEVER, in returning thanks, said their villages a birth rate double and a death rate half that in proportion to the United Kingdom. Allowance, however, must be made for the fact that they had many young people as tenants. In their villages they had to conform to the local by-laws. They were not subject to trade unionism. No individual manufacturer could interfere in the latter. He despaired of building cottages for tenants who could only pay 1s. 6d. per week, but he was sure that prices in building materials could be cheapened, and that it was possible to plan good and sanitary houses for 4s. to 5s. per week. The question of the cost of land for development such as Port Sunlight was a matter of policy and foresight.

## SUSSEX ARCHÆOLOGICAL SOCIETY

THE annual general meeting of the Sussex Archaeological Society was held on the 19th inst., in the lecture hall at Lewes Town Hall. The Rev. Canon Cooper, who presided, alluded to the recent excavations at Lewes Priory, which, he said, had been undertaken with the most earnest interest. They had with them Mr. St. John Hope, the greatest authority on the subject of priory excavations in England, and part of the excavations they would hear from him. The results of the work had been very considerable, and the Society's efforts were not quite equal to it. There had been a great deal in their history that year in the opening of the exhibition of Sussex iron in Lewes Castle, and for which they owe thanks to Mr. Dawson. He had a letter from him suggesting that the Society should hold an exhibition illustrating the ancient staple industries of Sussex. Now that the Society has on exhibition a good representative collection of Sussex ironwork it would be a good opportunity to hold further and to hold an exhibition (under one roof) of other much-spoken-of Sussex industries, such as the pottery and glass-making, about which very little seems generally known. Mr. Dawson has some specimens of Sussex pottery and glass which he would be pleased to lend to the exhibition, and other people would also be pleased to lend and present specimens. He suggested that the exhibition be held (with the permission of the hon. curator) in the tower of the Barbican Gate House, Lewes Castle, where there are already some valuable specimens of Sussex pottery, to be removed and stored. The collection of specimens should be commenced at once, so as to be on view during the coming summer and autumn, and all members of the Society and others should be invited to lend and present specimens. The cases of ironwork lent by the South Kensington Museum will be removed early in April, but their place will be then occupied with other interesting specimens of Sussex ironwork which are about to be lent and presented to the Society. Probably the same gentlemen who are on the ironwork sub-committee will be willing to act. Continuing, the chairman said another point in the programme was the reading by Mr. Dawson of a paper on the "Barons of the Cinque Ports," which resulted in the barons of the Cinque Ports receiving an invitation to attend the Coronation. The chairman also alluded to the loss of the Society had sustained in the death of Mr. J. L. André, who was a man of very large information and experience in archaeology, and always most kind in putting that information and experience at the service of the Society. It was really a very great loss to them, and they were sorry also that the valuable collection had been dispersed. He congratulated the Society on its prosperity, it having made a gain on the year of seventeen members.

The first paper was read by Mr. W. H. St. John Hope, "The Recent Excavations at Lewes Priory." Through the exertions of Mr. Michell Whitley and the courtesy of Mr. Blaker, who owned the site, and of Mr. Courthope, who was the lessee, it had been possible, said Mr. Hope, to take up excavations where they were left off. The excavations brought to light the foundations of a very remarkable structure, viz. the infirmary of the priory. From the remains of the building it would appear that it was of the Norman period, belonging to the main building of the priory, and dating about the first quarter of the twelfth century. It was remarkable for the massive nature of the whole place. So far as experience went, they had not the like in that country; and far as foreign monasteries were concerned, he did not remember seeing anything like it abroad. There were extraordinary evidences of its destruction. The method which had been employed in demolishing it had been to support the walls with posts, then dig trenches, and afterwards burn the posts, which gave way under the walls. The walls had been overthrown at all angles. He had no doubt in his mind that the building was the first infirmary of the priory. The



of the ancient infirmary did not quite correspond to those of our modern buildings of that name. The monastic idea was that sick brethren should go there, but also a place for the infirm brethren, also for those suffering from the process of bleeding—a remedy so generally used in ancient times. The building was about 100 feet long and the nave was 26 feet wide. There was an upper story to the nave. Investigations showed that there had been considerable extensions to the infirmary, consisting of a hall about 113 feet long and 50 feet wide, divided by arches; also that there had been two small buildings, apparently the buttery, pantry and kitchen. These rooms had evidently taken place about the middle of the twelfth century. One of the marked differences between this infirmary and the first one was that no such violence was employed in the demolition of the second as had been employed in the case of the first, but that of the second there were no architectural fragments whatever. Mr. Hope was much applauded.

The next paper was on "Trotton Church and its Brasses," by Mr. P. M. Johnston. Mr. Johnston explained that there was one of the most remote of Sussex villages, being in Hampshire borders, and having a population of 250. The church now standing was probably erected by Mary de St. Amand, the elder, who died in 1310, and whose brass was in the nave. Another brass, which was hardly inferior to the best, was that describing Baron de Camoys and his wife, the widow of Harry Hotspur, mentioned by Shakespeare in "Henry the Fifth," and her son.

Garraway Rice gave some notes relating to iron work and ironwork from Sussex wills proved in the Prerogative Court of Canterbury from 1383 to 1558 and from 1649 to 1700.

The information gleaned related to personal history, arms, furniture, wearing apparel, jewellery, tombs, ecclesiastical vestments, &c. An extract, dated 1504, related to a ton of the value of 66s. 8d.

The last paper was on "Ancient Cultivation," and was read by Reginald Blaker. He explained the method of the cultivation of land at the time of Domesday. Examples of British cultivation abounded in the parish of St. Anne, in the neighbourhood of Houndean and Ashcombe, and on the estate of Lord Abergavenny and Sir George Shiffner. On the near Lewes tumuli were numerous. Other examples of ancient cultivations were found in the parish of South Malling, in the parish of Berham and Ranscombe farms, and on the north-west of Otford Bottom, in the valley called Bible Bottom, and in the Downs between that valley and the rifle-range. None of the ancient cultivations referred to were in length or width to the open fields of an English farmer, and he thought they could dismiss the idea that they were a manorial association. They might infer that the slips, and terraces were cultivated by a system of co-operative ploughing through successive seasons. The tribes were not under a manorial lord, but under a chief, and might not these ancient cultivations be examples of the system to which the Roman chronicles referred?

Other papers which were down on the agenda, "On the Specimens of Martel-de-fer found at Lewes Priory," by Mr. P. Boyson, and "The Churchwardens' Accounts of St. Andrew's, Lewes," by Mr. H. Michell Whitley, were not read. Mr. Boyson explained that he had been informed by two antiquaries that the specimens he had proposed to speak about were what he had thought them to be.

## THE AUSTRALIAN CAPITAL.

Our CORRESPONDENT of the *Daily Chronicle*, writing from Melbourne on February 12, says:—Yesterday the Government left Melbourne on a fortnight's tour of the suggested sites for the wonderful city which is not only to be the capital of Australia, but the embodiment of the noblest achievements of architecture and of enlightened city government. The travail of past centuries has produced. The undergrounds unique, and will attract notice the wide world over. Sixty-six legislators will have to cover in about twelve months 282 miles by railroad, 200 miles by coach, and untold miles on foot, in order to see fourteen or fifteen districts in New South Wales outside a 100-mile radius of Sydney, as laid down in the Constitution. In about a month or six weeks when the tariff is disposed of—the House of Representatives, to the number of seventy-five, will attempt to pass the same ordeal. As a mere feat of endurance the task is amazing; as a means of satisfying State jealousies and allaying the keen anxiety of the Federal politicians to secure themselves from Melbourne influences it is unavoidable. It must be remembered that this question is mixed up with the main question upon which the decision as to whether New South Wales should come into the Federation or not largely hinged. It is again provided that the Federal Parliament should sit in the Federal territory from within New South Wales, but

outside a 100-mile radius of Sydney, as already indicated. The bargain also provided that until the site was selected and the capital ready for occupation the Parliament should sit at Melbourne, in Victoria. The rivalries between New South Wales and Victoria being so keen and so numerous in their aspects, it can readily be imagined that from the moment that the Federal Parliament met in May last the legislators from the Mother State applied themselves to the task of hurrying forward the selection of the Federal capital. Melbourne, with its Protectionist atmosphere and its strong and critical daily press, ever anxious to push the scalpel deep into political flesh, must be abandoned as the heart of the Federation with all speed.

Nothing was done to frustrate the wishes of the New South Welshmen. The Federal Government and the State Government, it is true, declined to exhibit any preference for any particular spot. Both, however, did their best to secure every available data upon which the members of Parliament could base a judgment, the *pièce de résistance* being a voluminous and able report by Mr. Oliver, who, as New South Wales State Commissioner, visited in 1899-1900 all the sites offered. The Federal Government, further, promised that at the earliest opportunity Parliament should have facilities for a personal inspection of areas. The prolongation of the debate on the tariff for over three months in the House of Representatives rendered it impossible for both branches of the legislature to go on tour together. Hence it comes about that the Senate's extraordinary legislative picnic, begun yesterday, is really but the partial fulfilment of an honourable triple compact made between the Government, the Federal Parliament and the people of New South Wales.

The sites to be definitely inspected by the Senate are thirteen in number, although fifteen have been listed from those offered. The following is a list, with the distance between each site and the capitals of the four principal States:—

### Distance in Miles.

Site.	To Sydney.	To Melbourne.	To Adelaide.	To Brisbane.
1. Albury . . . . .	386	190	700	900
2. Bathurst . . . . .	145	483	966	868
3. Bombala . . . . .	325	573	804	1,048
4. Braidwood . . . . .	187	576	1,271	933
5. Carcoar-Garland . . . . .	189	442	925	920
6. Cootamundra . . . . .	253	323	682	976
7. Forest Reefs and Calvert . . . . .	181	456	939	904
8. Goulburn . . . . .	134	443	924	857
9. Orange or Canobolas . . . . .	192	481	963	915
10. Queanbeyan . . . . .	194	502	1,260	917
11. Tumut . . . . .	310	350	819	1,000
12. Wagga Wagga . . . . .	309	267	750	1,033
13. Wellington . . . . .	248	537	1,020	971
14. Yass . . . . .	193	395	878	909
15. Lake George . . . . .	175	484	965	650

Next to the average temperature and water supply of a district, this question of distance from the four capitals will be a dominating factor in the selection to be made from the list. A West Australian under any circumstances must be four or five days' journey from the seat of Government, and a Tasmanian three or four. But the Queenslander, the Sydneysider and the Victorian object to being more than a day or two days' journey from the capital—and they possess the preponderating influence in the decision. Parliament will religiously inspect as many of the offered sites as its patience will permit, but it is understood here that the contest is really between Bombala-Eden, Yass and Orange. A few facts concerning these three localities may interest English readers:—

Bombala-Eden is a charming district, having a mean temperature in the summer of 66.1 degrees, and in the winter of 43.6 degrees; a maximum altitude of 2,800 feet and a minimum of 2,250 feet; a rainfall average for the past ten years of 29 inches. A good supply of pure water can be secured from Delegha river, and the trend of the country affords excellent natural drainage facilities. There are in the vicinity unlimited quantities of good building material. The site is sixty miles from Cooma station on the State railway system.

Yass is in direct connection with the trunk railway system. It has a mean temperature in the summer of 69.9 deg., and in the winter of 55.2 deg. It has an altitude of 1,800 feet and a rainfall of 24.20 inches. Both water-supply and drainage conditions are good and the supply of building materials ample. Orange or Canobolas is also on one of the State railway main lines. It has a mean summer temperature of 63 deg., and during the rest of the year of 46 deg. The mean altitude is 3,000 feet, but the Canobolas Mountain Peak towers up 4,500 feet. The rainfall totals 39½ inches. The water-supply is specially good and the drainage facilities ample. The district is peculiarly rich in building materials.

These bald but important facts are merely indications as to the practicability of the sites for utilisation for city purposes. Much has, however, yet to be learned about them before any estimate can be arrived at as to the cost of acquiring in one of



the localities 100 square miles of land to be the unalienable property of federated Australia for all time, and of erecting thereon a city which shall gratify the aspirations of a sensitive people. Assuming a selection were made this or next year, it will be a good five years before the New Jerusalem of Australia will flash its jewels beneath the noonday sun.

### TRAMWAY LEGISLATION.\*

**I**N the general survey of the position which electric traction has reached to-day, the first, I think, most prominent point is the utterly tangled and belated condition of tramway legislation.

I have entitled this paper "Tubes, Trams, and Trains," and when we look at the condition of the law and parliamentary procedure, we find that under each branch different laws and practices exist. If we propose to construct a tramway the General Tramways Act of 1870, with its purchase clause 43 and, incidentally, Standing Order 22, block our way. Light railways are under a different law, but with difficulties peculiarly their own. A railway stands on a still different footing, and it possesses the distinct privilege of coming before Parliament on its merits, an advantage hitherto denied to tramway undertakings. And here we encounter a curious anomaly. It has been specially recommended by the joint committee of both Houses which sat last year that the London problem should be largely met by means of underground lines within the more congested parts of "London and its immediate suburbs," joined up for purposes of interchange of traffic with electric surface tramways, &c., in the suburban districts. To do this under existing arrangements the surface lines must be promoted as tramways, while the tunnels, although designed to form integral portions of the through surface, must be promoted as railways. For the one, the two-thirds consent of the various local authorities concerned must be obtained by previous negotiation, or the project will fail under the Standing Orders, while a railway, whether it be "tube" or "shallow tunnel," comes at once into Court on its merits, and cannot be wrecked on the threshold by interested opponents or obstructive municipalities. This difference between a tramway and a railway is clearly indicated in the words of Lord Morley, chairman of committees in the House of Lords, when he says it is not right that anybody should be able to prevent a scheme from coming before Parliament. He further shows how unfairly the double veto of the road and local authorities bears on promoters, and how contrary to the public interest it is that local authorities should be able to exact onerous conditions as the price of their consent. I join with everyone who has recently spoken or written on the subject, that one of the greatest obstacles to electric progress in Great Britain has been the discouragement presented on the one hand to scientific and manufacturing skill, and on the other hand to financial enterprise, by the shackles and hindrances which legislation has imposed.

It has been recently urged that the Tramways Act of 1870 had in view horse traction alone, and that it was also anticipated that no tramway would traverse the territory of more than one municipal or local authority. This is probably true; but the statement makes the plea all the stronger for an alteration in the law.

The Tramways Act of 1870 to-day makes the promotion of electric tramways most arduous, and, indeed, in some respects impossible, and even my own various and to some extent successful labours in breaking down the twenty-one years purchase clause, and in struggling against the demands of Standing Order No. 22, afford no argument in support of the existing conditions. As is well known, I have had to encounter negotiations with a full score of local authorities in the promotion of one tramway Bill. Objections reasonable and unreasonable, conditions onerous and even prohibitive, have had to be fought out, not in the fair and open tribunal of a parliamentary committee, but in local caucuses and conclaves where the pressure of the knowledge that one hostile authority might wreck the Bill has given boldness to unconscionable demands for conditions. And the bitter irony of the thing is that even although we may with hard fighting and heavy expenditure pass portions of a scheme on Standing Orders, there has been no precedent yet created under which a committee of Parliament has sanctioned the removal of the general veto possessed by such authority, or has in the teeth of the opposition of even one local authority passed the preamble, and allowed the Bill to proceed. This is, indeed, the very anarchy of legislation.

There has been evidence of some gradual change of public feeling, as electric lines have been opened up to traffic and the real benefits of the service have become manifest. But the irreconcilable opponent of tramways in any shape still exists, and the hardness of heart of local authorities in striving to

impose impossible conditions is as yet little abated. wonder is it that Great Britain lags behind the world in invention and general electric development, and that when we do succeed in getting a lighting or a tramway authorised, we have had perforce to go to the United States for much of the plant and machinery special to such takings.

Yet, although I speak thus, I am able to claim a fair amount of work accomplished in this backward island of ours something to have been instrumental in awakening I think a knowledge of what electric traction can accomplish something to have shown that to-day upon sixteen miles of London United Electric Tramways it is possible to record of passengers equal to more than a twentieth part of total passengers carried on the thousand miles of tram in Great Britain as recently as 1895. This is a pregnant worthy the attention of anyone who seeks to disparage the capacity of electric cars such as those on our system, perhaps even ventures to suggest that a service of other vehicles such as 'buses, or, as now proposed, steam 'buses might all give double or more the accommodation to passengers the same route as our electric tramways. It is overlooked the ingenious writers who are hoping for great things some new steam omnibus that while, as they say, steam cars have a record of twenty years' failure behind them, omnibuses have a record of about seventy years' failure, as one familiar with the endeavours of Mr. Hancock and Mr. Russell well know. I may commend to the attention of such people the excellent argument of Mr. St. John Hanbury in a letter to the *Daily Chronicle* (an argument which I also often suggested) that the streets of London are congested because we have adhered to horse vehicles and 'buses, the absence of tramways which crowds the London streets, the writer—a somewhat Hibernian expression, but under the truth.

We have seen that in 1895 the total number of passengers carried over the tramways of Great Britain and Ireland—1,150 miles of line—amounted to 650 millions, about one of these being in the metropolitan area. On our 16 miles of electric tramways in West London we are to-day carrying passengers whose total, when a full year of electric work has been completed, will not fall short of 35 millions, being 2 millions per annum per route mile against a total for Great Britain, seven years ago, of under 600,000 per mile.

Notwithstanding this conspicuous success, first, in coming the inertia as well as the more active opposition multitude of local authorities, and next, in demonstrating London the magnificent service that a well-organised electric tramway can give to the public, there can be no complete solution of the great London problem—there can be no first seen—so long as the existing legislation and parliamentary conditions exist, and it is satisfactory to know that the Government has been so far aroused to the need for some action, a special departmental committee of seven able and experienced gentlemen has been appointed to report on the whole subject.

In the Act granted by Parliament to the London United Tramways, Limited, in 1898, a clause was inserted by Treasury giving certain powers to the authorities of Greenwich observatories, which for a time threatened to be a very serious obstacle indeed to every electric proposition within the metropolitan area. From early 1899 till the latter part of 1900 negotiations, experiments, &c., were carried on the way that the construction of the London United Tramways system was delayed. Even in 1900 no substantial progress towards settlement of the claims of these observatories had been made, and pending a settlement, the whole question of electric tramways in London had come to a deadlock. It is customary for the Metropolitan and the Metropolitan District Railway for their delay in proceeding to the electrification of their line. But I have no hesitation in saying that until the directors of the London United Tramways took the definite step in April 1901 of approaching the Treasury on the observatory question, no real progress with the electrification of the earlier underground railways could have been made. The South London, the Waterloo and City, and the Central London railways had obtained their powers to be in operation before this claim arose, or they too would have had their progress arrested, while even as going on they would have been liable to ridiculous interference if the Metropolitan and Greenwich had had their own way. It fell upon the London United Tramways Company to provide the cash consideration of which this obstacle was removed. Although the sacrifice was great the case was so clamant that the London United Tramways Company, without assistance from any of the various other electric-traction concerns in London, undertook the obligation to pay a sum of 10,000*l.*, and thereby brushed aside the difficulty and earned the thanks of every electric tramway or railway promoter, director and shareholder within the area of London.

Another point of Government interference already referred to, which threatens to give great trouble to electric undertakings

\* From the paper by Mr. J. Clifton Robinson, M.I.E.E., read before the Society of Arts.



for light, power or traction, throughout the whole of the country. We have had to assent to these although of opinion that they are not necessary for the face, while certainly harmful to tramway enterprise. It is an attempt to throw on companies and corporations an unreasonable burden, which properly belongs to the Government itself. I am the more decided in making this statement because in the Observatory case the reliance we were placed on the Board of Trade as standing between us and the Surveyor's authorities completely failed us, and after a negotiation the Board of Trade, as possessing no powers, remained practically helpless.

Attention may be drawn to another sign of danger to the nation as regards underground lines, whether "tubes" of varying depths or "shallow railways" under the streets, &c. At a meeting of the Auctioneers' Institute of the Kingdom, held on December 4 last, Mr. G. M. Freeman, C., read a paper on "The Problem of the Tubes," principally with the landowners' position in the foreground. The learned counsel pointed out that Parliament had dealt with such tunnels under streets as if they belonged to the local road authority, and the point of fact only such a depth is vested in the authority as is needful to enable sewers, &c., to be laid, the road to be kept in repair, &c., while all the rest belongs to the adjoining landowners. After showing the further rights of landowners are in such cases as unaltered under the Lands Clauses Acts, Mr. Freeman proceeded to say, "The only question in this case is, what is the best way of enforcing this claim" of the adjoining owner? There is here hung out a danger signal to promoters of underground lines would do well to take note of. The illustration may be given. Mr. Freeman says, "In former times, owing to the great value of the surface, it was customary to sink double basements extending under the street between two buildings of the same owners on either side of the street. The tube railways are carried at different levels, and it might be that their construction would be impossible hereafter to carry out double basements as has been done previously. Here is a case of damage, but its amount depends on the date of the works which will be required."

Especially in land, cannot be pushed to extremes, as in a hypothetical case, such as was hinted at, as "Perhaps to deepen my cellar some day," or even, "Perhaps to the opposite house, and may wish to make a subway to be pushed, the case of London underground commissions will be made all the harder."

of value to find that Mr. Freeman, although pointing out in directions in which claims for compensation might be opposed the idea of one of the speakers, that the distance within which a *locus standi* should be given extended to 350 yards, expressing his view that a 300 yards would not be inadequate. "They could not have an illimitable zone." For this assurance, much

## EDWARD VII. STREET.

At a meeting of the County Council on Tuesday the Building Act committee submitted the following report:—We have been in communication with the improvements committee with regard to the name to be given to the new street, in course of construction from Holborn to the Strand. The improvements committee express the opinion that the straight portion of the thoroughfare, which will be at Holborn and terminate at the site of the Theatre, and the new crescent street, which will be the main thoroughfare with the Strand, should have distinct names. In this we quite concur. To assign names to such important new thoroughfares is no easy matter. Naturally, the subject has excited much interest without the Council, and in all more than eighty suggestions have been suggested, but of these it is only necessary to mention a few. Mr. Frederic Harrison's original proposal, "Broadway," has its advocates. Again, it was suggested that the millenary of Alfred the Great might be commemorated. It was pointed out that the settlement of the City here outside the City walls, and on a site which was the modern parish of St. Clement Danes, and was known by the old and narrow thoroughfare (now to be widened) bearing the characteristically Danish name of "Danes Street," was most probably due to the peace made by King Alfred with the Danes. The names originally proposed were 'King Alfred Street' and 'Danes

Crescent.' Another proposal was to name the straight street after Shakespeare, not only one of the greatest of Englishmen, but a name naturally associated with the numerous theatres in the neighbourhood, while the improvements committee point out that, as the actual work of the improvement was begun in the year which marked the commencement of the reign of the present Sovereign, it would be a fitting opportunity for commemorating that important event by naming the street 'Edward VII. Street,' subject to this course meeting with the approval of the Sovereign. With this suggestion we are entirely in agreement. It was also suggested that it would be suitable to commemorate the Queen by naming the other street 'Alexandra Crescent.' To this name, however, we were constrained to object, owing to the fact that it is already in use in many places in London. The improvements committee then informed us that in their opinion the name 'Danes Crescent' would not only preserve the historic associations of the locality, but at the same time be a compliment to Her Majesty as a Danish Princess. With this suggestion we cannot agree, but think that as the Council has already allotted a site in the Strand opposite the eastern extremity of the crescent for the memorial to Mr. Gladstone, it is more appropriate that the name should be Gladstone Crescent. We recommend (a) that subject to the approval of His Majesty being obtained to the proposal, the new main street to be constructed from Holborn to the Strand be named 'Edward VII. Street'; (b) that the new crescent street to connect the proposed main street from Holborn to the Strand with the Strand at Wellington Street and the Law Courts, be named 'Gladstone Crescent.'

## TESSERÆ.

### Grouping in Painting.

ALL improvements in composition from the infancy of painting to its full maturity are the result of the gradual discovery of the principles by which nature makes assemblages of objects agreeable to the eye, sometimes by giving variety to regular forms or groups, sometimes by giving regularity to forms in themselves irregular and always by giving unity to multitude, and subordination of many objects to one or to a few; and in all that relates to forms or to lines it is chiefly perspective that does these things. Linear perspective is, therefore, the basis of linear grouping, and until its laws were well understood composition remained imperfect, whatever beauties it occasionally put forth being accidentally obtained by the lucky chance of the correct copying of the appearances of nature, but with no certainty of repetition, the causes of the appearances not being understood. Of composition therefore before the laws of perspective were known, it is more to be wondered at that we often find it as agreeable as it is than that we do not find it better. In the works of Giotto we see beautiful combinations of lines and forms, though these excellences are rarely sustained through an entire picture; but when a knowledge of perspective had settled the true principles of grouping with reference to background, we find extended composition well developed.

### Influence of Ancient Architecture Abroad.

The nature of European men has its roots intertwined with the past, and can only be developed by allowing those roots to remain undisturbed while the process of development is going on, until that perfect ripeness of the seed which carries with it a life independent of the root. This vital connection with the past is much more vividly felt on the Continent than in England, where we have to recall it by an effort of memory and reflection, for though our English life is in its core intensely traditional, Protestantism and commerce have modernised the face of the land and the aspects of society in a far greater degree than in any continental country. "Abroad," says Ruskin, "a building of the eighth or tenth century stands ruinous in the open street; the children play around it, the peasants heap their corn in it, the buildings of yesterday nestle about it and fit their new stones in its rents, and tremble in sympathy as it trembles. No one wonders at it or thinks of it as separate and of another time; we feel the ancient world to be a real thing, and one with the new; antiquity is no dream, it is rather the children playing about the old stones that are the dream. But all is continuous, and the words 'from generation to generation' understandable here."

### Palladio and Piling.

About building in water Palladio says but little. He says the length of the pile must be an eighth part of the height of the intended wall to be erected on it. This cannot be considered to be an invariable maximum. So long as it is driven to the solid, whether it is a fourth or a fourteenth part of the proportion given by Palladio, that will be the proper length. He orders the piles to be driven so contiguous to one another



that no others can be set between them; but this is certainly a needless waste, as a due lateral or transverse compression of the soil is better obtained by moderate intervals, than such close ones as to exude the earth. Their diameter was to be a twelfth part of their length, by which rule a pile 12 feet long must be a foot square. A much smaller diameter would be preferable, as every builder knows what an immense weight a perpendicular post or column will sustain, when prevented from leaving its perpendicularity. He preferred repeated gentle blows to violent ones, for driving them, and with reason; he also drove them under the inner or cross walls, which ought never to be omitted when they are to be carried up to the same height or have heavy partitions or floors to sustain. Palladio made his foundation-wall twice the thickness of the superincumbent one (which is a better proportion than that of Vitruvius), and diminished upwards. The ancients, he observed, paved the trench with stone, but in his time they used plank. He also recommends some foundations to be arched, but leaves us in the dark as to the manner.

### Greek Columns.

So far from employing pedestals to columns, which some have considered as forming as essential a part of an order as the entablature, the Greeks placed their columns immediately on the floor or uppermost step, the whole temple being generally raised on a low platform, to which the ascent was usually by three deep steps or gradini, serving as a base to the edifice; the depth of the steps was not accommodated to the human stature, but regulated so as to accord with the dimensions of the column. It is therefore conjectured that either a sloping platform of wood or lesser steps of the same material were employed as the real ascent to the temple. The Greeks invariably placed their columns singly, never in pairs, as has frequently been done by modern architects, and which, if not utterly indefensible, ought never to be resorted to unless required by positive necessity; for instance, where wider intercolumns than the scale of the order will properly admit are required, in which case, by affording additional support to the entablature, coupled columns not only excuse the width of the intervals, but take away the air of poverty that would result from single columns placed at the same distance from each other. Coupled columns are most of all offensive when forming a prostyle colonnade, especially if it be one with a pediment, since that disposition approximates so closely to that of the front of an ancient temple as to render any incongruity the more striking.

### Sudeley Castle.

Sudeley Castle is about a quarter of a mile south-east from Winchcombe, and appears now more like a castellated mansion than a baronial fortress. This building was erected by Ralph Lord Boteler, a prominent man, "a famous man of warre," as Leland says, and part of the windows here are said to have been glazed with beryl. Sudeley afterwards fell into the hands of the crown and so continued till the reign of Edward VI., when it was granted to Sir Thomas Seymour, who, having restored its neglected buildings, retired hither with Catherine Parr, the queen dowager, who had honoured him with her hand. This lady here died and was buried in the chapel, her effigy being sculptured in alabaster. The tomb had been wholly destroyed (doubtless by the republicans during the civil wars, when the rest of the buildings suffered so much), but her grave was opened in 1782, and the body being taken up her name and titles were found marked upon the cerecloth in which it was enclosed. The extent of the castle and its lofty towers, with the rich architecture of the hall, in various fragments, indicate the magnificence celebrated by Leland and by Fuller, who, in his quaint phraseology, calls it "of subjects' castles, the most handsome habitation, and of subjects' habitations, the strongest castle." Part of the ruins have been rebuilt as a residence.

### Parrhasius the Painter.

The correctness of Parrhasius succeeded to the genius of Zeuxis. He circumscribed his ample style, and, by subtle examination of outline, established that standard of divine and heroic form which raised him to the authority of a legislator, from whose decisions there was no appeal. He gave to the divine and heroic character in painting what Polycletus had given to the human in sculpture by his Doryphorus, a canon of proportion. Phidias had discovered in the nod of the Homeric Jupiter the characteristic of majesty—inclination of the head; this hinted to him a higher elevation of the neck behind, a bolder protrusion of the front, and the increased perpendicular of the profile. To this conception Parrhasius fixed a maximum—that point from which descends the ultimate line of celestial beauty, the angle within which moves what is inferior, beyond which what is portentous. From the head conclude to the proportions of the neck, the limbs, the extremities; from the father to the race of gods; all the sons of one, Zeus; derived from one source of tradition, Homer; formed by one artist, Phidias; on him measured and decided by Parrhasius. In

the simplicity of this principle, adhered to by the successive periods, lies the uninterrupted progress and the unattainable superiority of Grecian art. With this prerogative, evidently implies a profound as well as general knowledge of the parts, how are we to reconcile the criticism passed on the intermediate parts of his forms as inferior to their outlines? how could Winckelmann, in contradiction with his own principles, explain it by a want of anatomic knowledge? How possible to suppose that he who decided his outline with intelligence that it appeared ambient, and pronounced that it escaped the eye, should have been uninformed of its contents? Let us rather suppose that the defect ascribed to the intermediate forms of his bodies, if such a fault there was, consisted in an affectation of smoothness bordering on insipidity in something effeminately voluptuous, which absorbed the character and the idea of elastic vigour; and this Euphrates seems to have hinted at when, in comparing his own Titan with that of Parrhasius, he pronounced the Ionian's to have on roses, his own on flesh; emasculate softness was not, in opinion, the proper companion of the contour, or flowery softness of colour an adequate substitute for the sterner Titan's heroic form.

### GENERAL.

**Mr. R. D. Doulton** had the honour of being received by the King, and submitted to His Majesty a specimen of the cups which are being made to commemorate the King's death to the poor on the occasion of His Majesty's Coronation.

**The Roman Pharos** at Dover Castle is being roofed over by order of the military authorities in order to prevent further decay. It was used by early Romans as a lighthouse.

**Mr. George Cadbury** has presented the sum of 5000 to the Ruskin Memorial Fund. In making the gift Mr. Cadbury stated that he made no stipulation as to site, but gave the amount wherever this was settled upon.

**A Mansion** in the Champs-Élysées, Paris, which at the time gained notoriety as the Hôtel Paiva, has been sold at auction for 1,110,050 francs.

**Mr. G. H. M. Addison** has been elected president of the Queensland Institute of Architects.

**Mr. Inigo Pym-Jones**, of Lymington, has been recommended by the finance committee for election as surveyor of Chichester, at a salary of 200*l.* a year.

**The National Society of Fine Arts** in France received this year 2,219 pictures and designs for exhibition at the rival Salon. The selection of the architectural drawings will be entrusted to MM. Benouville, Roy, Gardelle, and Tony Selmersheim.

**A New Library** and vestries are to be built at Manchester Cathedral for the use of the choir and clergy. By the addition it will be possible to restore to the area of the cathedral the Jesus or Byrom Chapel at present screened off and used for the above purposes. The work, for which about 3,000*l.* will be required, will be a memorial of the late Sir J. W. MacLellan, M.P., who was a churchwarden of Manchester for fifteen years and was the means of raising between 30,000*l.* and 40,000*l.* for the restoration and enlargement of the cathedral.

**The Students** of the Ecole des Beaux-Arts who will compete for the Prix de Rome in the section of architecture are: (1) MM. Coutant, pupil of M. Pascal; (2) Chiffiot, pupil of M. Daumet and Esquié; (3) Faur-Dujarric, pupil of M. Pascal; (4) Ebrard, pupil of MM. Raulin and Sortais; (5) Duval, pupil of M. Pascal; (6) Hubain, pupil of M. Marcel Lambert; (7) Ferdinand, pupil of MM. Guadet and Paul Prost; (8) Prost, pupil of M. Marcel Lambert; (9) Gaüssely, pupil of M. Daumet and Esquié; (10) Perret, pupil of M. Pascal.

**The Site** for the Usher Hall, Edinburgh, has not been selected. Four sites were submitted to the committee at the last meeting, namely, the Atholl Crescent site; the Castle Terrace site, which involves the remodelling of the Synod Hall; and two sites on the city's own ground, one at the Cathedral Market in Lauriston, and the other in the Meadows. The town clerk is to procure and lay before the committee further information in printed form regarding the sites, including the cost of purchasing the Synod Hall.

**Baldersby Hall**, Yorkshire, about five miles from Ripon and six from Thirsk, and the late seat of Viscount Downe, has been partially destroyed by fire. The hall was formerly the residence of George Hudson, the railway king.

**Mr. J. T. Micklethwaite, F.S.A.**, has been engaged preparing designs for several of the copes which will be used at the Coronation. The Bishop of Durham's will cost about 170*l.*

**Ancient Lights.**—At the ordinary general meeting of the Society of Architects held on March 20 it was resolved: That it be referred to the Council of this Society to take such action as may be deemed necessary to promote some legislation to amend the existing law appertaining to rights of light. Carried unanimously.



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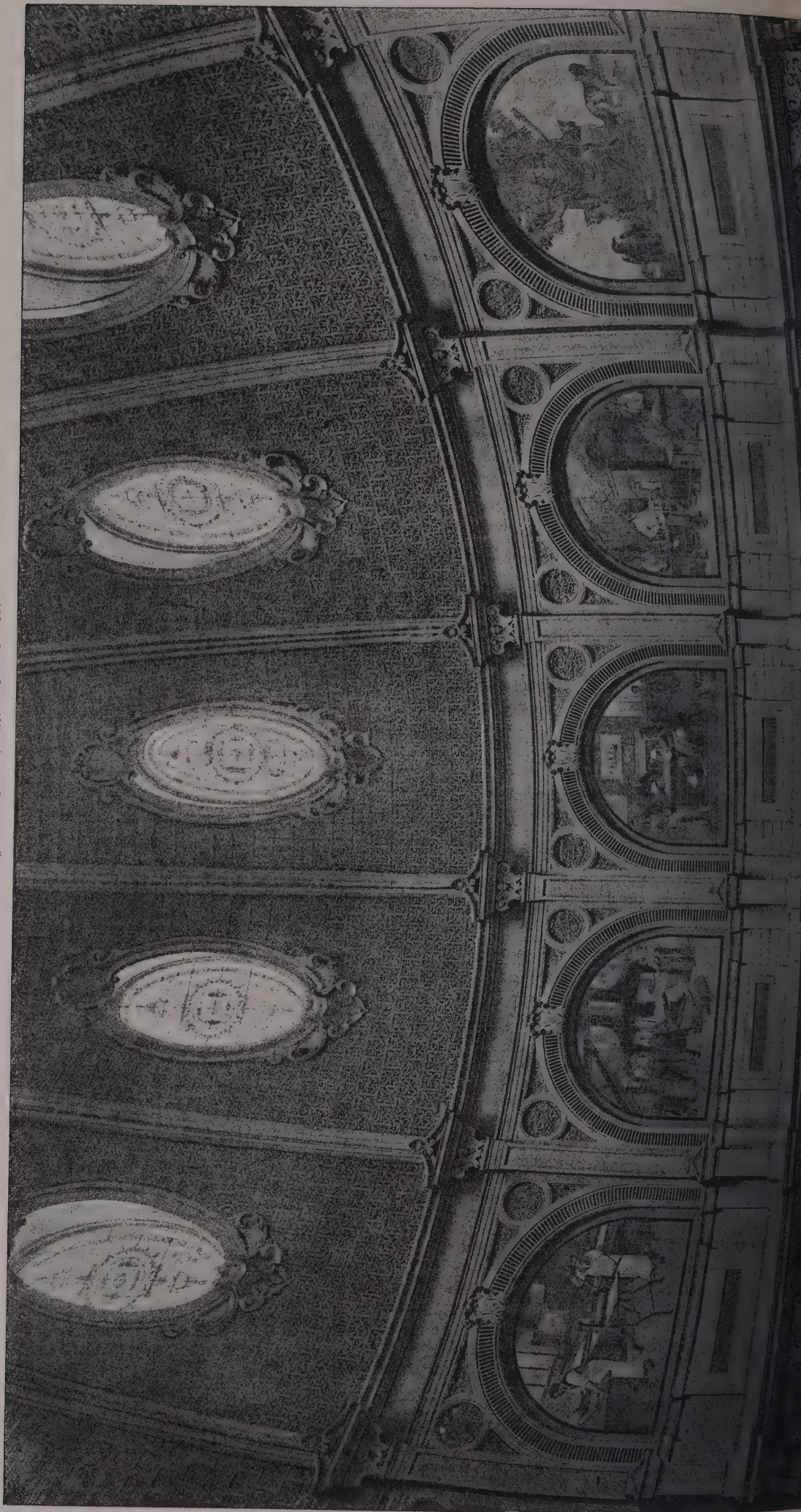
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The Architect, Mar 28<sup>th</sup> 1902.







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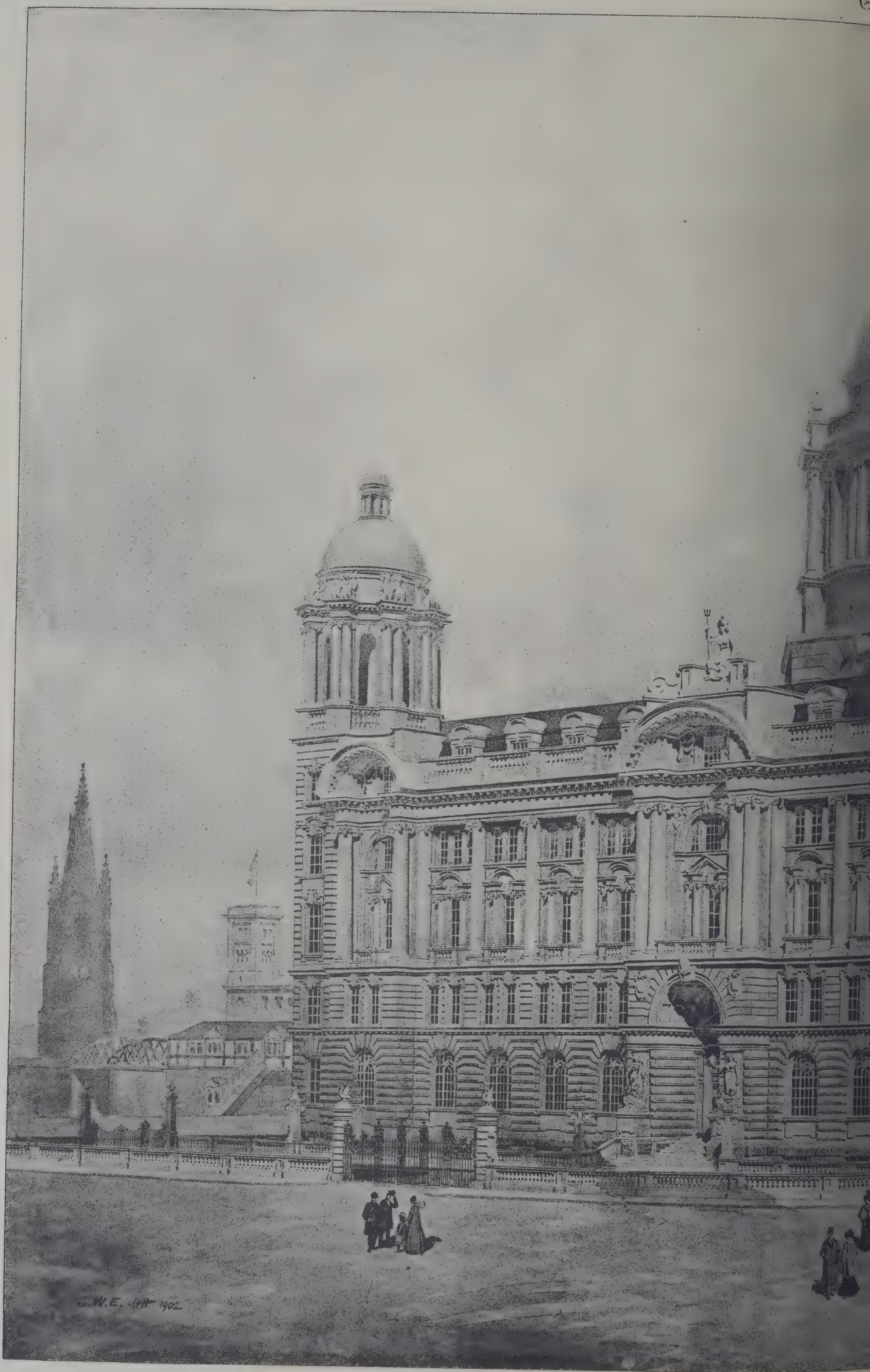












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THE  
 Architect and Contract Reporter.

EDITORIAL NOTICES.

of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under Workmen's Compensation Act, we have added to our **A VERY EMINENT BARRISTER**, who has made the subject a special study, and will be glad to answer the columns of this paper any questions relating to the complicated matters arising from the provisions of this new Act. Our **LEGAL ADVISER** will further answer any legal question that may be of interest to our readers. All letters must be addressed "**LEGAL ADVISER**," Office of "**The Architect**," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London the results of Competitions and Tenders and other particulars of Works in progress in which they are interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

Great disappointment is frequently expressed at the non-award of Contracts Open, Tenders, &c.; it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

**ALABAMA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent for the State of Victoria, 15 Victoria Street, West.

**ALBANY.**—May 14.—Designs required for a new town hall. Premiums, 150l., 100l. and 75l. Mr. F. Bagshaw, Engineer, Harrogate.

**ALBANY.**—April 21.—Designs are invited for twenty-five houses for the Coleraine Urban District Council. 20l. Mr. W. Henry, clerk to the Council.

**ALBANY.**—April 21.—Prizes of 20l. and 10l. respectively awarded for the first and second schemes in order of merit utilising to the best advantage a plot of ground offered by the Council for the erection of about twenty-five houses in Coleraine. Mr. William Henry, clerk, Coleraine.

**ALBANY.**—April 4.—Competitive drawings are invited for a house to be erected at Langho, near Blackburn, for the

accommodation of the epileptics, imbeciles and idiots at present in the workhouses of the Chorlton Union and the township of Manchester. Premiums of 200l., 150l. and 100l. respectively will be awarded. Lithographed plan of site, and copy of conditions and instructions, may be obtained by a written application only, addressed to the Clerk to the Joint Asylum Committee, Chorlton Union Offices, All Saints, Manchester.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**MANCHESTER.**—April 4.—Designs are invited for a colony for epileptics and imbeciles for the Chorlton and Manchester joint asylums. Premiums of 200l., 150l. and 100l. respectively are offered. Mr. H. Woodhouse, clerk to Asylums Board, Manchester.

**MEXBOROUGH.**—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25l. and 10l. are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

**OLDHAM.**—April 8.—Competitive drawings are invited for erection of new market hall and shops in Albion Street and Henshaw Street. Premiums will be awarded to the authors of the three selected designs, viz. 50l. for the design placed first, 30l. for the design placed second, and 20l. for the design placed third. Mr. S. A. Pickering, borough surveyor, Oldham.

**SCOTLAND.**—April 30.—Designs are invited for a branch library for the Anderston district, Glasgow. Sir J. D. Marwick, town clerk, Glasgow.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100l., 50l. and 25l. are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**YORK.**—May 1.—Designs are invited for a Memorial to the late Queen Victoria to be placed in the Guildhall, York. The design must include a representation of Her Majesty, and be accompanied by an estimate of the cost of the work complete, such cost not to exceed 1,000l. A prize of 50l. (to merge in the commission) will be given for the accepted design. Mr. W. H. Andrews, town clerk, Guildhall, York.

CONTRACTS OPEN.

**ASHINGTON.**—April 2.—For erection of a Presbyterian manse at Ashington. Mr. Osborne Blythe, architect, Market Place, Morpeth.

**CLAYTON.**—March 31.—For erection of a warehouse at Oak Mills, Clayton, Yorks. Messrs. Milnes & France, architects, 99 Swan Arcade, Bradford.

**COCKERMOUTH.**—April 7.—For erection of a greenhouse at the cemetery. Mr. T. Cuthbert Burn, clerk to the Burial Board, Main Street, Cockermouth.

**COLNE.**—April 1.—For erection of a grand stand and all necessary railing, fencing, &c., at the show field on June 7. Mr. R. S. Pilling, architect, Colne.

**DARTFORD.**—April 4.—For erection of a concert-hall, billiard-room, cloakrooms, &c., at Westgate House, Spital Street, Dartford, Kent. Mr. Herbert E. Bennett, secretary, Westgate House Club and Institute, Dartford.

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**CALLINGTON.**—April 7.—For erection of a dwelling-house at Woodland, near Callington. Mr. John Sansom, architect, Liskeard.

**DURHAM.**—April 4.—For reconstruction of cottages in South Cross Street, Leadgate. Mr. Charles E. Oliver, architect, Consett Iron Co., Ltd., Consett.

**EAST MOLESEY.**—April 1.—For erection of a fire station. Mr. John Stevenson, surveyor, Council Offices, Walton Road, East Molesey.

**GRAVESEND.**—April 8.—For erection of an additional block in the hospital, Denton, near Gravesend. Particulars supplied by the City Surveyor, Guildhall, E.C.

**HELSTON.**—April 5.—For erection of a police station and appurtenances at Helston, Cornwall. Mr. Oliver Caldwell architect, Victoria Square, Penzance.

**HITHER GREEN.**—April 10.—For erection of an engineer's cottage at the Park Fever Hospital. Specification prepared by the surveyor, for the Metropolitan Asylums Board. Specification, conditions of contract, &c., may be obtained at the office of the Metropolitan Asylums Board, Embankment, E.C.

**HULL.**—March 31.—For erection of a new workhouse infirmary at Patrington. Messrs. Runton & Barry, architects, Savile Chambers, Hull.

**ILFORD.**—April 14.—For erection of a junior mixed school for 500 children, with latrines, playsheds, caretaker's house, &c., on the Loxford Hall estate, Ilford. Mr. C. J. Dawson, architect, 7 Bank Buildings, Ilford, Essex.

**IRELAND.**—For additions to and rebuilding the present Lamb inn, Blaina, and the Ballers' Arms inn, Blaina. Messrs. Lansdowne & Griggs, architects, Metropolitan Bank Chambers, Newport, Mon.

**IRELAND.**—March 31.—For erection of a new hotel on site of the present King's Head, Blaina, Mon. Mr. T. Roderick, architect, 50 Glebeland, Merthyr.

**IRELAND.**—April 7.—For erection of a town hall, Macroom. Mr. A. W. Barnard, architect, Macroom.

**IRELAND.**—April 7.—For construction of a lean-to shed on the west side of the goods shed on Donegall Quay, Belfast. Mr. W. A. Currie, secretary, Harbour Office, Belfast.

**IRELAND.**—April 9.—For erection of a church at Lismacoe Meath. Mr. Frederick Shaw, architect, Drogheda.

**IRELAND.**—April 11.—For erection of a pair of detached villas in Deramore Drive, Malone Road, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

**IRELAND.**—April 12.—For erection of two villas on Purdysburn Estate, Belfast. Messrs. Graeme-Watt & Tulloch, architects, 77A Victoria Street, Belfast.

**IRELAND.**—April 14.—For erection of a parish church, Kilcoe, diocese of Ross. Mr. M. A. Hennessy, architect, South Mall, Cork.

**ISLEWORTH.**—April 1.—For additions to the Percy H. Schools, Isleworth. Mr. W. H. Ward, architect, Park Street, Birmingham.

**KEIGHLEY.**—April 2.—For erection of a four-storey warehouse in Dalton Lane. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

**KINOTON.**—April 3.—For erection of a Wesleyan mission house, Kineton. Mr. Arthur Fairfax, solicitor, Banbury.

**KINGSTON-UPON-THAMES.**—April 3.—For erection of additional buildings for the technical schools, St. James's Park. Mr. Harold A. Winsor, town clerk, Kingston-upon-Thames.

**LEEDS.**—For superstructure of warehouse, 100 feet by 180 feet, including steel construction, plastering, asphalt flooring, &c. Messrs. W. Evan Jones, and Percy Bulmer, architects, 7 Cookridge Street, Leeds.

**LEEDS.**—For erection of four through houses in St. Grove Mount, Hunslet. Mr. John B. Leak, architect, Watling Road, Hunslet.

**LEIGH.**—April 2.—For erection of a school for 500 children and a chapel to seat 700 in Leigh Road, Leigh, Lancashire. Messrs. Banks, Fairclough & Stephen, architects, Leigh.

**LEADGATE.**—April 4.—For reconstruction of cottages in South Cross Street, Leadgate. Mr. Henry Holliday, Consett Iron Co., Ltd., Consett.

**LONDON.**—April 10.—For erection of a gate porter's house and an addition to the steward's house at the Northern Hospital. Mr. T. Duncombe Mann, architect, Metropolitan Asylums Board, Embankment, E.C.

**MADRON.**—March 31.—For erection of a Wesleyan mission house at Madron, Cornwall. Mr. Henry Maddern, architect, 26 Clarence Street, Penzance.

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MIDDLETON-ON-THE-WOLDS.—April 10.—For erection of a new chapel and schools at Middleton-on-the-Wolds. Messrs. Gelder & Kitchen, architects, 76 Lowgate, Hull.

NANTWICH.—April 7.—For erection of electricity works and refuse-destructor. Mr. W. F. Newey, surveyor, Market Street, Nantwich.

NEWCASTLE-UPON-TYNE.—April 2.—For erection of the new special school. Mr. Alfred Goddard, clerk, Grainger Street, West.

OLDHAM.—April 9.—For complete electrical equipment of a car depot at Wallshaw. Mr. S. A. Pickering, borough surveyor, Town Hall, Oldham.

ROCKING AND KIRBYMOORSIDE.—March 31.—For six miles of 3½-inch and 3-inch cast-iron water-mains, construction of impounding tanks and service reservoir and supply of about 210 tons of cast-iron pipes and fittings for water-supply of Spaunton, Lastingham and Appleton, Yorks. Mr. J. E. Parker, engineer, Post Office, Newcastle-on-Tyne.

PUTNEY.—For erection of a detached residence, Keswick Putney, S.W. Mr. Hugh Davies, architect, 124 Holborn, London.

SANDBACH.—April 4.—For erection of a detached villa for a Wesleyan minister at Sandbach. Mr. Alfred Price, architect, Sandbach.

SCOTLAND.—April 15.—For erection of a public slaughterhouse on the farm of Thirdmailing, West Kilbride, Ayrshire. Andrew McQuaker, architect, Glenbank, Dalry.

STACOMBE.—April 2.—For erection of a new police-station at Stacombe, Cheshire. Mr. H. Beswick, county architect, Chester.

SUNDERLAND.—April 3.—For pulling-down and rebuilding houses at the corner of Saville Place and Tatham Street. Messrs. Wm. & T. R. Milburn, architects, 20 Fawcett Street, Sunderland.

ABERDARE.—For erection of two semi-detached villas at Aberdare. Mr. Samuel J. Williams, architect, 109 St. George's Terrace, Aberdare.

ABERDARE.—March 31.—For erection of six houses at Hengoed. Mr. Vivian Jones, architect, Hengoed.

ABERDARE.—March 31.—For erection of a villa on the dyarth Estate, Merthyr Tydfil. Mr. T. Roderick, architect, 50 Glebeland, Merthyr.

WALES.—March 31.—For erection of twenty-eight houses or more, Abercynon. Mr. Dowdeswell, architect, John Street, Treharris.

WALES.—April 1.—For erection of a classroom and other additions to the Neyland Board school buildings. Mr. D. Edward Thomas, architect, Victoria Place, Haverfordwest.

WALES.—April 1.—For erection of a convalescent home at Cwmdonkin, Swansea. Mr. Glendinning Moxham, architect, Castle Street, Swansea.

WALES.—April 2.—For erection of a pavilion at Bangor for the Royal National Eisteddfod. Mr. Frank Bellis, architect, 204 High Street, Bangor.

WALES.—April 9.—For erection of additional classrooms and other improvements and alterations at the infant department of the Griffithstown Board school, Griffithstown. Messrs. Lansdowne & Griggs, architects, Newport, Mon.

WALES.—April 14.—For erection of schools and classrooms, &c., Rhosllanerchrugog. Rev. R. Roberts, Laurel House, Rhosllanerchrugog.

WALES.—April 19.—For repairs and improvements at the Fochriw and Gelligaer Village Board schools. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WEST HAM.—April 1.—For erection of a public library at Broadway, Plaistow. Mr. S. B. Russell, architect, 11 Gray's Inn Square, W.C.

WESTON-SUPER-MARE.—April 3.—For structural alterations to Grove House, Grove Park. Mr. Hugh Nettleton, surveyor, Town Hall, Weston-super-Mare.

WHITBY.—April 1.—For erection of a smallpox hospital. Mr. Thomas Keat Scott, surveyor, Flowergate, Whitby.

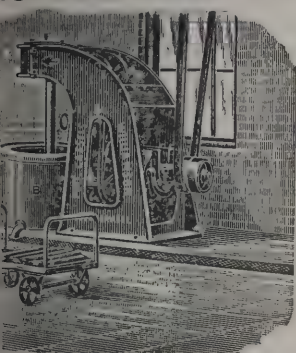
WHITEHAVEN.—April 2.—For pulling-down and rebuilding 111 Duke Street, and overhauling the exterior of the present baths and wash-houses in Duke Street. Mr. Thomas Brown, town clerk, Town Hall, Whitehaven.

WINDSOR.—April 1.—For erection of stabling, stores and workshops at the Corporation storeyard, Alma Road, Windsor. Mr. E. A. Stickland, borough surveyor, Alma Road, Windsor.

WINGATE.—April 5.—For erection of a Wesleyan Methodist church and school at Wingate. Mr. H. T. Gradon, architect, Market Place, Durham.

WORKINGTON.—April 7.—For erection of six dwelling-houses at Frostoms, Workington. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

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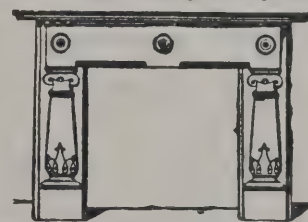
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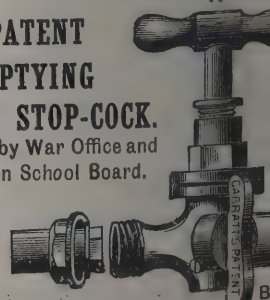
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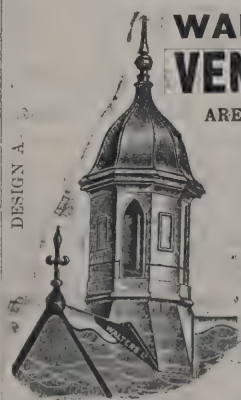
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Butterley Ironworks	2,087	1	9
Sheepbridge Iron Co. (do not include cylinders)	2,070	15	7
J & R. Ritchie (do not include cylinders)	1,891	13	10
	1,810	0	0

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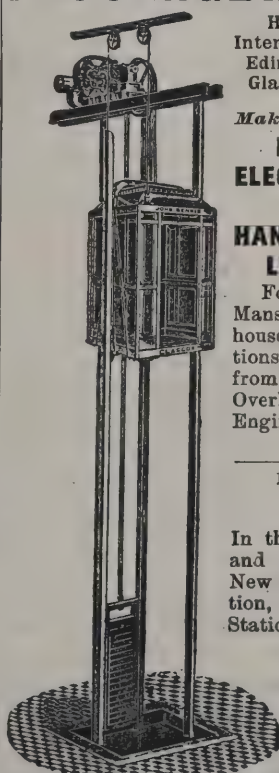
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## MILE END.

For a complete electric-light installation at the public library, Bancroft Road. Mr. W. JAMESON, borough engineer.

Haines & Co.	£148	18	8
Barlow Bros.	127	0	0
Tamplin & Makovski	109	17	2
Lighting Corporation, Ltd.	107	10	0
Christie & Co.	96	0	0
WARD BROS., 13 Beer Lane, E.C. (accepted)	93	1	0

## MORECAMBE.

For laying 4-inch and 3-inch cast-iron water-mains, with valves, hydrants, &c., in Heysham and Sandylands. Mr. H. G. NICHOLSON-LAILEY, surveyor.

G. F. Schofield	£728	15	0
Cross & Webb	690	0	0
E. Ireland	689	0	10
J. Hinchcliffe & Co.	649	19	4
S. WRIGHT, Sandylands, Heysham (accepted)	646	1	2
J. Turner	585	16	2

## TAUNTON.

For erection of destructor in the Target Field. Mr. T. H. SMITH, borough surveyor.

Moggridge	£1,146	5	11
E. PAGE, Cardiff (accepted)	1,071	16	4

## TOWCESTER.

For supply of a 12-ton road roller, a road scarifier, &c.

J. FOWLER & CO., Locomotive Works, Leeds (accepted).

## WALES.

For erection of a retort-house, coal store, exhaustor, boiler purifying and station meter-houses, and tar and liquor well, Aberavon; and the supply and fixing of iron and steel-work and materials in retort stack mountings (including firebrick work of stack and benches), condenser, exhaustor, tower scrubber, purifiers and revivifying shed, valves and connections.

## Latter Contract.

CLAPHAM BROS., Keighley, Yorks (accepted). £6,566 2 8

Note.—Other contract not yet let.

For erection of twenty-four cottages, Abertillery. Mr. G. C. HILLARD, architect, Abertillery.

W. PHILLIPS, Castle Street (amended and accepted). £4,420 0 0

## WALES—continued.

For conversion of the north pier into a promenade Aberavon.

G. Thompson & Co.	£1,284	1	0
Howell & Cockwell	998		
J. Davies	935		
T. SCOTT, Glasgow and Aberavon (accepted)	887		
Clark & Co.	628		

\* Made an error in length of railing.

## WALSALL.

For sewerage works in Darwall Street, Hatherton S Littleton Street, Teddesley Street, Butts Road, M Road, Lichfield Street, Lower Forster Street, U Forster Street, Warwick Street, the Butts, Freer S Bridge Street, Lower North Street, Albert Street, &c. W. MANDERS, Leyton, Essex (accepted). £3,761

For erection of a lodge, outbuildings and van-house in S Lane, Bloxwich.

S. WOTTEN, Bloxwich (accepted). £345

For construction of the permanent way and overhead e ment of about 6 miles of single track and 1 1/2 mi double track.

## Accepted tenders.

W. Griffiths & Co., Ltd., 35 to 39 Hamilton House, Bishopsgate Street Without, E.C., construction of permanent way	£35,827
R. Blackwell & Co., Ltd., 59 City Road, E.C., overhead equipment	7,480
Callender's Cable and Construction Co., Ltd., Hamilton House, Victoria Embankment, E.C., cables and feeders	6,444

## WEMBLEY.

For supply and fixing of about 45 sewer ventilating colu 6 in. in diameter, 30 ft. out of ground, and about 22 hole covers with aluminium air inlets. Mr. CECIL F. CHAPMAN, surveyor.

NORTON BROS., Balfour Road, Ilford, ventilating colu fixed complete, each 9l 7s. 6d.; manhole covers complete, each 5l 10s. (accepted).

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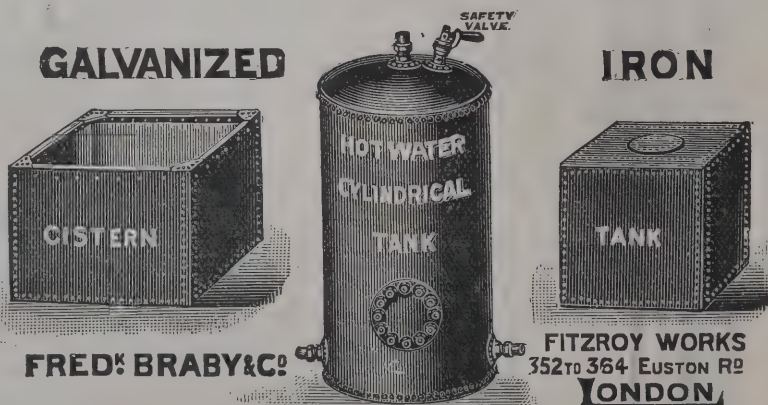
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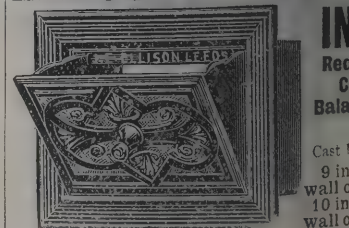
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ANT & SONS (accepted) . . . . . 20 0 0

*Greenhouse, &c.*

Welch & Sons . . . . . 408 0 0  
Addicott . . . . . 289 0 0  
Oyer . . . . . 247 0 0  
PRAKE (accepted) . . . . . 235 0 0

*Painting bandstand.*

ooth . . . . . 113 19 10  
R. Palmer . . . . . 99 15 0  
F. Kitchen . . . . . 95 0 0  
prake . . . . . 84 15 0  
Brent . . . . . 84 10 0  
ill & Son . . . . . 69 5 0  
URCH (accepted) . . . . . 68 10 0

*Electric wiring at swimming-baths, Knightstone.*  
ton-super-Mare Electric Wiring Co. . . . . £124 19 9

Curtis . . . . . 85 10 0  
ards & Armstrong . . . . . 79 6 1  
ANT & SONS (accepted) . . . . . 55 0 0

**WORKINGTON.**

lling-down and rebuilding three sets of business premises  
Pow Street. Mr. J. S. MOFFAT, architect, 53 Church  
reet, Whitehaven.

*Accepted tenders.*

n Bros., Workington, mason, bricklayer and plasterer.  
Harding, Church Street, Whitehaven, carpenter and  
joiner.

J. Lithgow & Sons, Workington, slater.  
Ellwood, Whitehaven, plumber, glazier and gasfitter.  
E. McConer, Duke Street, Whitehaven, painter.  
ington Engineering & Waggon Co., Workington, steel  
girders, joists and ironwork.

A. VAUGHAN WILLIAMS has informed us that he will  
the ruins of the Abbey de Fontibus de Merlaw to be seen  
tors during the Easter holidays. The admission fee of  
will be devoted to the restoration of the church of Little  
y. The ruins are  $\frac{3}{4}$  mile from Bourne End Station.

**BUILDING AND BUILDERS.**

OPERATIONS for the widening of London Bridge have been  
commenced, but for the present are confined to bringing  
timber to the steps on both sides of the river.

A NEW church, to be dedicated to St. John the Evangelist,  
is about to be erected for the district of Five Ways, in the  
parish of Cannock, and is to cost about 2,400*l*. The memorial-  
stone will be laid on Saturday, April 26.

A ROMAN CATHOLIC mission-room is to be erected at  
Chinley, at the cost of Messrs. Walter Scott, Middleton & Co.,  
for the benefit of the navvies employed on the widening of the  
Midland Railway between New Mills and Chinley.

A NEW Roman Catholic church is to be erected in the  
growing suburb of Acton, the dedication of which will be to  
"Our Lady of Lourdes." The building will be in the  
Romanesque style of architecture, after the fashion of those to  
be seen at Toulouse and other towns in the south of France.

THE sanction of the Local Government Board to the loan  
of 19,000*l*. applied for by the West Bromwich Town Council  
to defray the cost of extensions and improvements at the  
Borough Sewage Farm at Friar Park has been received.  
Tenders will be invited at once, and the work commenced as  
soon as possible.

A SPECIAL meeting of the Brierley Hill Urban Council has  
been held to receive a report of a sub-committee regarding a  
site for the new technical school, free library and reading-room,  
and council chamber, which have been decided upon as a  
permanent Coronation memorial. The Council unanimously  
resolved to purchase a piece of land at the corner of Bell  
Street for this purpose.

JAMES CAMERON, builder and contractor of Perth, com-  
mitted suicide by hanging himself on Saturday last. Cameron,  
who had been superintending some drainage work at Methven,  
arrived home on Friday night, but gave no indication that he  
intended to commit any rash act. On Saturday morning he  
rose early and went out. Subsequently he was discovered by  
his wife to have hanged himself in an outshed. The alarm  
was immediately raised, but life had been extinct for some  
time. Deceased was fifty-seven years of age.

MR. F. H. TULLOCH, C.E., Local Government Board  
inspector, held an inquiry at the Salford Town Hall last week  
as to the sanction of a loan by the Corporation of 23,562*l*. for  
the purposes of depôts at Agecroft, Carey Street and Wilburn  
Street, and also for the purpose of erecting refuse-destroyers

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at Carey Street and Wilburn Street. Mr. W. W. Greenhalgh, assistant town clerk, said the application for the loan had been rendered necessary owing to the increase in the population of the borough and the large number of new houses erected during the last few years. The work of the scavenging department had grown to such an extent that it was necessary that these works should be carried out in order that the department might be able to cope with the task with which it had to deal. The works at Agecroft were not extensive and would involve an estimated expenditure of 2,483/. The greatest outlay would be at Carey Street, on the Broughton side of the Irwell, where it was proposed to erect, in addition to new offices, six additional destructors, with the necessary walls, also mortar mills, as Parliament had given the Corporation power to manufacture and sell this material. At Carey Street it was proposed to acquire several plots of land at a cost of 2,975/., and also to erect a river retaining-wall at an estimated expenditure of 1,100/. At Wilburn Street it was intended to erect two additional destructors. A description of the details of the proposed improvements was given by Mr. J. Corbett, borough engineer; Mr. J. Elliott, borough treasurer; Superintendent Hamblett, scavenging department; Mr. Sharpe, architect, and others, and at the close of the inquiry the inspector visited the sites.

### TRADE NOTES.

MESSRS. ANDREW HANDYSIDE & CO., LTD., of Derby, have secured the contract for 170 tons of steelwork for a destructor for the Corporation of the city of Nottingham.

A LARGE clock has just been erected in the parish church at Starston, Suffolk, which shows time on one dial and strikes the hours on the largest bell. It is fitted with all the latest improvements. The work has been carried out by Messrs. John Smith & Sons, Midland Clock Works, Derby, who are also making a large clock and chimes for St. Mary's Church, Warwick.

MESSRS. WILLIAM POTTS & SONS, clock manufacturers, Leeds and Newcastle-on-Tyne, are now making a large turret clock and chimes for Mr. Sykes Lindley, Huddersfield, and fixing a large Cambridge quarter clock at Saltburn-by-the-Sea parish church. They are also erecting a new memorial clock at Ruswarp Church, near Whitby, and a clock for a church near Pateley Bridge, Yorkshire.

MESSRS. GEORGE JENNINGS, LTD., sanitary engineers, His Majesty the King, of Lambeth Palace Road, S.E., inform that their patent electro-mechanical apparatus for indicating and recording the varying level of water in reservoirs has been adopted by H.M. War Department for the reservoirs at Tidmouth, Salisbury Plain, for the waterworks in connection with the new military camp which is at present in course of formation. The firm have also recently completed the installation of a set of instruments for His Grace the Duke of Portland, K.G., in connection with the new reservoir at the Dukeries Worksop, which is giving every satisfaction. Installation of these instruments have been carried out at some of the largest waterworks in the kingdom, notably for the Corporation of Leicester at Swithland, where the area embraced covered a considerable extent.

MESSRS. PATERSON, COOPER & CO., LTD., electrical and mechanical engineers and contractors, have opened an office at 57 Gracechurch Street, E.C., where Mr. J. Walter Brice, A.M.I.C.E., will represent them.

THE Welbeck Cottage Hospital, Worksop, is being warmed and ventilated by means of Shorlands' patent Manchester stoves and special inlet tubes, supplied by Messrs. E. H. S. Land & Brother, of Manchester.

THE seventh annual general meeting of the British Association of Waterworks Engineers will be held at Leicester on July 22, 23, 24 and 25, under the presidency of Mr. Fred Griffith, M.Inst.C.E., Corporation water engineer.

ON Tuesday last the *Brussels*, a steamer intended for the Great Eastern Railway Company's Harwich-Antwerp service, was launched at Messrs. Gourlay Brothers & Co.'s yard, Dundee. The christening ceremony was performed by Mrs. Drury, daughter of the superintendent of the Great Eastern Railway. The fittings of the steamer *Brussels* are of the modern type, and particular attention has been given to ventilation. A special feature of the sleeping accommodation is the large number of two-berthed cabins. The vessel will be lighted throughout by electricity, is a steel twin-screw steamer, 285 feet in length by 34 feet beam, fitted with separate sets of triple-compound engines, so that in case of accident to one set the steamer can proceed with the other. She is expected to be ready for the summer service.

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## VARIETIES.

RICHARD HOLMES, town clerk of Arundel, died on the inst. from Bright's disease, aged forty-five.

BRIDLINGTON Town Council has appointed Mr. Jennings, M.B.E., sanitary inspector.

ODDINGHAM parish church was reopened after redecoration yesterday.

THE receiving homes for the St. Pancras Council, London, are about to be built in the Leighton Road, have been designed by the Local Government Board. Mr. A. E. Thompson has been appointed architect.

THE Local Government Board have sanctioned a loan of £10,000 to the Bexhill Urban District Council, in order that the Bexhill Park and pleasure grounds may be laid out and the Bexhill and Western Parade made up.

THE site of the Old Wanderers' Club at the corner of Waterloo Place and Pall Mall, has been purchased by Sir J. S. King & Co., the bankers, who will erect their new premises there. The architect is Mr. A. E. Thompson, 10, Abchurch Lane, London, E.C.

THE Viceroy of India on the 20th inst. unveiled the statue, erected by Mr. George Frampton, A.R.A., of Queen Victoria, which has been erected in Calcutta, in presence of the Lieutenant-Governor, the Commander-in-Chief, all the high officials, and a immense throng of natives.

A WORK that should be of the greatest value and interest to furniture designers and decorators is now being published by the Russian Government. It consists of a series of chromo-lithographic reproductions of drawings to scale of the chief pieces of fine furniture and objects of decorative art in the Imperial palaces, churches, &c., in Russia.

THE old Roman pharos at Dover Castle is being roofed in order of the military authorities in order to prevent further decay. This interesting relic dates back to a period before the Christian era. It was used by early Romans as a light-house. It is in a fair state of preservation considering the long time it has stood on the cliffs exposed to every kind of weather, and is regarded with the greatest interest by antiquaries all over the country.

ST. MARY'S CHURCH at Whicham, in South Cumberland, has been reopened after restoration. This church is a quaint structure, and stands at the foot of Black Combe, in the

Whicham Valley. The date of its erection is set down to the Norman period. There is a fine Norman arch over the entrance, and this lends some truth to the belief. According to tradition the church was twice burnt down by the Scots during their raids south. The two bells that hang in the belfry date back to pre-Reformation times.

A MEETING of the Glasgow Archaeological Society was held on the 20th inst. at Bath Street, the Rev. Professor Cooper in the chair. Dr. Thomas M. Bryce gave a descriptive lecture, illustrated with lantern views, on "The Sepulchral Pottery of the Stone Age in Scotland and its Affinities." The number of specimens of sepulchral pottery, he said, that could be referred to the stone age in Scotland was very limited. Until recently only four specimens were known. In the course of recent excavations he had been able to add twelve examples to the number. Dr. Bryce then described the continental affinities of this pottery with a view to determining the origin of the stone age culture in Scotland and the ethnographical relations of the primitive inhabitants of Scotland. The affinities of the pottery were with the pottery of Brittany, the Pyrenees and the Spanish Iberian Peninsula, so that the relations of the pottery gave strong support to the Iberian hypothesis as to the origin of the early inhabitants of Britain. Another paper was by Mr. George Macdonald on an ancient coin recently found at Erskine, and Mr. Graham Callander exhibited a collection of stone implements from Aberdeenshire.

A LARGE party of the members of the Edinburgh Architectural Association travelled to Glasgow on Saturday, and under the auspices and leadership of the Glasgow Architectural Association inspected a number of the more important among recently erected buildings. The programme was arranged by the President of the Glasgow Association, and among the buildings visited were the Mercantile Chambers, Bothwell Street (Messrs. James Salmon & Son, architects); Waterloo Chambers, Waterloo Street (Messrs. J. Burnett & Son, architects); Savings Bank, Ingram Street (Messrs. J. Burnett & Son, architects); School of Art, Renfrew Street (Messrs. Honeyman & Keppie, architects); Belmont Church (Mr. James Millar, architect); and Stevenson Memorial Church (Mr. John J. Stevenson, London, architect). Several private residences were also visited. At the close of the proceedings the company dined together in the Lansdowne Restaurant. Mr. Charles E. Whitelaw, president of the Glasgow Association, was in the chair, and Mr. Henry F. Kerr, president of the Edinburgh Association, was also present.

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PREMISES, LONG ACRE, W.C.

## ELECTRIC NOTES.

THE board of the Metropolitan Railway Company have let a contract for their electrical power station at Neasden to the British Westinghouse Electrical and Manufacturing Company, Ltd.

MR. E. M. HOLLINGSWORTH, deputy electrical engineer to the St. Helens Corporation, gave a demonstration last week at St. Helens of the working of a device which he has invented. In the event of an accident the breaking of a glass plate on the side of a box automatically releases the switch and cuts off the current, so that fallen wires may be handled with perfect safety.

ASTON District Council made a further advance in its scheme for the electric-lighting of the district and the electrical equipment of tramways. They held a special meeting recently, under the presidency of Councillor F. Smith, to consider the tenders for the erection of a generating station and cables for these purposes, a site for the station having been secured some time ago in Chester Street. There were no fewer than 351 tenders submitted for the work, these having previously been considered by the electrical committee. After a lengthy discussion the Council adopted the recommendation of the committee, who had devoted considerable time to the matter, and accepted tenders of various electrical firms representing in the aggregate the sum of 62,970l.

ARRANGEMENTS have been made for the holding of a service to commemorate the complete restoration of Peterborough Cathedral in July. The works have been in progress eighteen years, and have cost over 80,000l.

## THE PATENT "ACME" STONE BREAKER.

THE hardest and toughest kinds of stones are employed in construction of paved and macadamised roads, the first geological order as well as in usefulness being granite, which varies much in density and resistance to crushing force. There are the trap rocks, a group of igneous rocks allied to granite, and of which there are different varieties known as basalt, dolerite, whinstone, greywacke, &c.; but for macadam the hardest stones, such as Guernsey granite and Penmaenmawr greywacke, are considered the most suitable.

For dealing with these materials, and coping with the very heaviest work that a machine of the kind is called upon to do, the patent "Acme" stone breaker has been designed, both in the stationary and portable form, so as to meet the various requirements. For excellence of work, the quantity of material dealt with, simplicity of construction, and the consequent small expense entailed in renewal of working and wearing parts, it is claimed, and with a good show of reason, that there is nothing in the market to equal the apparatus in question.

The patent "Acme" portable stone breaker, adapted for road-making and maintenance, as well as for general corporation and estate work, is specially designed and constructed with extra large "wheel base" to give the greatest possible steadiness when at work. The output by this machine is, to understand, very great, and the sample of stone produced thereby is pronounced by experts to be equal in all respects to hand-broken, while it is able to deal in a satisfactory manner with materials, on which account it is, especially useful, as when required for roadwork it can be easily transported, if needed for the crushing of clinker and ashes at the refuse-destroying works, while it is fitted with all up-to-date labour-saving appliances.

This machine, which we illustrate, is fitted with the new patent portable tilting screen and platform, which has been designed to obviate the difficulties in moving from one place to another experienced with all other portable stone breakers. The revolving screen for sorting the broken material is here shown tilted. By this arrangement it is saved from damage by being dragged along the ground when the wheels sink a few inches in soft roads, lessens the space occupied in storage, and facilitates the turning of corners in narrow roadways. Messrs. Goodwin, Barsby & Co., St. Margaret's Ironworks

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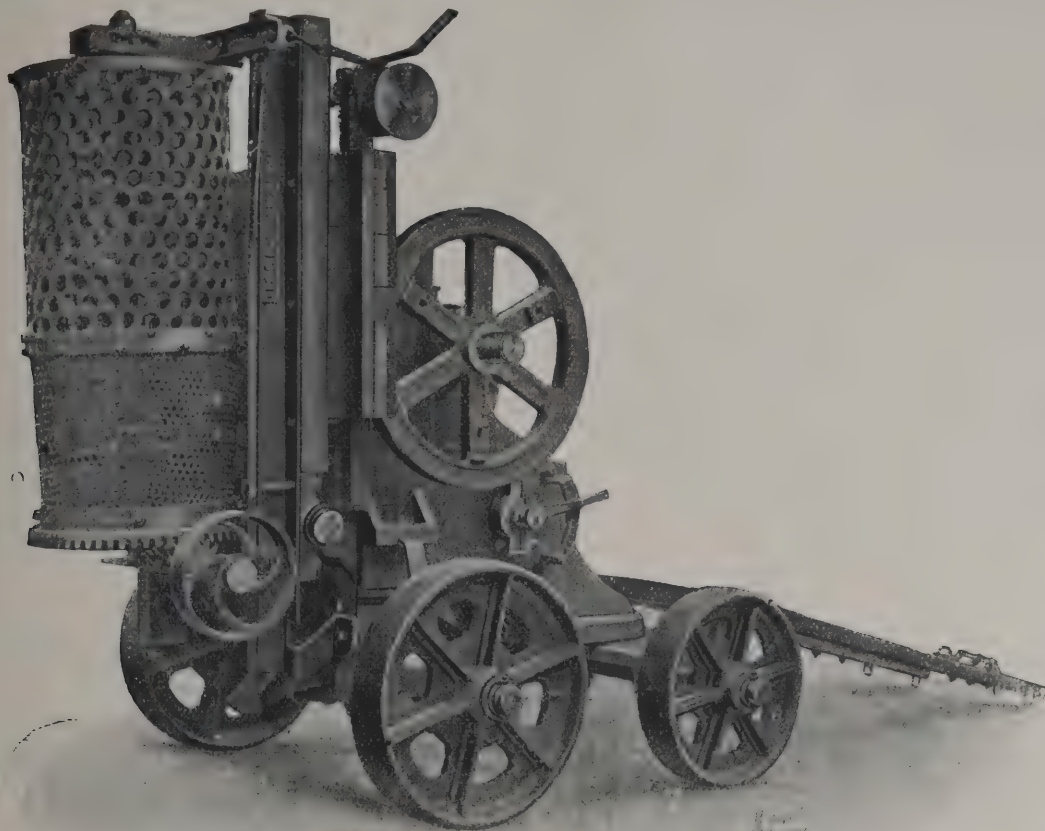
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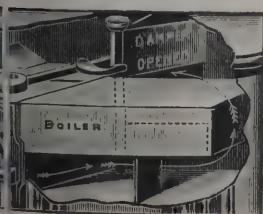
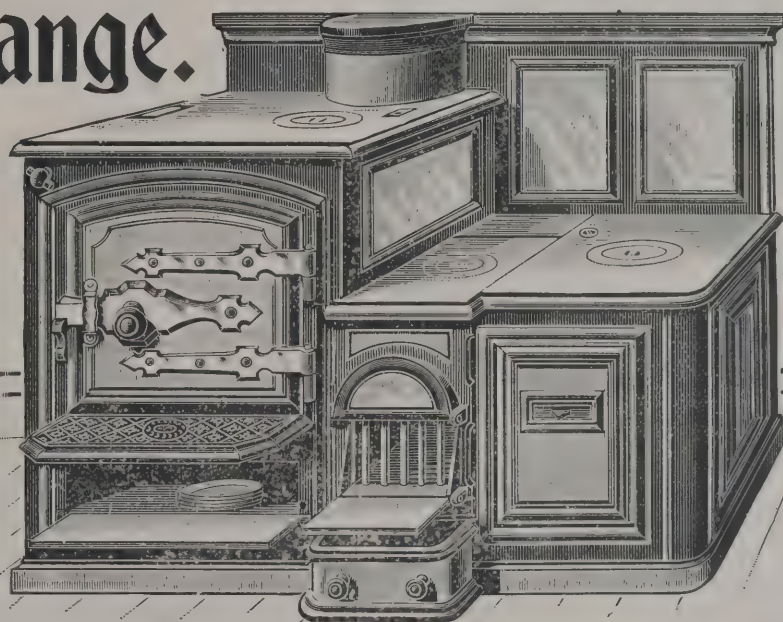
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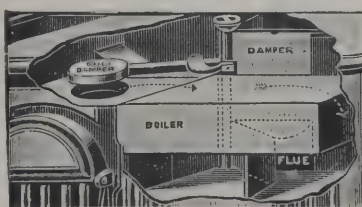
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ing and oven door are lined with slag wool and a third oven can be arranged if required.



## NATIONAL REGISTRATION OF PLUMBERS.

THE twelfth annual general meeting of plumbers registered by the Manchester and District Council for the Registration of Plumbers was held on Saturday afternoon in the chemical lecture theatre, the Technical School, Whitworth Street, Manchester. Mr. W. H. Munro, chairman of the Council, presided, and there was a large attendance. The report of the year's work was read by the secretary (Mr. John W. Hirst), and was of a very satisfactory character. It was stated that 688 applications for admission to the register had been received—191 from masters and 497 from operatives. After careful consideration, 161 masters and 434 operatives had been admitted, and 30 masters and 63 operatives referred to the examiners. The statement of accounts showed that the receipts (including a balance from last year's account of 116*l.*) amounted to 697*l.* 9*s.* 11*d.*, and that the expenditure left a balance of 236*l.* The meeting elected the Council and the auditors for the ensuing year, and cordially thanked the technical instruction committee and Mr. J. H. Reynolds for the use of the meeting-room and the chairman and the secretary for their services during the year. At a tea, later in the afternoon, Mr. W. H. Munro was presented with an illuminated address by his colleagues on the Registration Council.

THE question of wages and hours in the Coventry building trade still awaits a settlement. A communication was sent some days ago by the Federated Building Trades' Association, in which they refused to discuss any of the proposed alterations unless the employers withdrew several of what they termed the "objectionable clauses." A good deal of reticence is shown by those concerned in this matter, but we believe that the objectionable clauses relate to the paying of all men the same wages, interference with the authority of employers in the conduct of their business and the hours worked during the short days of the winter months. The notices served by the masters expire on Monday next.

## LIGHTING AND HEATING OF THEATRES.

THE theatres and music halls committee of the London County Council report:—"It will be within the recollection of the Council that the revised regulations which were approved on July 30, 1901, do not contain any clauses in regard to the electric lighting and heating arrangements at places of public entertainment. We were not quite prepared at that time with regulations respecting these matters, but after the summer recess we resumed our consideration of the subject, and as soon as we had prepared regulations we, at the request of the London Entertainments Protection Association, submitted them to that body for their consideration and suggestion. An electrical expert was appointed by the Association to confer with the Council's engineer, and as the result some slight modifications of the regulations were proposed to us which we are pleased to state we were able to accept almost in its entirety. The regulations have been amended and are now in accordance with the views of the London Entertainments Protection Association, and we have given instructions for copy to be sent to every member of the Council. We recommend that the regulations now submitted in regard to the electric lighting and heating arrangements at theatres, houses, rooms and other places of public resort within the administrative county of London be approved, and that the seal of the Council be affixed to two copies."

## READING BUILDING TRADES MASTERS' ASSOCIATION.

THE third annual dinner of the Reading and District Building Trades Masters' Association was held at the Queen's Hotel, Reading, on the 17th inst. Mr. J. T. Bottrill presided.

The Chairman proposed the loyal toast, which was duly honoured.

Mr. H. A. Lewis submitted "The Architects and Surveyors." With regard to the municipal buildings scheme, he deprecated the giving of the commission of 100 guineas to an outside

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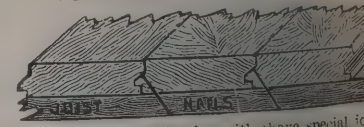
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itect, as he believed they had architects in Reading who e equally capable of developing the scheme. This had a recently proved by the fact that a young man, Mr. J. H. dman, had won a competition at Trowbridge open to the le of England for a building (isolation hospital) of con- rable size.

Mr. W. R. Howell, responding, congratulated Mr. Goodman his success, and expressed pleasure at the good feeling ing in Reading amongst the architects and their fellow i in the craft. During his short experience in the town he seen very great developments, not only in the quality of architecture, but also in the quality of the building. When history of Reading at the beginning of this century was ten the verdict, on the whole, would be a favourable one, but e or two instances, he thought, they would be blamed. as not for him to apportion the blame to anyone, but fifty rs hence people would wonder what the people of Reading e doing when they allowed the improvement of Queen oria Street to be carried out in such a splendid way, yet i the fatal blot of being too narrow. Another matter that e historians would blame the present age about was the question of overcrowding. One had only to walk along Tilehurst Road and look down upon the sea of houses on the i Park estate. Many people blamed that wicked man "the ulative builder" for the overcrowding, but he (Mr. Howell) ld blame the system under which they lived. The chief cause the want of locomotion and privacy. Within the next fifty rs they would get vastly improved means of locomotion, ch would allow "the speculative builder" to erect houses away from the centre of the town. He also thought that the f means of locomotion would take the form of motor-cars er than trams. One of the pressing duties of the people Reading to-day was to urge the Town Council to extend r boundaries. They were much hemmed in, especially on north and west. On the south there was plenty of ground, there were reasons which made it not easy to build there e present time. With regard to the 100 guineas scheme for municipal buildings, many people thought the architects of ding had been hardly dealt with, but seeing that many of n got more than half their practice outside the town they d not complain about an outsider coming to work here. logical conclusion to the argument was that if they objected outsiders the architects of Reading would have to confine work to the town. As much as he would like to have the our of carrying out the extension of the municipal buildings,

he would not care to do so because it would mean the giving up of his private practice.

Mr. J. Catley gave "The Town and Trade of Reading." In an interesting speech, dealing with some of the historical features of the town, he said during the thirty years he had been in Reading he had seen marvellous changes, but in the next thirty years there would be far more changes to marvel at. When the Domesday Book was written there were twenty-eight houses in Reading belonging to the King and twenty-nine in ruins. The progress of the town had not been at all smooth; it had been one long conflict between men on either side against despotism and inertness. What every town needed for progress and prosperity was good municipal government, and they were thankful for the many men on the Town Council who devoted their time and energy in the service of the town. Just now municipal government in Reading had reached something like a crisis. There was the question of education—elementary, secondary, or collegiate—which a wise community ought to foster and forward, and which paid quite as well as waterworks or tramways. Then there were slums in Reading that were a disgrace to the town. Sanitary science was not yet applied in Reading as it should be. They were thankful for a lessened death rate, but much remained to be done. There was the question of the isolation hospital, by which the community might have the chance to have that greatest of blessings—health, and also the question of the lighting of the town, which should be under public control. Then there was the question of how the communities springing up outside the borough should march side by side with them in efficient and wise administration, so as to be prevented from making those mistakes common to any community, and which were costly to set right. On their Town Council they had statesmen, and they were proud of such a speech as that recently made by one of the Councillors—full as it was of wisdom and insight. In all these matters to which he had alluded they were, as builders, willing to lend a hand and to bear their share of the financial burden; but there were a few things they wanted to say for themselves. They wanted to tell the Town Council to make their contracts fair and equitable, and see that they were carried out. They wanted to foster private enterprise as much as possible in Reading. They did not want any more restrictions than they could help, but to let local talent have the opportunity of developing and showing itself, because the success of townsmen was the success of the town.

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Mr. Barnard Messer replied to the toast. Referring to the scheme of the municipal buildings and Reading College, he expressed the opinion that the college had a great future, and would have a very great influence upon the town and trade of the town. He hoped in the carrying out of the municipal buildings scheme that the work would be in the hands of the Reading architects and builders. Viewing the marvellous strides made by Reading during the past thirty years, they might certainly say that they were citizens of no mean city. With Mr. Howell, he foresaw the time when Reading would stretch much beyond its present limits, though he did not agree with him in his remarks that the speculative builder should erect houses outside the town, because they would never know when they would be occupied. Neither did he agree that motor-cars would be the means of transit in the future. There was far more likelihood of tramways being the means of locomotion, and the Reading Corporation were farseeing in that respect in adopting the electric system, which would undoubtedly be the most popular means. He also expressed the opinion that the future would see great developments in Reading, with the use of the Thames waterway, improved buildings and the removal of the slums. In fact, he thought the town would so far advance that it would become the metropolis of the South Midlands. In conclusion Mr. Messer advocated the formation of a Chamber of Commerce for Reading.

The Mayor proposed the toast of the evening, "The Association." He apologised for not being able to be present earlier, explaining that he was obliged to be at the town's meeting to consider the Coronation celebration. From the report of the Association he gathered that they were banded together to protect their own interests, and also the interests of their customers and the welfare of the men they employed. The more employers combined the better it was for those whom they employed; in fact, it was better for both sides to be combined, with proper organisation, so that they could meet each other and discuss any questions of difference that might arise. He believed they had established a Conciliatory Board, so that before any strike took place in connection with the building trade they could jointly discuss the matter before the men took any definite action. He wished the Association every success and prosperity.

Mr. G. S. Lewis responded.

The Chairman proposed "The Visitors," for whom Mr. Williams responded. The concluding toast was "The Press."

## ARTISTIC ELECTRIC ILLUMINATIONS.\*

(Concluded from last week.)

THE route I took was from the Langham Hotel, Portland Place, down Regent Street to Piccadilly Circus, along Piccadilly to Bond Street, up Bond Street to Oxford Street, along Oxford Street to the Marble Arch, and down Park Lane and Grosvenor Place to Victoria Street. Then, passing Westminster Abbey, I went up Whitehall, the home of the great public offices, along Pall Mall, finishing with St. James's Street. The Langham Hotel had nothing to show.

The Queen's Hall was similarly a mass of darkness.

The Polytechnic was a void, and looking up and down Mortimer Street I saw nothing. The first star I saw was over Messrs Wyon's (No. 287), and that was an ordinary small gas star. Messrs. Lobb (No. 296) had a simple E.R. Nos. 297 and 280 had a plain line of lights. This was all the illumination I found north of Regent Circus.

The actual Regent Circus was in darkness, but Messrs Jays had a very big, ugly, although very ambitious, gas-jet display facing Regent Street. It was supposed to be emblematical, but as the lights were being constantly blown out the whole appearance of this device was most restless.

Opposite Messrs. Verrey's there was an E.R.

Messrs. Swears & Wells had an exceedingly vulgar kind of whirling crystal display with balls and stars moving automatically. I assume this was supposed to be something novel, but its taste was execrable.

Messrs. Lewis & Allenby had a badge; Messrs. Brooks and Messrs. Vickery likewise sported badges.

At No. 146 Messrs. Rowlands & Fraser sported a gas star and an E.R., whilst Messrs. Carrington, No. 130, were satisfied with a badge.

The device of Messrs. Scott Adie was the first of any artistic pretensions. This comprised a large thistle design worked out in crystals backed by gas-jets, and in colouring and effect it was certainly as good as anything could be in this crystal work.

The Goldsmiths' Company had a tiny little electrical badge or frame surrounding the King's head, rather pretty in itself, but insignificant. The main merit of this badge lay in the fact that it was the first electrical device I had come across all the way.

\* A paper read by Edwin O. Sachs, architect, A.M.I.Mech.E. on the 13th inst., before the Society for the Encouragement of the Fine Arts.



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Regent Street, and hence aspired towards some degree of novelty. Messrs. Johnson, the hatters, sported a badge and, I believe, the gas stars. The new Imperial Restaurant, which has just been fitted up, with a couple of very common badges and a crown, looking remarkably crude against the elaborate picture which they had recently erected. Now come to Piccadilly Circus. The Criterion sported some gas-flares on the roof, and the front of Messrs. Swan & Edgar could only boast of a badge, whilst looking down Lower Regent Street as far as could see, I found that Messrs. Elkington was the only one with an attempt at display, and they only had a badge. Turning down Piccadilly and going westwards I found myself in front of Messrs. Grant (No. 23), Dobbie (No. 198), Coist (No. 36), Sotheran & Co. (No. 37), and Lincoln, Nett & Co. (No. 49), the badge of the last named being a more ambitious than the others. Messrs. Woodrow (No. 46) had an E.R.; Messrs. Hatchard (No. 187) a star. At the corner of Bond Street and Piccadilly, Messrs. Scott, hatters, had a badge in gas and some small lamps over their shop-front. Turning northwards up Bond Street I saw that Messrs. Neubaum & Sons (No. 45) and Messrs. Stewart & Co. (No. 46) had badges; Messrs. Hill (Nos. 3 and 4) a gas star; Messrs. Hummel (No. 6) an E.R., and Messrs. Mitchell's display were rather more ambitious, for they had a motto "God Save the King," a star and a line of lights over their shop-front in gas. At No. 20 Messrs. Clark had an E.R. and a badge. Messrs. Barker (No. 5 New Bond Street) had a semicircular display in gas lamps, Messrs. Henry Lewis & Co. (No. 172) a star, Messrs. Morris & Co (No. 22) a badge, whilst Messrs. Callaghan & Co. (No. 23) had outlined their shop-front, provided an E. and R. and also four stars, the whole making a very creditable display in gaslight. Messrs. Cadbury, Pitt & Co. (No. 24) had a badge, with some thistles in primary gaslights. At No. 151 there was a badge, and Messrs. Grove & Co. (No. 150) had a star. Messrs. Savory & Moore (No. 143) had an outline over their shop fascia with a sun in the centre and a crown above it, and E.R. on each side; while Messrs. Johnson, the hatters, had a slight outline and a star.

This was the total of the Bond Street display, that home of the warrant-holders. Oxford Street to Marble Arch was pitiable, such great establishments as that of Messrs. Marshall & Snellgrove, with a splendid front, simply appearing as a mass of darkness. Messrs. Squire alone had a creditable display, a novel one, namely, a large electrical badge, E.R.I., very cleverly designed and of high artistic merit for this kind of work; the badge was a great deal larger than those usually found, the colour scheme good and the whole in proportion to the building. Nos. 425 and 456 were the only others I noticed with lights, and those were gaslights. No. 465 had, I believe, an electrical E.R., but of this I am not quite sure. All the way down Park Lane was a mass of darkness, and I hear that South Audley Street and Mount Street were practically the same. The first creditable display in this part of the West End as far as private houses are concerned was Apsley House, the Duke of Wellington's, which had a large motto in gas, "God Save the King." Grosvenor Place was a mass of darkness; also the property all round Victoria Station, and Victoria Street, the home of so many colonial offices, only had a few E.R.'s and a crown. The only big display in Victoria Street was that of the Electric-Lighting Boards Company along the front of Grosvenor Mansions, where the balconies were very carefully outlined in garland fashion and some very large E.R.'s, crowns and stars had been grouped on the façade, the colouring being in good taste. At the end of Victoria Street comes the Square which so incongruously has Westminster Abbey on one side and the Aquarium on the other. The Aquarium had some tawdry outline work and some E.R.'s in gas, plain and vulgar. Whitehall had scarcely anything, although the Admiralty had gone to the length of a gas crown and an E.R. in leaves in the shape of old-fashioned gas-jets. The entire Government Offices were otherwise in a mass of darkness. Arriving at Trafalgar Square, I looked down Northumberland Avenue, and found that the only effective design was that of the Constitutional Club, which had the words "For King and Constitution" and an E.R. on each side, and a neat club badge. The Hôtel Victoria had a primitive attempt in white wood stars with single incandescent lights hanging along the front, looking more like the endeavours of a fifth-rate music-hall than those of a first-class hotel. The Métropole actually had a few flares on the roof. The Avenue Theatre also had a few flares.



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Trafalgar Square was practically without any illuminations; but, going up Cockspur Street, I found that one of the shipping companies at No. 16 had a charming ship-badger with a crown above it in crystal with the picture of a ship in the middle, exceedingly well and tastefully done, one of the few attempts at really artistic work.

Pall Mall East had a few R's and stars in gas.

The whole Carlton Hotel block only showed a crystal badge. This badge was in better colour than those generally made, but was rather poor for so large a block.

No. 7 Pall Mall, the headquarters of the Electric-Lighting Boards, had outlined its windows with electric lights and had a large crown at the top of a semicircular window and the words "Edward the VII."

I then reached the heart of Pall Mall Club-land; but I am sorry to say that I could find nothing novel here, for the whole of Pall Mall had practically nothing else but the usual gas-flares. Here I should perhaps add that gas-flares themselves, if placed at regular intervals along an entire thoroughfare, are exceedingly effective and dignified, but to find them only here and there on an otherwise black street has a depressing effect, and savours rather of the special illuminations of an asphaltting or road-making company when they do night-work with the assistance of naphtha lights.

The final stretch I took was up St. James's Street. Here the Thatched House Club had flares, Nos. 73 and 8 had stars, and a few of the clubs had badges. Chubbs had made some attempt at gas display—an E.R. flanked by two circles centred by a crown.

The Royal Society Club had some flares, Briggs a couple of stars, Boodle's Club an E.R. and a star, and Brooks's an E.R. and a crown.

The New University Club had some flares, Hooper's a badge, and Thomas's a small outline.

Devonshire Club and White's sported a badge and star respectively.

Fortunately, the finale of my round was a pleasant one, for I found that Messrs. Heath, the hatters, had a charming electrical Union Jack, which, I understand, had been specially made up by their own workmen, and which was placed over the corner entrance. This flare, which, I believe, really hails from America, in design was a thoroughly artistic and well-made device of great effect, and was certainly the best individual device on the whole route.

The second item with which I closed my round was Devon-

shire House, which had its walls outlined with gas, and had some E.R.'s and a crown; but I may tell you that, speaking generally, I went home very depressed as to the taste displayed on the King's first birthday celebration.

Now from all this you will see, with what I have already indicated above, that, as far as gas illuminations are concerned, the plain outlining or the plain star are all that I can recommend.

As far as the crystal device is concerned, the plain badges are by far the most effective, such badges as that in front of the P. and O. office in Cockspur Street, or some of the plain badges with the Imperial Crown above, being far above anything in the more elaborated designs. The moment any tawdry attempts are made at whirligigs or the like, or the outlining of heraldic devices, nothing but failure results.

Now, when moving down these thoroughfares the one thing that, of course, struck me most was the absence of electric-lighting appliances. In all, electricity had only been used at points, *i.e.* at the Goldsmiths' Company, at Squire's, in Victoria Street, and at No. 7 Pall Mall, the offices of the Electric-Lighting Boards.

Well, gentlemen, this really was something very meagre, and on looking into the question I found the following, namely, firstly, that Londoners are too conservative to leave gas for electric light easily; secondly, that the electric power companies in London do not seem to quite have grasped the possibilities by which they could make money, and by which they could induce their customers to regularly illuminate by electric light instead of gas. The public certainly considered the few electrical devices it saw as superior to what was being done in gas or oil lamps, that is to say, the public expressed itself so frequently. As far as the Victoria Street decorative scheme in particular was concerned, the only large electrical scheme I saw certainly created quite a mild sensation.

We must, of course, remember that the illuminations on the King's birthday were trivial in the extreme compared with any illuminations one would find in connection with a similar event in any foreign country, or, as a matter of fact, in our own colonies, where electric light has already been used with great effect. We must also not forget that the Scotsman is already ahead of us, for the main buildings of the Glasgow Exhibition were outlined last summer in the best possible style.

The great difficulty, however, in outlining buildings with electricity in places like London, where labour is dear, has

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one of cost. Then the time taken in fixing and the necessity, as a rule, of keeping to straight-line work form are main drawbacks.

Now, with the impending invasion of the E.L.B. system brought forward by the Electric-Lighting Boards Company, the question of expense, the question of time of fixing and the question of keeping to straight lines have been overcome, and, what is far more important, those getting out their decorative schemes are not bound to give points in fixing their lights, but can fix them wherever they like at will and without difficulty. Thus, given a straight line of cornice, it may suit the designer to space his lights 2 feet apart, but, on seeing the effect on rehearsal night, he considers the lights too close together. He thereupon simply removes his lights and fixes them in 2 feet 6 inches apart. This meets any system of wiring lampholders tied to given points. Similarly, he may wish to have a straight line; he may simply wish to festoon his work, twine his cables round columns. This he is quite at liberty to do, for he can simply unroll his flexible cable off its drum, twine it round anything he likes, festoon, garland and work in his lamps wherever he chooses, moving them, if the effect does not please him, until he gets right proportions, right distances, &c., and can give full play to his imagination.

The great difficulty of artistic illumination has always been the design. All this can now be avoided.

Again, given an electric-lighting board, the proud possessor can change his motto, his device, his sentiments at will, by changing his letters and pricking them in wherever he likes. An ardent Liberal who has said "Bravo, C. B.," one night, can change to "Bravo, Rosebery," on the next, if he so wishes, without extra cost.

What can be done in the way of artistic illumination with the assistance of these appliances may be seen from the experience gained in France, the most artistic-loving country in the world. There we find that when the Czar arrived at Compiègne the public authorities wished to do something for him extraordinarily well and show him something novel, they immediately got hold of these new appliances, and decorated no less than two miles of streets with them in a festoon pattern. In an art-loving country like France immediately takes up

an invention only a few months' old and applies it with high artistic merit, there must be something in it.

What happened at Dunkerque and Compiègne last summer at the time of the Czar's visit has been repeated again and again in that light-loving country, one of the principal demonstrations of late being at the Hôtel de Ville of Ste Etienne early in January. But more recently, the great Victor Hugo celebrations, when a mass of illuminations on the same artistic principles were utilised, showed what could be done.

Mr. Sachs thereupon, with the aid of illustrations, went on to describe the various decorative schemes that lent themselves particularly to electric lighting, and dealt at some length with the various illumination schemes on the Continent, at Toronto and Montreal in connection with the visit of the Prince and Princess of Wales last autumn.

Mr. Sachs then went on to show the easy application of the Electric-Lighting Board's specialty for artistic illumination schemes, and demonstrated the easy adaptability of the system for rapid temporary work.

For the purpose of demonstrating the application of the Electric-Lighting Board's system, a number of valuable and highly artistic designs prepared by Mr. Haité, president of the Society of Designers, were shown, several of them having been worked out in materials by Mrs. Hart.

Mr. Sachs closed his lecture by referring to the possibilities of uniform decorative schemes for districts like the City of London, St. James's Street, Pall Mall and Whitehall.

### FOUNDATIONS ON QUICKSAND.\*

MERIDEN lies in a valley between high hills. In the valley, which is claimed by some to be the original bed of the Connecticut River, is a soil which consists of a sandy loam, a

\* From a paper by Mr. C. A. Learned, read before the New England Association of Gas Engineers.

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Is the front view of Junction and loose flange; the inlet being elongated, allows the lead pipe to be cut to any required angle.

Shows the Joint fixed and ready for tightening up, and also a few of the angles which can be got.

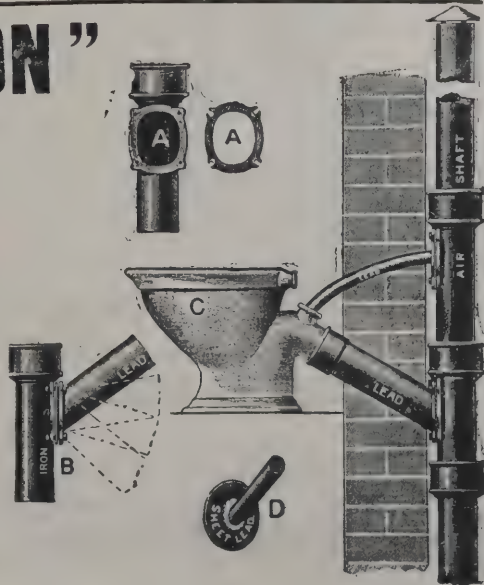
Shows the one size which can be adapted for 4 in. Soil Pipe, and a 4 in. x 1 1/2 in. Invert Junction for Anti-siphon Pipes, &c.

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little gravel and plenty of quicksand. Most of the buildings in this valley rest on the skin which is found at various depths below the surface, and here the Meriden Gas Light Company bought a 300 by 500-foot meadow lot adjoining its works on which to erect a new holder. Careful borings were made over a section 120 feet wide by 250 feet long to determine the thickness of the gravel, if any, and its distance below the surface. To the west of this section, and 25 feet distant, runs a shallow brook, 20 to 30 feet wide—shallow except in freshet time. About seventy-five tests were taken, and the result laid out and plotted into curves, so that the most desirable place for the site might be located. The top material was a sandy loam, evidently a silt deposited from the overflow of the brook when in past years it was not so confined; the next a good gravel, but very thin; below that a quicksand of unknown depth. At a few points the gravel was found as near as 2 feet from the surface and 2 feet thick, while at the others it was 8.5 deep and only 0.4 thick, shading off to nothing. The average depth, however, taken from the boring stations, was 5.5 feet deep and 1.2 feet thick. A boring of 50 feet taken in the centre of the site showed 42 feet of quicksand and still more below.

On such materials it was decided to construct the foundation and erect a steel tank holder, to be 115 feet in diameter and 103 feet high, holding 700,000 feet of gas in three lifts. The weight of the holder to be 475 tons and the weight of the water to be 8,625 tons, or a total of 9,100 tons.

As the work of excavating progressed and the gravel was exposed, there was found a clearly defined depression diagonally across the pit, as if at some time the brook had flowed that way; for logs and trunks of trees were found together with a quantity of brush. Through this depression the gravel was very thin, and in three places the quicksand was entirely exposed—the first, a space 10 by 15 feet; the second, a space 4 by 12 feet; the third, a space 3 by 15 feet.

Hardly had the whole of the loam been removed when a rain came, followed by a heavy freshet, overflowing the meadow and deluging the pit. When the water had subsided it was pumped out in 8 hours with a 4-inch centrifugal pump and a 7½ horse-power motor, though the water was 10 feet deep in some places. The freshet convinced the company more than ever that in erecting a holder it would be advisable to make the top of the foundation above high-water mark, which in this case would mean a fill in some spots of 12 feet, with an average of 8 feet, and the steel tank would be 2.5 feet above the level of the meadow.

At this point a difficult problem was confronted. Meriden topographically is on high hills and in a sandy valley; good gravel is a very scarce article. Four miles away, on the line of the railroad, is a large, poor gravel bank, and two miles in another direction is a small, good bank; but with all the teams that could be procured it was not possible to haul the material as fast as it was needed; and it was expensive—1 dol. per yard—delivered. It was evident that other and good material must be obtained in large quantities. On the line of the railroad three miles away is a large trap-rock quarry. Refusing the shape of iron-stone, soft rock and some dirt is accumulated in large quantities. It was believed this stone would mix well with the material which was on hand and could be purchased after it had been passed through the crusher to a 1½-inch size at 60 cents per yard delivered, and in quantities up to 150 yards per day. About 50 yards of gravel and 50 yards of clean sharp sand could also be procured each day, and as much as needed from the works as there were teams to put on it.

The question of piling was considered, and by some might seem the only wise plan under the circumstances, but after consulting the leading local builder who had worked on this quicksand for thirty years and had erected some very heavy factory buildings on it, it was thought best to put in a combination filling of the above-named materials.

The quicksand is found hard packed and not easily dug unless water is allowed to mix freely with it. Although the excavation was in places much below the level of the brook little water was encountered, and quite as much came from the land as from the brook side. By keeping the bare spots well drained the men could work on the quicksand with a degree of ease without sinking in very deep; the less it was disturbed however, the better off they were. Over these bare spots it was decided to lay plank close together lengthways of the holes and upon these 8 by 10-inch timbers, 8 inches apart, crossways of the holes. The filling between the timbers was of pieces of bricks and old retorts broken up fine, that being the best material at hand just then. One of the bare spots being narrow and long, the surface was covered with large flat stones, the smaller spaces being filled in with fire-bricks and coarse ashes.

While working at this low level a pump was run night and day; also from these quicksand spots a 4-inch tile drain was laid to a central point to facilitate drainage and keep the mass from becoming spongy while the tamping was going on at each course of filling was laid.

Until the whole surface approached a level no roller could

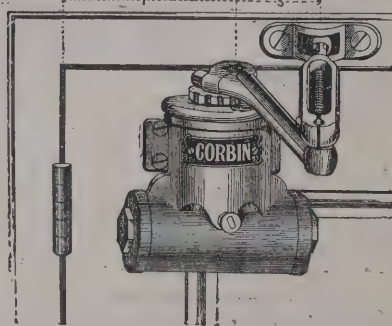


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was used, but everything put in was thoroughly rammed and sprinkled. The layers were about 3 inches thick over the whole surface. When the valleys were evened up a two-horse roller was put on, and as the thickness became greater this roller was increased in weight to 6,500 lbs., requiring four horses. When the level of filling had been raised above the natural water level the pumping was dispensed with over night, allowing the foundation to be saturated, but it was pumped out again in the morning.

Near the centre of the foundation a loose brick well was built up, into which the water ran as the foundation was successively wetted, and from which it was pumped to the brook. There were some high knolls of gravel not over 3 feet under the surface. It was thought at first that the 5-foot concrete side wall foundation might rest on these, but further consideration convinced the company that this was not advisable, as part of the foundation would rest on natural gravel, while most of it would be on filled ground, so the whole level was raised 1 foot to allow of the same kind of cushion underneath the whole structure before the 5-foot circle was started.

The layers spread each day over a diameter of 125 feet were about as follows:—125 yards of quarry refuse, 40 yards of good gravel, 50 yards of works' ashes. Towards the end of the work the ashes were exhausted. Near by was a bank of 100 yards of sand, and from this was taken what was needed to make the top dressing under the concrete, spreading on the tone, washing it in and carefully rolling. Toward the end the roller worked night and day.

Near the edge where the wall of concrete was laid, there was a space that could not be rolled, but had to be filled and tamped to a depth of 4 feet. In order to make sure that this portion was as solid as the centre, a round tapering bar 5 feet long was driven into the main foundation several times. Seventy blows on the average were required to drive it 4½ feet, and the outside ring was tamped until it equalled the above test.

The amount of material removed approximated 2,900 yards. The work of excavating and filling ready to begin concreting took twenty-two days, and six days more were required to fill in around the great circle after the concrete wall was 4 feet high. This, however, did not delay the concreters in their work. The filling was as per the following amounts:—Quarry stone or freuse, 1,780 yards; gravel, 680 yards; sand, 310 yards; ashes, 1,100 yards; total, 3,870 yards.

On this foundation was laid 630 yards of Portland cement concrete, in the following proportions:—1 of cement, 2½ of sand and 5 of stone. The size of stone was 1½ inch and smaller. A great circle of concrete 4 feet wide and 1 foot thick was laid 5 feet below the finished top. On this circle was laid a ring 3 feet wide at the bottom, tapering to 2 feet 9 inches wide at the top, and 3 feet high; resting on the ring was laid, over the whole diameter of 118 feet, a layer 1 foot thick, trued to perfect level and plastered smooth. This work was accomplished in eighteen days, and in a most satisfactory manner, a local engineer taking the job at 4.90 dols. per cubic yard laid. As soon as the foundation was ready the iron men were on the ground, and the holder was erected complete in a week less than the specified time of four months.

In order to prevent the action of the brook eating away the bank near the holder, a stone wall 7 feet high was built to the level of the holder foundation and 400 feet long, protecting also a new purifier building near the brook. City water was used to fill the tank, as the brook water contained acids. It took three and a half days to fill the tank, which holds a little over 2,000,000 gallons. Before the water was put in careful levels were taken on eight points of the foundations. After filling levels were again taken, and there was not the slightest settlement.

### A STEEL PRISON.

THE new part of the Tombs prison, New York, has a 52 by 184-foot wing 132 feet high, with heavy masonry walls and steel framework, which contains 320 cells for male prisoners. The wing has semicircular ends and a street entrance in the centre of one long side, opposite which is a transverse passage to an auxiliary building containing kitchen, laundry, dining-rooms, chapels and other apartments. In the cell wing the basement is devoted to the mechanical plant and storage, the first storey to general offices and apartments for the employes, the second and third storeys to cells, and the fourth storey to an airing court, which comprises all the floor space except a small portion in the centre, and is used for an exercising place for prisoners, the high attic being unoccupied.

The steel floor-beams, says the *Engineering Record*, are supported directly by the exterior walls and by a centre longitudinal row of steel columns about 13 feet apart on centres.

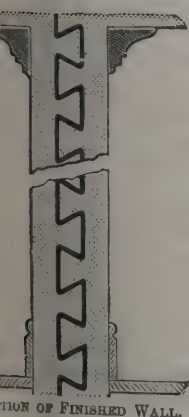
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Both the second and third storeys are 35 feet high in the clear, and each contains four tiers of forty cells each, arranged in two parallel longitudinal rows, 5 feet apart in the clear, as indicated in the general cross-section. The cells have grated doors and transoms, and are warmed by hot air delivered through ducts in the outer walls to the main corridors, and ventilated by ducts having registers in the rear cell walls and exhausted above the roof by electric fans. The space between the rows of cells is called the utility corridor, and in it are located all plumbing pipes and vent flues, and there is a grated platform covered with rubber matting at each floor from which the guards can inspect the cells through peep-holes, and from which the pipes are accessible. The ends of these corridors are closed with locked grated doors and with solid steel-plate doors, so that no circulation of air can take place between them and the main cell-rooms.

There is a 10-foot corridor between the cell-fronts and the outer walls, and the tiers of cells are symmetrically arranged with the transverse and longitudinal axes of the wing, which divide them into four sets of ten cells in each tier. In each tier the two sets of ten cells each on the same side of the transverse axis of the wing make one group, which has at the outer end a shower-bath cell, with its outer wall curved to correspond with the end wall of the building; between them is the entrance to the utility corridor. In each storey the three upper tiers of cells are accessible from stairways in the centre transverse corridor, and are surrounded on both sides, and the rounded end by U-shaped balconies 3 feet wide enclosed by steel gratings.

Each cell is about 8 feet long, 6 feet wide and 8 feet high, resembling one compartment in a set of steel pigeon-holes. The floors, ceilings, walls and partitions of the cells are made with burglar-proof flat steel plates and angles, countersunk rivetted together and supported on the steel floorbeams of the building. The 2 by 2½-inch vertical angles in the corners of the cells are ⅜-inch thick at the lower tier, and reduce by ⅛ to ⅜-inch at the upper tier. They are continuous through the four tiers in each storey, and have planed, ribbed cast-iron shoes seated on the floorbeams. All the sides of the cells are made of vertical steel plates extending down below the floor line to rivet to the corresponding plates in the cells of the tier below. The fronts of the cells are made of ⅜-inch smooth plates, rivetted at the top and bottom joints to inside 2 by 2 by ¼-inch horizontal flange angles, which are rivetted together through their outstanding flanges and form T's carry-

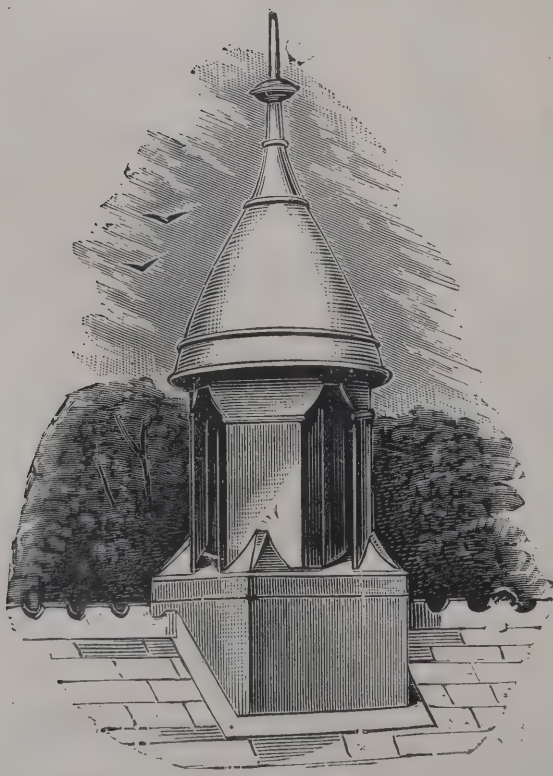
ing the cell floors. The cell walls next the utility corridor are similar, but ⅝-inch thick, made for each cell with two plates rivetted together, with planed edges and a vertical butt joint covered by double 4 by ⅝-inch splice plates. The floor and ceiling of each cell is made, like the utility corridor wall, of two steel-plates with planed edges, butt joint and covered splice, but in this case the plates are ⅝-inch thick.

The same plates serve for the floor of one cell and the ceiling of the cell next below, and are rivetted to the 2 by 2 by ¼-inch angles at the joints of the wall-plates. In the upper tiers of cells in each storey the two ceiling-plates are spliced together with an inside batten-plate and an outside 4½ by 2½ inch T-bar. The floor-plates of the first and fifth tiers are spliced with an outside T-bar and an inside batten-plate, and are well bedded in concrete. The floor, ceiling and wall-plate of all cells are reinforced by panelling of 2 by ⅝-inch tool-steel channel battens with round edges, neatly mitred and rivetted on in pairs on opposite sides, from four to 6 inches apart, with countersunk ⅝-inch rivets ground smooth. The partition-wall between cells are made with double ¼-inch plates with 8-lb sheet lead rivetted between them. Each partition is made of two plates with butt joints and double 4 by ⅝-inch splice-plates, and ⅝-inch rivets on 4 inches pitch. All the cell-plates are re-rolled toolproof steel, made of either Brooklyn chrome steel or "white diamond" steel. The former consists of three ply of iron and three ply of steel, and the latter has a soft iron core and a covering of converted steel. The plates were made under the constant supervision of inspectors, and were tested by ⅜-inch drill-holes 6 inches apart and by burglar-proof saws on the edges.

The fronts of the cell partitions are covered by plaster made of steel angles and panelled plates, they also form the door-jamb and are reinforced strongly enough to receive the lock-bolts which they are mortised for, and have ornamental cast-iron capitals and bases. The doors slide horizontally and are hung with two trolleys each from a track supported at intervals of 18 inches and enclosed in a continuous horizontal track-box with wrought-iron mouldings. The trolleys are strong enough to carry 1,800 lbs. each, and have double wheels with ball bearings. Above the track-box there is a continuous transom about 6 inches high, with ¾-inch square steel-bars 3 inches apart.

The cell doors are about 32 inches wide and 6½ feet high, with rivetted frames of 2 by ¾ by ⅝-inch steel channels and vertical ⅝-inch octagon steel bars 4 inches apart. The bars

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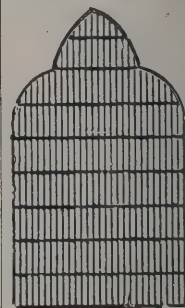
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pass through four 2 by 1-inch intermediate transverse strips, and have 3-inch octagon bars 4 feet long in the spaces between them. The balconies are enclosed by vertical square steel bars 9 inches apart, and have at the stairway doors similar to the cell doors.

Each cell is independently locked by a dead-lock, a snap-lock and a lever-lock, all of which may be used separately or together. A horizontal 1-inch chrome steel bar extends continuously across the fronts of all the cells in each row, and is carried in the track box over the cell doors. These levers can be moved from the lock boxes in the centre of the prison, so that bevelled dogs welded to them engage vertical bars attached to the three hook bolts on each cell door. The dogs fit the bolts free of the catches and thus unlock all doors in that row at once. The three bolts for any cell can also be simultaneously lifted independently of those on any other cell door by a handle-lever on the outside of the cell door, so that any door may be opened independently of the lever bar. The vertical bolt-bars are also pivoted to a system of links, which, when the door is dead-locked by a key, displaces them laterally enough to prevent the lever dogs from engaging them and so renders that door independent of the opening and closing of the other doors in the row. Finally, the lever bar has a second set of dogs which engage slots in plates in the top of each door, and so hold the doors securely from being slid open, even if the hook bolts are all released.

The Yale lock on each cell door has five pin tumblers, and the position of the keyhole indicates whether the bolts are dead-locked or spring-locked. The three 1½ by ½-inch bolts and the connecting and operating bars are protected and enclosed by chrome steel armour plates ¼ inch thick, rivetted on both sides of the door. A spring opener is fixed in the doorway jamb so as promptly to throw the door far enough when the bolts are released to prevent their engaging again until the door is fully closed. It consists of a horizontal coiled spring with a ¾-inch plunger having a ½-inch longitudinal motion. The bottom of the door slides between two bevelled angle flanges, and engages a rivetted stop and heavy rubber buffer.

In each cell there is hinged to the wall a steel bunk, made with a 1½ by 1½ by ¼-inch angle iron frame and 1 by 1-16-inch lattice bars with 3-inch mesh. A hinged steel table, a steel shelf and two clothes-hooks are also rivetted to the walls in each cell. The cell floors are covered with a 2-inch North

River bluestone slab in two pieces, with rubbed upper surface. The stones are bedded in 1:2 Portland cement mortar, and the ½-inch joints between them are caulked with hemp and run full of molten lead. All steelwork was painted one coat of pure linseed oil at the shops, and after erection was painted two coats of "superior graphite" paint and two coats of pure lead and linseed oil and finished with two coats of "porcelite." The panelled work was painted cream colour, the doors, cornices, transoms and ceilings were painted white, and the base of cells, 12 inches high, was painted black.

The brackets for the lower balcony floors are of cast-iron, and those for the upper balconies have double ¼-inch steel web plates with flange angles; all are rivetted to the steel plates in the front walls of the cells. The outer ends of all brackets are partly carried by 1-inch vertical suspension rods, continuous from the fourth floor girders to the lowest tier of brackets. The outer ends of brackets are rivetted to a fascia girder made up of 8-inch channels and steel plates with wrought-iron mouldings. The balcony floors, stairs and landings are laid with slabs of 1½-inch sea-green polished slate. The grating walk at each cell floor level in the utility corridor is made of 2½ by ¾-inch steel bars, edgewise, with cast-iron spool separators and ¾-inch tie rods. In the centre of the grating there is a ¼-inch steel plate to receive the rubber matting. Under the first tier walk, and over the eighth tier ceiling, there is a burglar-proof grating similar to the cell transoms, attached to the steel floor beams.

Messrs. Horgan & Slattery designed the cells.

### ACETYLENE GAS GENERATORS.

IN January last a circular was issued from the Home Office to the various manufacturers of acetylene gas generators inviting them to submit their apparatus for a test, to be made under the direction of a special committee appointed by the Department of H.M. Inspector of Explosives. The manufacturers in nearly every instance gladly availed themselves of this offer, and forty-six different generators, representing nearly the whole of the various types of generators in use in the United Kingdom, have been tested. A report has been issued which embodies a short description of each apparatus submitted, and the efficiency of each apparatus is given.

Although the generators submitted have in no instance shown evidence of being otherwise than safe under the con-

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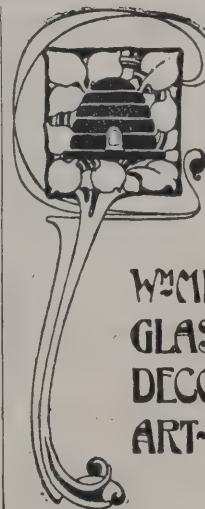
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ditions of the test to which they were subjected, the committee consider many of them are unnecessarily complicated in design, and some are not sufficiently strong in construction. They state that the points to be considered in the selection of a generator are:—Simplicity of action and design, strength of construction, high efficiency as indicated by the yield of gas per pound of carbide, low pressure in generator and facility of removal of the residue.

The machines tested can be divided into three classes:—Non-automatic; automatic "carbide to water" generators; automatic "water to carbide" generators. In the first class ten generators were submitted, eight of which, however, failed to come within the standard of efficiency considered safe by the committee, viz. 90 per cent. of the possible yield of carbide. The remaining two, which came well above the limit, were the Ideal, 99.80 per cent. efficiency; Willeys No. 2, 96.15 per cent. efficiency. With this type of generator a storage holder is necessary of sufficient capacity to take up the total yield of gas from the carbide contained in the generator, and it is in this respect that it varies from the automatic class, which are intended to generate the gas as required for consumption.

English inventors appear to have found the automatic carbide to water problem a difficult one to cope with, though the system is largely adopted on the Continent and in America, as only six generators of this class were submitted, and four failed to reach the standard of efficiency laid down by the committee. The machines which passed satisfactorily were:—Strode's "Perfect," 94.72 efficiency; Hesperus (portable), 94.28 efficiency. The great advantage of the carbide to water generator, properly constructed, is the purity of gas generated and absence of after generation, which next to absolute safety are the chief essentials of good acetylene gas generators.

Twenty-nine firms were represented in the water to carbide class, sixteen with generators having an efficiency of 90 per cent. and over, and thirteen whose generators did not reach this:—Sunbeam, 99.39; Economic, 98.8; Gregory Smith No. 1, 98.8; Allen, 97.59; Moss's, 97.54; Strode's, 97.52; Sir Chas. Forbes, 97.05; S. C. Sovereign, 96.85; Auto-Simplex, 96.74; Imperial (1 lt.), 96.00; Owens, 95.04; Home and Colonial No. 2, 94.31; Rosco Automatic, 91.46; Salisbury "Bleriot" (motor lamp), 90.47; Leading Light, 90.20, and Read Halliday, 90.00 efficiency.

The efficiency in some instances was under 70 per cent, and it is difficult to account for a loss of over 30 per cent. of the total yield of gas. It would have been interesting to know

something of the conditions under which the machines were tested. For instance, the amount of carbide with which each machine was tested, the number of hours each machine was run, the purity of gas generated, and if any generators were tested with purifiers attached.

We suspect that the low efficiency in a good many instances was caused by a purifier, which not only took the impurities out of the acetylene, but evidently part of the gas itself. War also absorbs acetylene gas, one cubic foot of water taking one cubic foot of gas, and consequently machines having great bulk of water would show a low efficiency until the water became saturated with gas, when the absorption would cease except when the pressure in the apparatus was high, when the water would always be a certain diffusion of gas from the water in the air.

The committee give in an appendix the various conditions which a generator should fulfil to be considered safe, which may be summed up as follows:—Low temperature, efficiency 90 per cent., gas pipes to be of full size, complete decomposition of carbide in the generator, low pressure, absence of impurities, precautions taken against freezing, lime sludge not to have access to gas or water pipes, glass gauges to be avoided, space small as possible, copper parts to be avoided.

We know as a fact that a great deal of harm has been done to the acetylene industry by the cheap and imperfect machines put on the market in the early days, and also by the unskillful manner in which installations have been fitted up, so that acetylene gas has been stigmatised as a stinking nuisance, and the unfortunate possessor has gone back to the old-fashioned oil-lamps and candles, and relegated the generator to the scrap-heap. With a good generator, properly fitted pipes and properly constructed gas-fittings, an acetylene gas installation can be made a perfect success. One must, however, go to a firm of good standing who have a reputation to maintain, and who can give their client the benefit of practical experience. There is a great future for acetylene gas. It is an ideal light, and specially suitable for country houses, churches and isolated buildings, and even villages. The initial outlay is comparatively small, and with calcium carbide at 2. per ton, at which price it can be delivered anywhere in England, the cost of the light is no more than coal-gas at 1. per 1,000 cubic feet. Calcium carbide can be produced on the Continent and in America at about 12. per ton, and there is every prospect of the production in England being considerably cheapened.

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# The Architect.

## THE WEEK.

THE late Sir ANDREW CLARKE, who died on Saturday, was the most versatile of modern Royal Engineers, but it must be recorded to his credit that he never attempted to pose as an architect or to interfere with civilian architects. He seemed to be equally adapted for war and civil administration. He was Surveyor-General in Victoria, and he helped to frame the constitution of the colony. He was an elected member of the Legislature, and acted as Minister of Public Lands. In course of time he was appointed Director of Works for the Admiralty, and did much to improve the fortifying of Chatham, Portsmouth and Plymouth, together with other arsenals in the Colonies and India. In India he served for five years as Minister of Public Works, and the problem of water-supply long engaged his attention. In 1882 he was selected for the post of Inspector-General of Fortifications. For Malta he designed remarkable dock-gates which were carried out by Messrs. EASTON & ANDERSON, and his floating dock in Bermuda was at once recognised as a great invention. Although he rendered the State so much service, it could not be said that he was rewarded as liberally as many officers whose work was less enduring.

THE oration which was delivered by the Emperor of GERMANY on the completion of the Sieges-Allee in Berlin was not received with much favour by critics in Germany or in foreign countries. His Majesty likes to give surprises, and in an age which is every day becoming more realistic he advocated the adoption of idealism as the aim and object of every artist. All things come to him who can wait, and a formal declaration in favour of the Imperial suggestion has been sent from Monte Casino, the ancient convent which was for so long the home of scholars and artists as well as monks. It appears that a brotherhood of German monastic artists have undertaken as a duty to adorn the tomb of St. BENEDICT with mosaics, reliefs in stone and bronze, and works in granite and porphyry, as a tribute to the founder of the great order that helped to civilise Germany. They declare that they have been inspired by the love of the ideal which the Emperor recommended, and also believe that it is closely connected with the welfare of mankind. The Emperor thanked the monks through the ambassador in Rome, not only for the address, but for their labours in the adornment of the renowned abbey. The history of OVERBECK and his friends in Rome reveals that sixty or seventy years ago an effort was made by Germans to restore the practice of early Christian art. They anticipated the pre-Raphaelites, but their attempts were of a different character. The German works could be said to follow the ideal, for they were more suggestive than representative, while the English artists lingered over details. But if tradition alone is to be observed, all that has to be done is to imitate the example of the religious painters of the Greek Church. It is possible in Paris to buy to-day *icons* which correspond to a hair with altar-pieces which were produced in mountain monasteries ages ago. The German brotherhood will have, we suppose, a different ideal, for as they must have Western ideas they are never likely to agree that only one type for each holy person can be allowed.

ALTHOUGH judgment has been given in respect of the accident that occurred on the stage of the Variétés in Paris at the end of last year, it must not be concluded that the law suits have come to an end. In addition to the 700*l.* awarded last week the two plaintiffs may yet receive much larger damages, and there are a great many additional claimants to be compensated. Modern performances rely for much of their success on carpentry. It is to be expected that the failure of the carpenter's work will cause financial losses proportionate to its importance. Indeed, as woodwork has become so influential, a French writer feels the highest compliment has been paid to him when he is

informed that his book, play or poem is an excellent piece of carpentry. In the Variétés a staircase was to be presented as an attraction in a "revue." Apparently the constructor considered the framing ought to be in keeping with the dialogue and the scantily-dressed performers. He neglected to screw the parts together, and the glue was not allowed sufficient time to dry. The stage-carpenter professed to be ignorant of the load that was to be brought on his handiwork, but several witnesses testified that he was aware of the arrangement. The judges were of the same opinion, and inflicted a fine of 200 francs upon him, a sum that is out of proportion to the sufferings caused by his carelessness. In all theatres there is far too much reliance on the empiricism of the mechanics. The kind of spectacles which are now produced necessitate more knowledge than the men possess, and we hope it will not be necessary to demonstrate that fact by catastrophes in this country. The director of the theatre will have to pay 10,000 francs to a young actress of sixteen, and 8,000 francs to the venerable M. LASSOUCHE as provisional compensation. But those sums are only fractions of the total amount which will be demanded by the remaining victims.

WHEN the portrait of RICHARD II. was discovered in Westminster Abbey it excited extraordinary interest. It was restored under the direction of GEORGE RICHMOND, R.A. The picture was a revelation, and confirmed the belief in the weak-mindedness of the king, and suggested the absence of exaggeration in SHAKESPEARE'S tragedy. In the WINTON collection is another portrait, which is no less expressive. The question arose about the origin of the portraits and the painters who were likely to have produced them. Mr. CARPENTER, of the British Museum, was in favour of a Bohemian artist, while GEORGE SCHARF believed the portraits were by Italians. Mr. C. F. BELL, of the Ashmolean Museum, Oxford, now supports the Bohemian theory. RICHARD'S first wife, ANNE, was, he says, accompanied by a numerous band of Bohemian followers, amongst whom a painter may with great probability, considering the flourishing state of the arts at the Court of Prague, have been included. "The enlightened mind of this short-lived queen, displayed in her sympathy for the doctrines of WYCLIF, is traditional in history, and it is surely not over-hazardous to conjecture that for the first breath of the Renaissance, as well as for the earliest light of the Reformation in England, we may be largely indebted to her fostering care." There was a connection at the time between England and Bohemia. When MOWBRAY was banished by RICHARD II. it was understood that during his exile he was to remain in Germany, Hungary, or Bohemia, and out of his great estates he was allowed to reserve 1,000*l.* for his expenses. Mr. BELL alleges that the exhibition of early Bohemian pictures which is now to be seen in Prague is a convincing proof, from the similarity of style, that the two portraits of RICHARD II. have had a Bohemian origin.

THE French are so impulsive, it is not surprising that sometimes workmen go on strike without giving an hour's warning to their employers. Any action of that kind is, however, contrary to the spirit of French law. The obligations of the men have just been announced by the Advocate-General. It appears that their right to join in strikes is limited by the rights of other parties, that is to say, of employers, and therefore signifies that the ordinary relations between employers and employed must be respected. If artificers were allowed to suddenly stop working under pretext of a strike, and in that way failed to carry out an implied contract, it would be also equitable for employers to combine and dismiss their men without any notice. If employers were to imitate the men, thousands of workmen could be at once cast into the streets, and in France that would mean a crisis. The test case which produced the statement was that of a locksmith, who was summoned for taking part in a strike of building workmen. He maintained that he did no more than make use of "la loi des grèves," which was one of his privileges as a citizen. But the Courts confirmed the judgment of the Civil Tribunal, and ordered him to pay 28 francs or a week's wages in lieu of notice.



## STONEHENGE AND ITS APPROACHES.

THE agitation about the enclosure of Stonehenge may not at present be general, for people have now to turn their attention to more pressing subjects than the possession of a few mysterious stones. But it is sufficiently important to deserve consideration. Stonehenge is one of those cases which suggest anomalies in English jurisdiction. It is commonly assumed that the stones and the land about them to an indefinite extent, as well as the approaches from all towns and villages in the vicinity, belong to the public. People who think in that way do not realise how infinitesimal a portion of this country can be legally regarded as national property. It would be impossible to indicate the extent on any ordinary map. Even commons, which from their name would be concluded to be part of the general estate, are in many instances held on so uncertain a tenure that encroachments seem to be always impending and are resisted with difficulty. The land of England was once admitted to be the property of the monarch. He made grants under certain conditions to his favourites or to religious bodies. But the principle of individual ownership is still paramount, and there is nothing unwarranted or peculiar in the belief that a monument like Stonehenge, of which the origin and purpose are unknown, stands in the same category as Hyde Park or Richmond Park.

In the case of Stonehenge there was for a long period much indifference about the ownership. The land bearing the name of Salisbury Plain was not valued for agricultural purposes, and that may account for the treatment of it as if it belonged to nobody. STUKELEY, in the middle of the eighteenth century, lamented an encroachment on the margin of it by the plough, which, he said, "threatens the ruin of this fine champaign, and of all the monuments of antiquity thereabouts." To his mind any alteration of the ground was as unauthorised as meddling with what he thought was the prehistoric Westminster Abbey of Britain. Space is absolutely needed in order that the stones shall produce their full impressiveness on the mind of the visitor, and what more natural than to suppose that space and stones were an inheritance from remote ancestors? In the description which EMERSON gives of his visit to Stonehenge in company with CARLYLE he dwells especially on the effect of the large area around the monument, as if one was the complement of the other. He says:—"On the top of a mountain the old temple would not be more impressive. Far and wide a few shepherds with their flocks sprinkled the plain, and a bagman drove along the road. It looked as if the wide margin given in this crowded isle to this primeval temple were accorded by the veneration of the British race to the old egg out of which all their ecclesiastical structures had proceeded." EMERSON was under the delusion that Salisbury Plain belonged to the British public, and if the stones could have been brought to America a still wider expanse would be assigned to display them. CARLYLE, however, who was in one of his grumbling moods, desired that evil might fall upon all those who would use the downs for a wretched sheepwalk when so many Englishmen were hungry and wanted work. "But I heard," adds the more shrewd American, "afterwards that it is not an economy to cultivate this land, which only yields one crop on being broken up, and is then spoiled."

EMERSON would be likely to have lost his philosophic equanimity if he had realised that in wandering round the stones and clambering over them he was a trespasser on a private estate, and that most of the tracks across the plain which lead to the enclosure were more like garden walks than public thoroughfares. Englishmen were no less in the dark. There is uncertainty about the origin of Stonehenge and the purpose for which the stones were raised. They may be 6,000 years old or date from a remoter or nearer time. But amidst so much that is doubtful there is no question that the remains and the ground on which they rest belong to Sir EDMUND ANTROBUS, and he can deal with them in exactly the same manner as he would with the rest of the estate which he has inherited. And here let us say that much credit is due to Sir EDMUND ANTROBUS, as well as to his predecessors in title, for the interest taken in Stonehenge. There may be difference of opinion about the prudence of the recent measures which

were taken for the preservation of the monument, but archaeologists must respect the motives by which Sir EDMUND ANTROBUS was actuated.

It is also well to understand that some of the objectors who are opposed to him are not entirely disinterested or inspired solely by the love of archaeology. The parish council of Amesbury have taken the initiative in persuading the county council of Wilts to hold an inquiry into the enclosure of Stonehenge and the interference with the rights of way to the monument. But in the petition it frankly admitted that obstruction is detrimental to the best interests of the parish, "which has enjoyed considerable benefit from the hitherto free and open condition of the monument." If translated into other words, it means that the people of Amesbury derive profit from the visitors to Stonehenge, and if the number should be reduced by a wire fence or restriction to one route across the plain, then there would be a financial loss; and to avoid that result efforts are made to induce others to become the defenders of the Amesbury rights. The grievance cannot, however, be felt beyond the parish boundaries, and it is likely to be much more circumscribed. This is to be inferred from the indifference of the Amesbury rural district council on the subject, for the members declined to take action after hearing all the particulars. The parish council had then to memorialise the county council, and an inquiry was held last week, with what result has yet to be made known.

As we have said, the objections are based on two grounds. In the first place the enclosure has been surrounded by a fencing of barbed wire, and a fee of 1s. is now charged to anyone who wishes to pass through it. There is something absurd and incongruous in protecting so ancient a memorial by means of lines which have been disapproved when set up as a substitute for hedges. Barbed wire may be useful as a defence against Boers and hunting men, but on that account it seems out of place as an environment of a few dismal stones on Salisbury Plain. It is, however, unobtrusive, and it is cheap and effective. Sir EDMUND ANTROBUS has expended money in setting up some of the stones and in adopting constructive provision for their stability. He has not exceeded his rights when he seeks to recoup himself for a part or the whole of his outlay. Moreover, with a wire fence there is less opportunity for knocking off pieces of the stones by vandals and, in proportion as interest is taken in Stonehenge, the stronger is the desire for individuals of a certain class to possess fragments of their prowess in breaking rules.

In the second place there is a resolve to close most of the tracks which cross the plain, and which were suggestive of public rights. There is no doubt that evidence is forthcoming by the drivers of vehicles from Wilton or Salisbury who could follow more than one course to the enclosure. That was a convenience, especially on occasions such as June 21, when about two thousand people make the journey to Stonehenge in order that they may see the sunrise, and in that way imagine they obtain a key to the mystery surrounding the place. How far that use under the peculiar circumstances created a public right, we need not inquire. But it is certain that the rural district council, in opposition to the parish council, expressed themselves as satisfied with the removal of certain obstructions on the highways, but declined to offer an opinion as to the rights of public access to Stonehenge.

While admitting to the fullest extent the privileges of ownership, it is none the less to be regretted that so unique a treasure should not be under the guardianship of the highest authority in the land. Stonehenge is a title-deed through which the country can claim acceptance by the rest of the world as being the scene of rites and ceremonies in a remote age. It is one claim to distinction. There are prehistoric monuments in various places on the Continent, but none of them seem to have been arranged with the same care that is visible at Stonehenge. It does not matter whether the purpose to be served was astronomical, or monumental, or ritualistic; the fact remains that some determined plan was realised in the arrangement which brought renown to the island. From what is known of ancient customs it is not unlikely that Stonehenge served as a goal for tribes of men, as Mecca and other places still serve in our time. Property which possesses so much national importance is not adapted to be held by any individual,



however appreciative of its interest. Although in England it is not easy for the public to acquire private property, yet the Ancient Monuments Act allows of arrangements being made by which the State can perform the duties of guardian while leaving to the owner all other proprietary rights. In no case can an individual guarantee that his successors will hold the same opinions as himself, and it would be possible hereafter for an owner of Stonehenge to inflict irreparable injury on the country by his treatment of the monoliths. That is a prospect which we are confident Sir EDMUND ANTROBUS would regard with horror; but against it there is no security unless through the intervention of the State. Under the control of Government the safety of Stonehenge would be secured. There would be no interference with private rights in roads or tracks; there would be no displeasing enclosures. Stonehenge would then become, not only a relic of antiquity, but a memorial of the patriotic spirit of its present owner.

### ANGLO-AMERICAN BUILDINGS.\*

THE superseding of the English timber church by one of stone or in the Roman manner was a revolution, although it may now appear no more than a mere change of fashion in building under foreign advice. Timber, it should be remembered, was a material which possessed peculiar associations for the most energetic if not the most numerous of the inhabitants of England. There were so many forests in the Germany of their ancestors, the trees came to be regarded as if they were natural forces of more importance than the men who found shelter and protection amidst them. The Romans related that the forests were sacred to the Germans, and when the ancient belief became more restricted, particular trees were selected for veneration. The Yggdrasil ash was long accepted in Northern mythology as a symbol of the world, and the names ash and alder were long applied to men. The conditions of life of another part of the Germanic race were also likely to give interest to timber. The sea-rovers who were connected with the British Isles as invaders and as settlers spent a great part of their lives—that which they most enjoyed—in timber vessels, and their houses to some extent resembled their boats. In Iceland, where we are best able to study the characteristics of the race, there were no towns in the modern sense of the word. The nearest approach to one was made up of detached homesteads, for the Northmen could no more realise the advantage of a collection of houses united in a street than of boats cabled together in the firths. The people wished to be as independent on land as on sea, and the desire was furthered by means of timber houses.

We can well understand how strangers from Rome coming to Germany would conclude there was a relation between timber or forest temples and idolatry or nature worship. Missionaries would advocate the employment of stone as more Roman and more orthodox. In England also an effort would be made to attain a like result. The history of Ripon Cathedral affords an example of the consequences which followed the attempt to introduce the Roman manner. St. WILFRID offended the monks and people of the district by erecting a building which was of stone, and supported by columns and pillars. It was considered to be a foreign innovation, and much prejudice was excited against the prelate on account of it. One cause of the dislike to stone probably arose from the circumstance that in some of the Northern traditions stone-pillared dwellings were said to be found only in Hell (Hades) or on the road thither.

The influence of churches on buildings of a different class cannot be measured by what takes place in our time. The church was supposed to be the nearest approach to perfection, and inspiration was derived from it, if only remotely, for domestic buildings. The use of stone, apart from its endurance, was however an agency in our progress. It not only required skill in its employment, but it led to other arts. To obtain stone it was necessary to employ

quarrying, and a wall would not last or keep out bleak winds without the use of mortar. The adornment of stone by carving was also more difficult than with wood, and, in fact, to produce a church or a house of masonry was a less simple affair than if they were formed of timber, and in that way development was aided.

In course of time, however, convenience rather than precedent dictated the materials for buildings in this country. The Saxon found he could be sufficiently safe in dwellings where timber was largely if not entirely employed. The Norman, who distrusted the people he oppressed and knew the skill in attack of his fellow strangers, believed in thick stone walls with openings reduced to the smallest dimensions. At a later date a compromise in the form of half timber, like compromises in general, found much acceptance not only in England but in Normandy. Although it might be presumed the combination was not likely to insure substantiality, many of these houses have survived during several centuries. We owe much to the old wood-workers who have produced so many lasting examples of building which sometimes suggest forms that appear to be native and sometimes are derivative, although it is not clear how English workmen could have become acquainted with the originals. Americans will, therefore, although they possess only partial evidence of the English craftsmen's scheme, agree with Mr. PAUL WATERHOUSE when he says in one of the essays introduced in the collection of Colonial Work:—

I think that the house carpenter has somehow lacked a poet to sing his praises, and even historians have rather allowed him to be overshadowed by the mysterious mason. There can be little doubt that for centuries the carpenter was, in England, the great transmitter of tradition, the great artist in construction, and a contriver of so high an order as to merit the name of designer. He was a great man in Gothic times; he was a great man still in Renaissance and Georgian times; and whereas the mason undoubtedly changed his personnel, occasionally being at one period and another a foreigner, introduced to carry out the new ideas from the Continent, whether Italian or Dutch, I expect that our friend the carpenter must have endured much less of foreign substitution. With the versatility of his craft he lent himself easily to the new modes (which were, in truth, such old ones), and found with all the joy of an artist that these cymas and ovolos, flutes and astragals, were the very things his tools were meant to work. He was, without more ado, at home with these bits of Rome and Greece. He worked, he prospered, and became the backbone of Georgian art.

In the United States they cannot point to examples of half-timber work, although in some New England houses they claim to have something which is distantly related to it. There is, however, the overhanging upper storey, which was at one time explained as a mode of defence against Indian enemies. The arrangement is now considered to be no more than an imitation of an English method by English carpenters, and which was followed by their descendants. If LONGFELLOW can be taken as an authority, it was also to be found in the French village of Grand-Pré, Nova Scotia:—

Strongly built were the houses, with frames of oak and of chestnut,  
Such as the peasants of Normandy built in the reign of the Henries.  
Thatched were the roofs, with dormer windows; and gables projecting  
Over the basement below protected and shaded the doorway.

The history of Boston begins with the seventeenth century, and in consequence much interest is attached to whatever recalls the early settlers and their immediate successors. A Boston newspaper has obtained information from correspondents which proves that in Massachusetts alone there are over 150 buildings of that time, some being constructed in timber, including the House with the Seven Gables, HAWTHORNE'S birthplace, and sundry houses which history or fiction has made memorable.

There were other settlers besides those who fled from England for conscience sake. It is sometimes difficult to say whether an old building in an American town is English or Dutch. Apparently, undoubted Dutch work is very circumscribed in its habitat. According to one of the writers, "Aside from the immediate neighbourhood of

\* *The Georgian Period*, being Measured Drawings of Colonial Work. Part IX. Boston: American Architect and Building News Company.



New York the work of the Hollander had little direct influence on the building done in America during the eighteenth century, and this is all the more disappointing since one of the myths relating to the gambrel roof is that it was derived from Holland."

The influence of Germany is wider, but is very quietly expressed. The German, although he always has had a grandson's affection for his old country, cannot escape the longing for an ideal even in existence. Every reader of "Evangeline" remembers how in her search the Acadian girl sometimes found refuge "in the tents of grace of the meek Moravian Missions," and how in the early dawn the German farmer met her returning home from her watchings. The history of the emigration is saddening. It is recorded that in one year two thousand Germans died during the passage across the Atlantic. There were various settlements, but Pennsylvania attracted them beyond all the other parts. There is not much of their work, however, to be seen in Philadelphia, for the Quakers who held authority in the town despatched German immigrants, as they were skilled in arms, to various places along the frontiers. Bethlehem was founded in 1741, and its name was given to it by Count ZINZENDORF, the Moravian. In the church the German love of music still prevails, and the following description of one of its consequences is interesting, especially as the influence of music upon exterior architecture is a subject which has not received much attention:—

At Bethlehem the trombone is *par excellence* the instrument, and its use, or rather one of its uses, has had a curious effect on architecture. Just as in some towns the "passing-bell" is tolled in the church tower as the weary soul has just taken its flight, the same function is at Bethlehem discharged by official trombone-players, four in number, whose duty it is to ascend to the tower of the church and there blow to the four quarters of the town the news that brother or sister, maid, man or widow lies a-dying, the age, sex and marital condition of the departing being indicated by the chorale that is played. This custom brings it about that the church tower must be provided with a platform or gallery, around which the players can pass, and from which they can blow their mournful messages.

In the Moravian buildings double ranges of dormers are to be found, which recall the high roofs of German towns, and as was to be expected from so careful a fraternity the buildings, although some of them are 160 years old, are in excellent condition. By the irony of fate the chapel, with its house and the Gemein-haus, form "a curious contrast to the great industrial plant in the once quiet township which now turns out armour-plate and great guns." The "Old Trappe Church" at Collegeville is very humble, and dates from 1745. It resembles a Dutch church at Sleepy Hollow in Tarrytown, which, in spite of its simplicity, has inspired a good many modern churches. The old Swedes Church at Wilmington, which was erected in 1698, is still used. The love of antiquity can be gauged from the fact that the congregation of St. Paul's Church, Boston, although it is not very old, refused a million and a half of dollars for the site. English associations are also revived by numerous inns. Their origin is thus described:—

Men of business as well as men of peace, the Quakers of Philadelphia were the connecting link between the farmers and trappers of the interior and the mother country, and in prosecution of their business they and others had to travel widely over the State; and as Pennsylvania is not as well served with rivers as is Virginia, their journeys had to be taken on horseback or in some form of vehicle. Along the travelled roads, then, that were thus created in every direction, there were established after they had become stage routes numerous inns and taverns, many of which, being as substantially built as other buildings of the time and district, still exist, a few still serving as inns, and others converted to different uses. These inns seem generally to have been kept by English hosts, for the sign-board that swung before the inn usually bore a name and painted cognisance of the same class as those that hung before many an old English inn, and we hear of "Red Lions," "White Horses," "Mariner's Compasses," "Blue Boars," "Rising Suns," and so on in different directions. Perhaps the oldest of these inns now extant is the "Jolly Post," on the Frankford Pike, built in 1680; but as the Lancaster Pike was the first turnpike road in the State, some of the many inns along its length may be older yet.

In reading the descriptions and glancing over the plates of the latest addition to the series of "The Georgian Period" we seem as if we were still in England. There is so much that is homelike, it is difficult to realise how wide a space separates us from the buildings which are illustrated. We should be thankful that the English emigrants were not endowed with much imagination and relied mainly on the memory. Their treatment also indicates a characteristic of the race, for under new conditions which would seem to invite license, tradition is respected and laws are observed although they may not be the best of their kind. The early Puritans continued the church services and the mode of administration of justice with which they were familiar in England, and the carpenters and masons repeated the old forms which they had produced in English towns and cities. Modern Americans cling to the buildings with affection, and it is gratifying to find that there is a demand for the exact representations of details which constitute "The Georgian Period," every part of which should be almost as interesting to Englishmen as to Americans.

## STRUCTURAL COLOUR DECORATION OF THE INTERIOR OF PUBLIC BUILDINGS.\*

IT is a remarkable fact that since the sixteenth century in England the practice of decorating in colour all our buildings, both public and private, as a natural and expected action, has declined. It is as if our countrymen, who lavished colour in cathedral and castle during the centuries preceding the Reformation, had suddenly lost all hearty desire to beautify their buildings in this particular way. We know that England was not behindhand in knowledge of the decorative arts. The remains of the noble craftsmanship in painting and sculpture of the thirteenth and fourteenth centuries go to prove that Englishmen knew how to paint and to carve. The late Professor Middleton has said of English art from 1260-1320:—

"The painting of England was unequalled by that of any other country; even in Italy, Cimabue and his associates were still labouring in the fetters of Byzantine conventionalism, and produced no works which for jewel-like colour and grace of form were quite equal to the painting under Edward I."

Encouraged by kings such as Henry III. and by the Church, English artists decorated Canterbury, Westminster, Salisbury and countless buildings throughout the land; but the civil wars, the coming of the Renaissance from abroad, the fall of the Church and the growth of Puritan feeling seemed to paralyse the development of native decorative art. No Pinturicchio arose here as in Italy, no Raphael to work with the architects in the adornment of public buildings. The Renaissance, instead of adding to our confidence and energy seemed to condemn us as insular, to be without artistic knowledge, unworthy to paint frescoes. Little belief in our powers was shown by those in high places, by those able to commission and encourage. Was sculpture needed, or painting, the artists must come from abroad. Torregiano must make the king's tomb; later, Rubens alone can paint the roof at Whitehall, just as Vandyke must paint the portraits. Verrio must paint the ceilings and walls at Hampton Court. Though, through it all, there were English painters whose works we know, and many art craftsmen, the English artist was eclipsed by the superior skill of the foreigner. With the advent of Wren, the great English master, we find our countrymen again employed in important work, Streater in the Sheldonian at Oxford, and still later, Sir James Thornhill at St. Paul's and at Greenwich.

It has been said that the revival of letters 400 years ago made it no longer so necessary that the walls of public buildings should furnish a literature for the people, and thus a great incentive to noble, historical and allegorical painting died. Together with the sciences, the painters became learned and conscious. The naiveté of the earlier masters changed to greater care in exactness of representation, but with the old impossibility of the human race to do all things well and perfectly at one and the same time, their works lacked the simplicity and dignity of the earlier period. Architecture thought more of itself and less of the other arts which were previously combined with it to form an organic whole. If she used painting it was more as a mistress employs a handmaid, and less as an equal co-operating with an equal, and painting apparently would have it so. Instead of covering wall surfaces with representations of noble deeds by great men, or pictures portraying the mightiness of virtue and the baseness of evil as in the days of Giotto and Lorenzetti, she wasted her powers, her perfect knowledge of technique, in extravagant flatteries of

\* From a paper by Gerald C. Horsley, read before the Applied Art Section of the Society of Arts.



her employers, such scenes as we see Rubens painted for Marie de Medicis, the Apotheosis of James at Whitehall and the foolish scene of Olympus, by Verrio, at Hampton Court. Can we wonder when we see the purpose of painting reduced to these inanities that the link uniting her to the great art of architecture would not bear the strain, or that we should have seen, as we have seen, painting and architecture widely separated, the one perfecting herself at the easel and the other working experiments in the different styles?

We cannot imagine a more half-hearted or more selfish condition of things, or one more contrary to the spirit of the great days of art. It is, at any rate, to the credit of English architects that they have all along recognised—and with much fulness of late—the harmfulness of the position.

On the other hand, we have also to notice that the Continent has never lost in the same degree as ourselves its interest or delight in the use of colour decoration. Changes not dissimilar to our own have taken place, but the arts of architecture and painting never lost touch one with the other as they did here. In Italy to this day a colour scheme in a new building has a prominent place. In France a church, a mairie, or a theatre, even a railway station,\* is not considered complete until it is painted in tempera or with canvases, "marouffe," so that they form part of the building. Such conditions as these may also be found in Germany and Austria. England alone seems with but few exceptions to disregard colour as a necessary element of beauty in the designs of the interior of her public buildings.

What these exceptions are we may presently consider, but it is time to discuss the two divisions particularly with some regard to our work and practice at the present time. First, those buildings whose actual materials form a colour scheme. This is a method of decoration which was more in favour with the last generation of art workers than it is with us at the present day. We are reminded of the buildings of the "Gothic revival," of the works of Butterfield and Street.

These buildings were the result, no doubt, of visits to Italy, where their prototypes may be found, also of a study of our own Gothic period, when a certain amount of parti-coloured wallwork was done, brought to us by the Mediæval current of art practice from East to West. Modern churches like All Saints, Margaret Street, and Keble College Chapel, by Butterfield, and the church in Garden Street, Vauxhall, by Street, are buildings of this type.

In process of time we seem to have largely passed away from this kind of work; it does not now seem so well worth doing; the results obtained were often cold looking, harsh and mechanical, owing perhaps to the mathematical accuracy of modern building methods, but there was a principle underlying it all, one of value which cannot be lightly dismissed. We must remember that when Butterfield did this work it was a great achievement, a launching out into new methods, a deliberate attempt at a human expression in art, and a clean break away from the (to him) cold and formal, dull and vacuous interiors of 1845. Butterfield, in All Saints, has done this, his first essay in the manner, with consummate skill and largeness of feeling, better than at any later time, and better than any of his imitators, and there were many who followed his lead. Few artists ever took such great pains or had such great gifts as William Butterfield. We must not think that he introduced this coloured work with the sole intention of breaking up the appearance of the wall surface. This was clearly not his main idea. With the "true principles" of the neo-Gothic architect—and here, I think, we have the principle underlying so much of this work—his aim was to get a permanent wall decoration, one which would outlast the usually improperly made plaster wall covering. He recognised the difficulty and expense of securing any form of painted wall decoration, also the deleterious effects upon any painted surface of the fumes from gas lights and oil lamps, and the evilly charged atmosphere of London and our great cities. He set himself therefore to produce something which was suitable, lasting and easily kept clean. He did this admirably. Take, for instance, the wall surface at All Saints, Margaret Street. First there is a dado of full colour some 5 feet high of tiles; above large scenes from the New Testament painted on tiles. Above the arches of the nave arcade the wall surface is stone inlaid with bold patterning in tiles and dark inlay. On the east wall only is there any painting. Here are frescoes by Dyce in panels spaced between margins of alabaster. The roofs are vaulted and painted in the chancel, and painted wood in the nave. With the exception of the pictures on the east wall there is not a scrap of plaster in the church, and no one will deny that the scheme is interesting and good. In Keble Chapel there is a very similar scheme, but in materials more precious as befits a college chapel of such importance. Here the lower part of the wall has an arcading of stone, with the spandrels formed of coloured bricks. Above at a height of some 10 feet from the

floor are pictures, the subjects from the sacred history, in mosaic, and framed in stone. The pictures form a large and striking frieze running round the chapel; above it are the windows filled with painted glass, at some height, therefore, from the floor. Between and above the windows are more bands of coloured brick. The roof is vaulted, painted to represent stone. Here again, therefore, except in the painted roof, the ground of which I suspect is in well-made plaster, there is no plaster used, and the whole effect is one of great dignity. To our eyes nowadays such a method as this would require to be carried out on the broadest and simplest lines; we should also demand that the materials should be worthy. The black, white and yellow bricks of fifty years ago have few charms for us now.

The system of alternations of colour in a wall surface, which no doubt had its origin—so much as came to us from the East—in the ancient Chaldean and Egyptian worship of the universe, when by building their temples and pyramids in coloured stripes or courses, in due sequence and tints, they commemorated the heavenly spheres, fits in with the natural demand of the eye, which welcomes and recognises the propriety of variety in colour. It is open to us, therefore, to appropriately use the differently coloured stones we have, or our own native marble, while thanks to the discovery and re-opening of some of the old Greek and African marble quarries by men of energy and foresight like Mr. Samuel Brindley, of Messrs. Farmer & Brindley, ancient sources of supply are no longer closed to us. So long as we arrange the materials at our hand, be they of clay or stone, with breadth and simplicity, we shall be treating them with the dignity they deserve; and in buildings of importance we shall, I think, be treating ourselves with greater consideration if we invest our patterns with some meaning and intention.

Such principles as these, common to all forms of art, seem to be especially brought into mind when thinking of this form of treatment of a wall surface. In passing I may point to the Baptistery of Florence, San Miniato at Florence, the church of the Miracoli at Venice, some late Roman examples at Ravenna, as being particularly successful examples of the use of marble in this connection. The cathedrals of Orvieto and Siena are direct descendants of the striped work of the Saracen builders, a method of building common in the East to this day, and dating, as I have said, from her immemorial past.

The second division of our subject, "Those buildings which on their completion have been decorated in colour in a manner which makes that colour one with the materials of the building," offers a larger field for examination. It brings us into touch with the methods employed by our fellow artists the painters and other art workers, and into notice the conditions which govern the employment of artists in these matters. I ventured to point out just now the different state of things 400 years ago in this country compared with the present time. How that then nothing was more natural in most communities than a wide employment of painters and workers in the arts in the decoration of public buildings. The history of the past and the examples remaining to us make this clear. What a contrast presents itself in our own time. Who, for instance, can read the story of the preparations for decorating the Houses of Parliament fifty or sixty years ago without amazement and astonishment at the ignorance of and want of confidence in the capability of the painters of that time by those in high authority? For some twenty years a Royal Commission was in existence to consider and decide upon the best means of painting certain panels and rooms in the new Palace of Westminster. They instituted open competitions, invited cartoons, called for samples of painting in fresco. They doled out a few commissions. The expense incurred in preparing for these competitions and trials in painting must have brought many artists to the verge of ruin, and the many delays and slow procedure disheartened and crushed the spirit of all. If anyone wishes to read the sad story of these years, let me refer him to Redgrave's "Century of Painters," where the whole history is set forth by one who lived during the time, and knew it well. It may be that the Government of our country is too complex and vast an institution to see the advantage of departing from the competition system, and to trust with commissions artists whose works and capabilities are known, the execution of which would add to the intellectual and artistic output of the country. The few examples we have of such a departure have been signal successes. I may refer, as an instance, to the employment of the late Lord Leighton in the frescoes, "Arts of War" and "Arts of Peace," at the South Kensington Museum.

Fortunately, the experience of the Houses of Parliament Commission I have referred to has served as a warning throughout the country to municipalities and to individuals, and it has been, no doubt, easier for municipal councils, who have so much power in their hands, to foster and encourage the arts of the country, and with their less cumbrous governing machinery to avoid the many mistakes it is possible to make in the fit decoration of a building of importance. This is

\* The new Gare d'Orléans, at Paris, which has two large wall-paintings of *Biarritz* and *The Loire* in the waiting hall.



evident by the conspicuous success which has attended the efforts of some of the municipalities of the country. Manchester is most fortunate in having commissioned Ford Madox Brown to paint the scenes from her history in panels in her town hall. Glasgow is employing some of her own sons, Messrs. Henry, Lavery, Walton and Roche, in her city buildings. The Corporation of Liverpool, acting wisely on the advice of their architect, has commissioned Mr. Charles Furse to paint the pendentives of its large dome, illustrating scenes from the commercial greatness of the city. Birmingham has commissioned some of the students of her Municipal School of Art to paint scenes commemorating her history in panels in the town hall. The Corporation of Colchester also, in the new town hall, on the advice of their architect, Mr. Belcher, is employing Mr. Charles Baskett to decorate the council chamber and moot hall, under his supervision and with his assistance. In London, in our own Royal Exchange, the Corporation of the City of London, together with some of the great City companies, have commissioned artists to paint the panels of the ambulatory.

For some years past the municipalities of our towns have been fostering a love and appreciation for our arts by buying pictures and placing them in suitable galleries. This virtue of acquiring beautiful things has now been supplemented by giving commissions for mural painting. In the placing of these commissions we have the greatest hope and encouragement for the future, and with the increase of the municipal councils which is taking place in our midst we may look to see full advantage taken of the opportunities the public buildings present for the employment of artists of proved power and attainment, to the advantage of the people of this country. With this hope in our hearts we may consider with greater interest certain of the methods of work which at the present time are in use.

Before speaking of different forms of painting available, I would like briefly to touch upon the possibilities offered to us by the use of marble, mosaic and plaster, stucco duro and sgraffito. These are so closely allied to the first division of the subject that I would speak of them here. We know that the Egyptians, Greeks and Romans used colour largely in their buildings, but we can have but little idea of the magnificent effects often attained by means of their fresco painting, encaustic painting, tempera, modelled plaster, mosaic, marble linings and veneering, bronze, ivory, gold and silver overlaying, and inlaying.

For instance, we read of the Golden House of Nero, that the walls were encrusted with gems and mother-of-pearl; of banquetting halls having ivory ceilings; of a ceiling in the State dining-room which was spherical in shape, and cut in ivory to represent the constellated skies, and kept in constant motion by machinery in imitation of the stars and planets. This magnificence, inventive and symbolic, partook something of the marvellous and the rare, qualities which we have far to seek in this prosaic age. In their large halls, basilicas and baths, it was also a custom of the Romans to line the walls with marble slabs to a considerable height, and above to use mosaic or plaster reliefs. The vaulted ceilings were generally coffered and decorated in plaster reliefs, coloured and gilt; bronze rosettes were also used in the coffers.

These were general forms of decoration throughout the Roman Empire both in the West and East. We find them used by the Byzantine builders in Constantinople, Sicily and Italy, and we may be of opinion that few finer schemes of decoration have ever been devised. In some manner adapted to our modern needs they are available to-day, and it is understood that marble and mosaic are to be adopted in the new Roman Catholic Cathedral at Westminster.

In considering the use of mosaic at the present time, we may hope that the modern and vicious habit of preparing mosaic tesserae face downwards on a sheet of paper laid on a flat table, and then pressing the sheet of paper into position on the wall has been finally given up. The old and only right method is to fix each tessera into the cement pushed in by hand from the front. Too many works of the last century are deficient in one of the most important elements of decoration, namely, the right technique. Sir William Richmond in St. Paul's Cathedral, the largest example of mosaicwork of modern times, has shown in the work which he has done there that there is no more trouble and no appreciable loss of time in doing mosaicwork in the only true way, viz. pushing it in, tessera by tessera, from the front. His assistants after very little practice have been able to do the work on these lines with the greatest rapidity, and naturally with intelligence and interest in seeing their work in position as it proceeds.

Time will not permit me to speak of modelled plaster and sgraffito in any detail, except to express the satisfaction we must all feel that these ancient arts of tried quality are understood and worked in a modern spirit to-day. The composition of stucco duro has been often described, and we know by the remains of ancient Roman work found in the Villa Farnesina, and of the works of the sixteenth century in the Loggia of the

Vatican, and the Villa Madama and other buildings in Italy and France, what exquisite possibilities this material presents. The work, particularly in the Early Renaissance, was usually decorated in colour. This was generally laid on whilst the stucco was wet as in fresco, and the details heightened with tempera or encaustic colours, and accessories enriched in gesso.

We may congratulate ourselves that artists like Mr. George Frampton, R.A., and Mr. Anning Bell have worked in this material in churches and other buildings in our time. The processes of stucco duro and sgraffito are fully described in the "Arts and Crafts Essays" published in 1893, the former by the late Mr. G. T. Robinson and the latter by Mr. Heywood Sumner, whose work in All Saints Church, Ennismore Garden, affords an example of modern treatment. I need not do more than name these two forms of lasting decoration, peculiarly structural, and available to us to-day.

(To be concluded.)

## INSTITUTE OF ARCHITECTS OF NEW SOUTH WALES.

THE report of the Council for session 1901 of the Institute of Architects of New South Wales is as follows:—The Council has pleasure in presenting the thirtieth annual report. The number of members now on the roll is 68, viz. 3 Fellows, 24 Associates, 2 retired Fellows and 6 honorary members. During the session 5 Fellows, 11 Associates and 1 honorary member were added, making a total of 19 new members for the session. The following are the names of the newly-elected members:—Fellows, Messrs. Alfred Spaine, H. Gardiner Garden, J. S. E. Ellis, D. T. Morrow and Walter Hunt; Associates, Messrs. Donald Esplin, Albert Sparkes, C. W. F. Carter, G. A. Roberts, John Barr, Harold White, G. H. Mathison, Howard Grove, H. V. Vernon, Oscar Backhouse and Peter Wood; honorary member, Mr. J. J. Coher. M.L.A. The Council has to record with regret the death of the late Mr. A. F. Evans, an energetic member of the Institute. The Council has, during the session which now closes, held eleven meetings. Two special general meetings of the Institute were called with the object of altering Article 77, so that the nomination of office-bearers will in future be in the hands of the members themselves, whereas before the alteration it was the Council's business first to nominate the various members for officers and Council. It is hoped that by thus putting upon all members the responsibility of nominating members for officers and Council, more interest will be evoked in the annual elections.

Following upon the Conference of all the Institutes of Australian Architects, held in Sydney during January 1901, a Conference was held in Melbourne during last May to consider the report and draft articles of association of the proposed Institute of Australasian Architects, which were drawn up by the committee appointed at the Sydney Conference. The delegates who were appointed by the Institute to attend the Conference in Melbourne were Messrs. Barlow, Kenwood and the hon. secretary. Mr. Kenwood was unable to attend, and the other delegates, according to the power given them by the Institute, elected Mr. H. C. Kent as the third delegate. These gentlemen submitted the report and draft articles of association in due course to the Conference. Their report of what took place will be very shortly submitted for your consideration at a special meeting to be called for that purpose.

On September 27 and various other dates public meetings convened by the combined efforts of your Institute and the Institution of Surveyors, were held in the rooms to hear and discuss papers on the question of the design of the Federal City, read by the president (Mr. J. Barlow) and Mr. G. H. Knibbs (president of the Institution of Surveyors), and a lively discussion ensued, amongst the speakers being Mr. Alexander Oliver, M.A., the special commissioner appointed to inspect and report upon the sites proposed for the capital, and many gentlemen, prominent citizens and others who hold important positions in the public service. The result of the various meetings was that a committee was appointed to draw up a report embracing certain propositions to be forwarded to the Federal Government. The following sessional papers were read at the general meetings, viz. March 6, the President's address; April 17, "Quantity Surveying in Australia," by the late Mr. A. F. Evans; June 5, "A Book of Building Standards," by Mr. Cyril Blacket (vice-president); August 8, "Fire-resisting Construction," by Mr. R. C. Backhouse.

On October 31 there was forwarded to the Municipal Council of Sydney the following resolution, which had been passed at a business meeting of the Institute, viz.:—"That in the opinion of this Institute the departments of the city architect and the city surveyor should be under separate control."

The Council is pleased to be able to state that this opinion



has been acted upon, and that the department of city architect is now separate and distinct from that of the city surveyor. No doubt much good to the welfare of the people will be the outcome.

On December 9 a large deputation from the Institute, introduced by Mr. J. J. Cohen, M.L.A., and Messrs. James Ashton and Dacey, M's L.A., waited upon the Under-Secretary for Public Works (Mr. J. Davis), in the absence of the State Minister for Public Works, to ask that works of a national character be thrown open to competition, especially the proposed designs for the tenement dwellings to be erected in "The Rocks" resumed area. A statement giving the reasons why, in the opinion of the Institute, the best results for the people are obtained when designs for national buildings are thrown open to competition, was presented, and Messrs. C. Blacket (vice-president), Mansfield and Kent spoke in support. Mr. Davis replied, saying that he would have a verbatim report of the speeches put before the Minister for Works, and a reply would be sent. The Council regrets that up to the present no reply has been received though nearly two months have elapsed since the deputation.

The board of examiners of the Public Service Board had arranged with the Council that the special examination for the associateship should be held in Sydney in June last. The younger members of the profession had given promise of interest in the examination, many applications were lodged, and the Council were given to understand by some that they would certainly sit; much trouble was taken to notify and advertise the examination throughout Australia, and information of all kinds was imparted, but unfortunately not one candidate presented himself. The Council very much regret that this is so, but considers that the failure is due largely to the fact that only the special examination was held. Had the preliminary and the intermediate examinations been also held at the same time many of the younger men would have presented themselves for one or the other, and the initiation of this series having been commenced would, in a year or so, have led up to the special examination without difficulty. The Council felt this so keenly that in the report sent to the board of examiners this reason was emphatically dwelt upon, with the result that a reply had been received from the secretary of the Public Service Board stating that the matter would be put before his committee for consideration.

The Council are also glad to say that there are signs of an increase in the influence and prestige of the Institute. To show that this is so it is only necessary to instance the fact that the president (Mr. Barlow) has been appointed as one of the members of the advisory board. Mr. V. Parkes and Mr. McCredie, other members, are also Fellows of the Institute. It may be also noted as a significant fact that some time since, when the public works committee were considering the question of the extensions to the Prince Alfred Hospital, the President was requested to attend and give evidence. These, amongst many other things, are signs that the Institute is gaining in influence, and that its standing is being recognised by the public and the State Government.

The Sketching Club has unfortunately, for various reasons, not yet been fully started, but intending members are asked to send in their names to the secretary, so that as soon as possible the club may be set going in earnest. Prizes of 2*l.* 2*s.* and 1*l.* 1*s.* are offered for the best and second best sets of sketches.

The Council acknowledge, with thanks, the receipt of various publications received during the session. The Council once more urges upon the members to support the office-bearers in endeavouring to further the best interests of the Institute and of the profession to which we delight to belong.

(Signed) JOHN BARLOW (President).  
G. SYDNEY JONES (Hon. Secretary).

## ARCHITECTURE IN EDINBURGH.

THE architecture of Princes Street, Edinburgh, comprising as it already did some examples of notable excellence, has just been enriched by the erection at No. 136 of new business premises by Messrs. Macvitties, Guest & Co., Ltd. The building, for the following description of which we are indebted to *The Scotsman*, has been in process of construction for the last two years, and has attracted a good deal of attention on account of the façade having certain novel and distinctive architectural features which give the composition an imposing character, and are not to be seen elsewhere along the whole line of the street. Designed by Messrs. Hamilton, Paterson & Rhind, architects, George Street, the building externally does credit to the prominent site it occupies, while internally it marks a great advance on the artistic decoration of shops or restaurants in Edinburgh. For parallel one would have to go to London, or to one or two of the high class restaurants of Paris. It is in the neo-Renaissance style, in connection with which, however, use has been freely made of Classical details. With a frontage of

30 feet to Princes Street, the building, 80 feet in height, is divided into four principal floors. The walls are of sandstone ashlar, except the whole of the shop front, which has been faced with polished red Correnie granite. The feature here is a segmented arch which encloses a central doorway and two large windows, one on each side. The door is deeply recessed and its oak woodwork is carved in a light French style. The four windows on the first, or tea-room, floor are of the French casement order. They are set in a massive arcading, each opening separated from its neighbour by a three-quarter column, with an Ionic capital treated in a modern spirit; while the pediments have large key blocks with trusses for supports at the sides. Over this is an architrave, with dentil moulding. The four windows on the second floor, which light the smoking-room, are of a plainer character, being divided by simple, angle pilasters, breaking into the square at the base with carved stops. Higher is a plain frieze over which are the grill-room windows on the third floor. The divisions between them are pronouncedly treated with rusticated blocks, which give a feeling of strength to them as supports to the main cornice. This is of a plain character with modillion blocks. Above this rises an ornamental gable top having a circular window, supporting a carved niche with side pillars and overhead a broken pediment. In front of the circular window is a wrought-iron balcony grill. The building is, so to speak, framed on its east and west sides by octagonal pilasters, which, rising above the whole of the floors, are finished atop with carved pinnacles. Two coloured shields of Royal patrons of the establishment affixed on each side bind the granite and ashlar masonry together, and the ornamentation being all bold and the windows considerably recessed a fine play of light and shade takes place over the building under the influence of the afternoon sun. The constructive parts of the building are of steel. It was found that the old gables, riddled as they were with flues, were not fit to carry the weight it was intended to put upon them. Heavy steel uprights were accordingly brought into use, and all the floors, which are fireproof, are also carried on beams of the same material. The foundations were dug into a soft, crumbly shale, which at a suitable depth was ultimately covered with a thick layer of concrete. No fewer than six springs of water were tapped, but the difficulties connected with their flow were ultimately overcome. The building is L-shaped, the other front being to South Charlotte Street, where the elevation is substantially the same as that of Princes Street, though the frontage is 5 feet less in width. In the angle of the L there is a large dome with lantern, the opening to which is 25 feet from the floor. The lower panels of the dome, which is 28 feet across, are beautifully decorated with the signs of the Zodiac, the figures being in low relief. The whole of the decorations of the shop are in stencilled ornament, gold and light colours being freely used with pleasing effect. The tea-room above, 50 feet by 25 feet by 14 feet in height, is an elegant hall, panelled in fine Scottish plasterwork, and having for *pièce de résistance* a large "plafond" or ceiling painting, executed by a French artist, the subject of which is Queen Mab in her fairy chariot with attendants. Oval in form, the picture, executed in soft colours, with great breadth, is framed by a rich gold moulded band with flowers and fruit in high relief. The smoking-room is panelled in dark oak, and has for special feature an old English fireplace with inglenook, the opening of the hood of which is 14 feet across by 7 feet in height. The grill-room above is fitted up to resemble an old English kitchen. It, too, is panelled in dark oak. The ceiling shows exposed joists with white plasterwork between, and the windows are filled with leaded glass of novel designs. In the overmantels (over two fireplaces) are racks with old pewter, which is at present all the "rage." The kitchen is on the top floor. The whole of the Princes Street side of the building is devoted to the public; the Charlotte Street half and the basement are fitted up with the most modern appliances for the manufacture of lighter articles in the bakery and confectionery business of the firm. The power is supplied by electricity, and it is by electric lamps that the building throughout is artificially lighted. An unusual amount of thought and care has been devoted to the heating and ventilation arrangements. The system of ventilation adopted is that of pumping in pure air under pressure into each room, and there are elaborate means for washing, heating in winter and cooling in summer, the air before it is sent on its way to the different floors along a series of large metal tubes which have been skilfully masked. The principle on which the Otis electric service lifts work is also of a somewhat novel character, the cage being raised or lowered automatically to any floor from basement to ceiling by the touching of a numbered button on an indicator outside the shaft at the different stages. There is also, of course, a lift for visitors.

The Postmaster-General has appointed Mr. J. Gavey to be engineer-in-chief of the Post Office, on the approaching retirement of Mr. J. Hookey.



## NOTES AND COMMENTS.

It is not creditable to find local authorities in America endeavouring to deprive an architect of his legitimate fees on the supposition that an increase in the size of buildings does not add to the architect's labours. The Commissioners of Jasper County, Indiana, gave instructions to Mr. C. R. WEATHERHOGG, Indianapolis, to prepare plans for a court-house at Rensselaer which was to cost 100,000 dols. He was to be paid 3 per cent. commission for the plans and 2 per cent. for superintendence on the cost of the completed building. It was arranged, moreover, that alterations were to be made and new plans furnished if required, or if the tenders exceeded the stipulated sum. Various changes were made by the Commissioners, and eventually the cost of the building was nearly 150,000 dols. The Commissioners declined to pay fees on that sum, maintaining that the architect was simply to have his fees charged on a basis of 100,000 dols. The Supreme Court of Indiana took a different view of the agreement, and decided that the architect was entitled to receive 5 per cent. on the actual cost of the building. It would be peculiarly inequitable if a court of justice should be an enduring memorial of unfairness to the designer.

THE second part of Mr. H. INIGO TRIGGS's work on "Formal Gardens in England and Scotland" (B. T. BATSFORD) has appeared. The first subject is Wilton House, and the sunken garden is presented in which architectural forms and sculpture are introduced. It is no wonder that so many visitors to the house prefer looking out of the windows towards the grounds instead of devoting their attention to the sculpture and paintings. The garden and maze at Hatfield House depend mainly on the geometrical character of the beds, for no statues and vases are visible. Drayton House, Northants, possesses gardens in which the aim evidently was to suggest spaciousness as well as beauty. The entrance-gates are a fine composition and the leaden vases are proofs of the skill which was attained in working with that material. There are several plates of Hampton Court. Views and plans are also given of Trentham Hall, Livens Hall, Ashridge Park, Buckingham House, Fordel House, Balcarres, Barncluth, Newbattle Abbey, Kinross House, which has remarkably quaint cornucopia arranged as a coping to the wall; Drumlanrig Castle, Earls Hall, Drummond Castle, Summerhouses, Claverton House, Ven House, Bulwick Park and Hadsoe. There are, in addition, examples of gates, sundials and topiary work. The interest of the first part is well sustained, and the execution of the measured drawings, sketches and photographic plates is no less perfect.

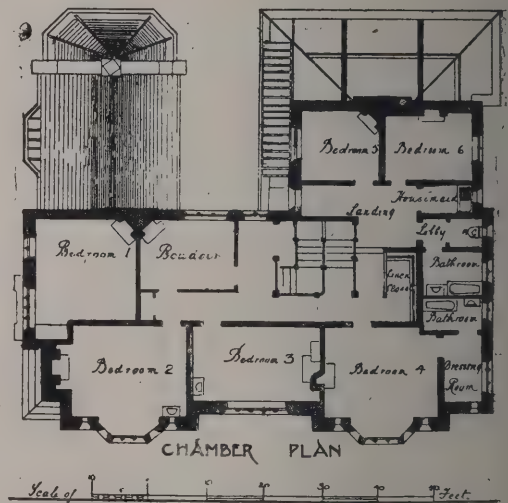
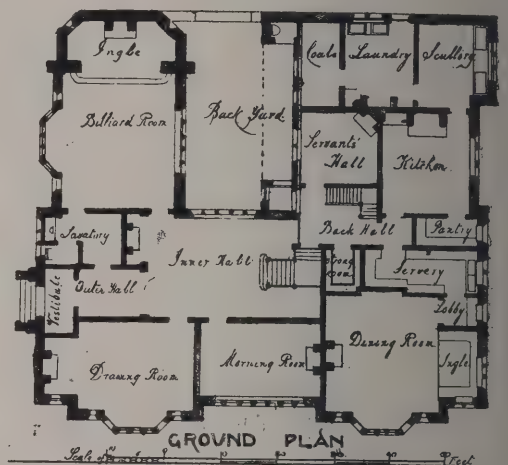
IN the *Baltimore Architects and Builders' Journal* Mr. J. APPLETON WILSON records some of the impressions he received in London. He was more satisfied with all he saw than the majority of tourists; and his remarks will suggest some of the differences between the Metropolis and American cities. He says:—The residence portion, as at South Kensington, is generally well paved. The footways are always of stone or concrete, with curbing about 1 foot thick. The driveway is generally of blocks of creosoted Australian red wood, laid over a heavy bed of cement concrete. This is left with a perfectly true surface and the blocks placed on it with a grout of cement, or a binder of hot pitch between them. The surface of the pavement is covered with fine gravel and coarse sand occasionally, to prevent horses from slipping. This is kept in iron boxes at the curb. The blocks stand well, and are easily repaired when worn, as the foundation is never disturbed. All wires, pipes, &c., are either under the footways, or if under the street, are accessible every few feet, through covered manholes. The houses are generally without vestibules, but have handsome street doors—usually painted black, Tuscan red or apple green—with brilliant gloss. The bells, knockers and plates are of polished brass. All houses have wide areas, protected in many cases by handsome wrought-ironwork. The kitchen and servants' rooms are always below ground, opening on the area, the ground floor being only a few steps above the pavement. As each room has a fireplace the result is seen

in the immense chimney-stacks on the party walls. It is not unusual to see them with twenty-four flues. The better class of houses have five storeys above ground, and the uniformity of the architecture gives breadth and dignity to the streets. Portland cement is largely used for window and door enrichment, balconies, porticoes, balustrades, &c. and wears admirably. The colour of the London brick is a mottled yellow. After a few years it becomes toned down by smoke and exposure, giving not an unpleasant effect to the mass.

## ILLUSTRATIONS.

MANSION AT BAILDON, YORKS: SOUTH-WEST ELEVATION. SOUTH ELEVATION. DRAWING-ROOM. DINING-ROOM. MORNING-ROOM. BILLIARD-ROOM. HALL.

THE external walling is faced with local sandstone in irregular courses; the roof is covered with stone slates. The woodwork, where not painted, is of fumed oak left unpolished. The hall and billiard-room are lined above oak dado with red sandstone. The dining-room is panelled with oak, and walls covered with red canvas. In the drawing-room the woodwork is white, and walls covered



with yellow canvas. The woodwork of the morning-room is mahogany, and the walls are lined with green silk. The glazing is mostly in plain leaded squares; Norman glass is used in coloured windows. The heating is by low-pressure American radiators, and the electric lighting throughout from house dynamo.

The general contractors were Messrs. W. Ives & Co., of Shipley, the architects being Messrs. ADKIN & HILL.

AUCHENDENNAN, BALLOCH, N.B.: THE HALL. DRAWING-ROOM. DINING-ROOM.

CATHEDRAL SERIES.—RIPON: THE SOUTH NAVE AISLE. LOOKING EAST



## RIPON CATHEDRAL.

In the early part of the last century little attention was given to the history of the English cathedrals. It was therefore considered an onerous task when Dean Waddilove undertook to examine the archives of Ripon Cathedral which were in his custody. It would have been easy for him to make a large use out of the information, but he preferred to restrict himself to the following essay, which contains all that can be gathered from the documentary evidence about the history of the cathedral:—

The church of Ripon partakes of the common origin of others in this kingdom, being founded at the re-establishment of Christianity after the conversion of the pagans. Alfred, king of Northumberland, first established a monastery or college of monks at Ripon, from Lindisfarne and Hexham, in the year 661.

At this period the controversy concerning the time of the celebration of Easter took place, and to decide it a synod was held before the king at Strenshal, now Whitby. Here Wilfrid appeared as the champion of the Church of Rome. His eloquence prevailed; the Roman ritual was confirmed, and the British monks retiring from their monastery at Ripon, Wilfrid was appointed to preside in it, A.D. 663, and soon afterwards raised to the see of York. All the ideas of this prelate were magnificent for the age in which he lived, and it is to be regretted that we have no perfect instance of his skill in architecture yet remaining, unless the church at Ely, or that at Derbyshire, be of his construction.

He built very splendidly, according to his time, the church at Ripon, "with curious arches, fine pavements and winding staircases," as William of Malmesbury describes it. It is allowed, however, that it had ceased to exist in the time of that writer, and was probably not extensive in comparison with the structures in later ages. But the similar descriptions of the church at Hexham, another production of Wilfrid's genius, by writers as late as its existence, Eddius and the Prior of Hexham, leave no ground to doubt of its being an edifice of considerable importance. This structure at Ripon probably sunk in the interval between the Danes and Saxons long before the Conquest. It is found in the year 860, or rather 866, the town, with part of the monastery, was destroyed by the Danes, and A.D. 948 the king Edred retaliated on them, and laid waste the Northumbrian territories, when the monastery and again town perished in a general conflagration. In the course of two years the town was rebuilt, or restored, by the care of Odo, bishop of Canterbury, who removed the bones of Wilfrid to his own cathedral in Kent.

The devastation of the northern counties by the Norman conqueror was also fatal to Ripon. "Omnis hæc terra vasta" was the return of the Domesday Book on the territories of the church. But there are grounds to conjecture that it did not remain in that state.

The church and manor of Ripon from the time of Wilfrid, at least from that of the Saxon Athelstan, had belonged to the king of York. Thus in Domesday, "Hoc manerium tenuit archiepiscopus nunc Thomas archiepiscopus." And Thomas, the chaplain of the Norman king, and archbishop of York, and who assisted himself in restoring his see, died at Ripon. It cannot be supposed that the church, or the demesnes, would be then allowed to lay waste. Henry I. also granted a charter for a free town. This implies some degree of population, and is also to the era of the present edifice.

In the reign of his successor, King Stephen, A.D. 1140, the present structure of the cathedral of Ripon, however since enlarged and improved, was raised by the munificence of Thurstan, archbishop of York, and the first patron of the new Abbey. The whole of the west front, including its towers, the middle tower and the transept, with a part of the aisles, remain of his work. These remains are amply sufficient to furnish a clear idea of the plan and construction of the first very singular Anglo-Norman church. The time of the construction of it was precisely the era when the narrow sharp-pointed Gothic arch first began to take the place of the circular one, and they are both seen in a perfection scarcely attained elsewhere in the kingdom.

The general plan consisted of a west front, with narrow windows, supported by two handsome towers, and an opening into a broad nave without side aisles, leading to four circular arches which supported the middle tower, and forming a choir, not perhaps of greater extent than the rest of the transept.

However much the church has gained in size and ornament by subsequent alterations, a transient regret cannot but arise in the mind that so complete a specimen of the architecture of the age had not remained to posterity.

The west front is uniform and stately. Its breadth is 43 feet, including the towers of 29½ feet each, is in the whole the external measure. It rises in the point in which the transept terminates to a height of more than 100 feet and in the towers to 110 feet, whilst they were evidently surmounted by

wooden spires, covered with lead, since removed, of at least an equal elevation. The three doors of this front, of a deep recess, and flanked with many small pillars, open into the nave. Above them are two rows of five windows, of a good height and proportion, and all the windows and ornaments attached to the towers are in a corresponding style of building. The towers themselves stand in a continued line with the front, and compose a part of it; but have had three outward sides, and only communicated with the church in their interior side, and in a line which made a part of the walls of the nave. The west towers of the old cathedral of Ely had an opening to the church in a similar manner.

In the inside of the nave it is plain that this front composes what is usually called the great west window, filling a space of 57 feet by 41 feet; and the size and number of these collected lancet-shaped windows are so ample that the effect of light gained to the church is very considerable. There is also a degree of elegance in the construction of the architecture, which appearance is gained by the row of long, slender columns that surround each of these lancet-shaped windows in the inside, in a similar manner with those of the external front, and which, accompanying them in their whole length, compose the inner west front towards the nave. It has been observed by writers on ancient architecture that on the introduction of the sharp-pointed arch an immediate change took place from ponderous Saxon columns to the most minute small ones; sometimes in clusters, occasionally as separate and distinct, frequently, as here, in two slightly attached columns, with which also the door-cases, having arches of singular flatness, are supported. The whole effect is very favourable to the lightness of the building.

The walls of the first nave are gone, but its height may be known by the stone angular ledge for supporting the roof, yet remaining, with a portion of lead in it, on the side of the middle tower, compared with that of the point or apex of the west front. The measurement of these angles determined the shape or fall of the roof, and consequently the height of the walls.

The ridge of this roof much exceeded the height of the present one, and must have been nearly 100 feet, if not more, from the pavement. The walls probably not less than 80 feet, and this corresponds with the square of the west front under the pediment between the west towers.

The windows in the side walls of this nave were, it may be presumed, either narrow with a circular top, as those of Fontaineaux and other abbeys of that age, or, more probably, lancet-shaped, to correspond with those in the adjoining towers. Examples of each kind now exist in the transept of the minster.

The east end of the nave or body is bounded by the middle tower, of the same height but larger in width than those of the west end, and then supporting a leaden spire of the height of 120 feet. The tower was raised on four circular or Saxon arches of such amplitude, lightness and beauty as fully to vindicate the Anglo-Norman artists from the inability to execute works of just and elegant proportions. Two of these now remain. And the antiquary, accustomed to contemplate the massive pillars and heavy arcades of the Saxon or Norman churches, views with wonder and delight a lofty arch of great expansion and delicate workmanship. These arches are 22 feet in span, 33 feet high to the crown of the arch, on a column of 26 feet, and are formed with a slight moulding of not more than 5 feet in thickness.

The two, north and south, ends of the transept are in the usual style of the age, with narrow windows, plain, and no ways remarkable.

The extent of the old choir is sufficiently ascertained. All the choirs of the Norman churches were remarkably short. And this is a strong instance of it, it being about the length of 42 feet. The walls and windows of its narrow side aisles correspond with those of the transept. The side arches of this ancient choir have been altered to a Gothic shape, but the upper windows above them on the north side yet remain. The original form of these arches may be supposed to have been circular, and if in a style corresponding to the large one adjoining to them under the middle tower must have exhibited a very handsome appearance. The east end of this first choir can only be conjectured; yet most probably it had much consonance with the opposite windows of the west end of the church. And a very reasonable idea may therefore be obtained of it by supposing it to resemble the end of the choir in the abbey of Rievaulx, with two rows of three large lancet-shaped windows, and probably a smaller one like that of the west front of Ripon, in the angular top of the building. Such was the edifice built by Archbishop Thurstan in the middle of the twelfth century.

The alterations that have since taken place have converted the internal appearance into that of a Gothic structure of just and noble proportions; whilst select parts of the first church are yet retained sufficient to render it one of the best specimens of the Anglo-Norman style to an antiquary.

These alterations were made way for by a destructive con-



flagration on an invasion of the Scots, A.D. 1317, in the reign of Edward II., when the church was, as it were, totally consumed. But there existed another general cause, which was constantly producing effects beneficial to the church of Ripon. The archbishops of York had a palace at Ripon, and appear to have paid great attention to the fabric of the church as accidental injury or varying taste demanded any change or renovation. Hence wealth would not be wanting, and the architects who raised or improved their magnificent cathedral were at hand to furnish similar plans of improvement at Ripon.

Fortunately for this fabric Archbishop Melton held the see of York when the town and church of Ripon were destroyed by the Scots. And on the accession of Edward III., as soon probably as a more stable government gave any prospect of security to the northern parts of the kingdom, he promoted the rebuilding of the town and caused the church to be re-edified, as it is expressed, from the foundations.

The devastation caused by the fire was probably the guide to the new erections. It may be deemed certain that the whole of the roof and spires was consumed. It is far from improbable that the walls of the nave were also damaged beyond the hope of restoration. This would occasion their removal. At the same time the whole west front remained, and pointed out the breadth of the new side aisles by the breadth of the towers now to be included in them.

Archbishop Melton was then employed in completing the west end of the church at York on the plan of his predecessor, John de Romaine; and the breadth of the aisles, the style of the Gothic arches of the nave, with the lofty range of windows which surmount them at Ripon, exhibit great similarity to the corresponding parts in that cathedral.

How far the two large Norman arches, under the middle tower, now removed, were impaired by the fire cannot be ascertained; but they are replaced with great ingenuity, for the Saxon arch was removed and the pointed one inserted without disturbing the upper part of the wall of the tower by two Gothic arches in the style of those of the nave, yet somewhat heavy and ponderous, with much irregularity in the general appearance, and do not entirely compensate for the absence of the Saxon.

At the same time these two sides of the middle tower, perhaps also injured by fire, were new cased with stonework, and their windows in the lantern altered to the Gothic. It is apparent, from the unfinished state of the stonework, and from the columns of these Gothic arches, that an intention prevailed of rendering the whole uniform by the alteration of the other sides of the tower; but whether this change was made by Archbishop Melton and succeeded the conflagration, or took place under the idea of rendering the great arches similar to those of York at a future period, is uncertain.

In the choir a date of A.D. 1331, the same year in which this archbishop gave regulations to the canons of the church, makes it evident that he had a principal share in improving and enlarging it. He extended it eastward to twice its former length, so that it is now of the extent of 99 feet. He also probably altered the arches of the old choir and added the new ones.

The other alterations in the choir it is difficult to assign to any particular era. There is a date on the woodwork so low as A.D. 1494. The notices to be obtained from the style of the architecture are very dubious. It was once obvious from a negligent junction of the old and new work at the third side arch, and from a step across the choir, that it was considerably lengthened.

At the present day the east end is adorned by a window of ample size and great beauty. In its pristine state and full extent its dimensions were 51 feet by 25 feet. It is very similar in design to those of the chapter-house at York, probably subsequent to the renovation of the church in the time of Edward III., but yet of the same design or pattern of the side windows adjoining to it. For there yet remain in the window two shields in painted glass, with the arms of England and of France, in which those of France are given with *fleurs de lys semé*, and not restricted to three *fleurs*, as took place in the time of Henry V. This fixes the date of the window to the fourteenth century, or between 1 Edward III., A.D. 1326, and the time of Henry V., A.D. 1413.

Out of gratitude towards their founder, King James I., the dean and chapter had his arms placed in the centre of this window. The splendid colours of the glass add a richness to the appearance of the choir.

The rich ornaments of the stone screen at the entrance of the choir, and the carved woodwork which ornaments the stalls of the interior part of it, seem also to claim particular notice, as the last is allowed to exhibit a delicacy and lightness superior even to that of York, or of almost any other religious edifice possessing similar decorations.

Another advantageous distinction of the church of Ripon is the excellent proportion of the body of the fabric, the breadth of the nave and side aisles being 87 feet, which exceeds that of

every Gothic church, collegiate and cathedral, in the king except those of York, Westminster and St. Albans. A length of the nave is not considerable, being about 134 and the height very ample, of above 80 feet, the whole presents an edifice more nearly approaching the just rules of architecture than perhaps any other structure of its kind in the Middle Ages.

The exterior of the church is in itself lofty and well proportioned. But the towers, like all those which have been found to support leaden spires of great altitude, are flat and give in part that appearance to the whole building.

## THE PROPOSED HORTICULTURAL HALL

IT seems an extraordinary fact, writes a correspondent of the *Times*, that, large as is the capital invested in the country in the various trades generically grouped under the title of horticulture, there is no really corporate centre. The Royal Horticultural Society which has done, and which continues to do so much for the trade, hides itself in a characterless rooms in a large building in Victoria Street; fortnightly floral exhibitions are held in a drill hall in the street of Westminster; whilst the Horticultural Club, which is almost exclusively composed of members of the Society, has its quarters elsewhere. The rent of the two first-mentioned places amount to over 300*l*. Of the drill hall, where the exhibitions are held, it may be said that it possesses every possible advantage—except size—for flower shows, with the result that the general rule its visitors include very few of the general public apart from those immediately or remotely associated with horticultural pursuits.

For many years some of the more spirited members of the Society have been agitating for a central hall which should include under one roof the offices and library of the Society, an exhibition hall for all purposes. Some years ago an organised attempt was made, but the scheme after attaining considerable proportions was, for some reason or other, which it is not now necessary to enter, dropped like the verbal hot potato. Another scheme has been formed within the last few weeks, and promises to be a success.

When the committee appointed by the Society were in position to take a practical step, five different sites were inspected. Among these were (1) the spot known as Nine Elms, which covers about an acre of land, for the freehold of the sum of 100,000*l*. was asked, whilst another 10,000*l*. would be required to convert the place into a suitable home for the Society; (2) a site in Buckingham Palace Road, covering about 15,190 square feet, at a rent of 700*l*., coupled with an obligation to expend at least 20,000*l*. on buildings and a lease of eighty years' duration only; (3) a site bounded by Vincent Square, Bridge Road, Francis Street, and Carlisle Place, including a fine building known as the old Cardinal's house; (4) a site in Francis Street, covering 15,000 square feet, at a rental of 1,000*l*. for a long lease; and (5) a site in Vincent Square, at the corner of Bell Street, with an area of 17,565 square feet at a rent of 690*l*. a year for 999 years. For various reasons the first four sites were abandoned and the last one committed itself to the committee, who recommended its adoption. Ecclesiastical Commissioners are the owners of the land, and they stipulate that a sum of not less than 15,000*l*. should be spent on a building and offices.

All things considered, the site selected is perhaps the best of the five which the committee had under consideration—the cheapest, at all events. It is difficult to understand, however, why the members of the committee confined their choice to Westminster, which is not by any means the most convenient position in London. Horseferry Road, one of the entrances to Vincent Square, is not a savoury thoroughfare, and Vincent Square itself is scarcely a fashionable quarter. Why have the headquarters of a most important industry in an obscure street in Westminster? Are there no available spaces to be considered on the way of the new thoroughfare between Horseferry Road and the Strand?

The committee who have decided upon the spot included is true, some of the most honoured and experienced names in horticulture, amateur and professional—Sir Henry Schomburgk, Sir Trevor Lawrence, Mr. H. J. Keitch, Dr. Maxwell Masters, F.R.S., and Mr. Sherwood—and their influence of opinion in the matter cannot be improved upon. Still, the interests of the general public a better position might have been selected. The Horticultural Hall, to fulfil its functions, should be international rather than national. The Lindley Library, one of the finest semi-public collections of horticultural and botanical books in existence, is in the custody of the Society. Since it was started, a century ago, the Society has done a vast amount of good work; it has had its ups and downs, like many other excellent institutions, but the success which has been vouchsafed it during the last few years should only be maintained and improved upon so long as it is managed on strictly business principles.



The Society has ratified and adopted the recommendations of the committee, and it only now remains for it to obtain by subscription the 25,000*l.* necessary before building can begin. One-third of this has been obtained before any appeal has been made—Sir Henry Schröder has promised 10,000*l.*, whilst Mr. Sherwood, Mr. Elwes and Mr. Sutton have promised 1,000*l.* The Society has an astonishingly long list of members, no fewer than 900 joining last year. Although the scheme selected is not an ideal one in any way, yet perhaps in the long march of improvement may overtake even the West-End slums and transform the unlovely neighbourhood of Coventry Square into a pleasant and healthy part of London. The erection of the Horticultural Hall will at least contribute something towards that highly desirable end.

## SHAKESPEARE MEMORIAL THEATRE.

A LETTER has been addressed to the *Times* by Mr. T. Fairman Ordish, F.S.A., chairman, executive committee, of the Topographical Society, and the author of books on the Elizabethan theatres, on the subject of a Shakespeare Memorial Theatre, in the form of one of the old playhouses. He says:—

When the scheme for the new thoroughfare from Holborn to the Strand was made known, the idea of a memorial to Shakespeare within the area marked for clearance may have occurred to many; but whether the idea resulted in any movement other than that with which I am acquainted I do not know. A committee was formed, a petition to the London City Council was drafted, printed and signed by the members of the committee and various people of eminence were found to approve of the proposal. Then came the war in South Africa, and in the period of stress and anxiety ensued it was agreed that the movement should be postponed. Happily the time has now arrived when the note of discord which rings in the patriotic plays of Shakespeare does not suggest a discord with the nation's mood and fortunes; the opportunity of celebrating in the capital of the Empire the most intellectual force of the English-speaking peoples has been issued away, and those who were concerned in its inception desire to test the possibility of realising this memorial as a symbol of that unity which has so gloriously appeared in the history of the nation through which we have passed.

The personality of Shakespeare is obscure, but the appeal of his plays is vivid and real. It is not proposed to add to the statues of the poet which already exist; the idea of a proposed memorial is an objective presentment of the conditions in which the plays were born. The terms might be suggested by saying the conditions which begot the plays. The Elizabethan playhouse was distinctively an English institution. Foreign visitors to this country regarded these playhouses as the most distinctly novel feature of London at the time. On every hand they beheld dismantled religious buildings, and within the ruins of some which skirted the city they found these playhouses had been erected, as at Blackfriars, at Blackfriars, and at Holywell, Shoreditch. On the inside they saw playhouses built in the open, the foundations of which had been determined by national tradition, and elsewhere shown. Instead of the priests and friars which they were accustomed, these visitors found the playhouses were bands of actors trained to a high standard of acting. They beheld the London populace flocking eagerly to the playhouses, as to the lecture-halls of a great university, and they listened eagerly to the music of their newly introduced language, where plays were presented of such range and power that they became the best popular school of *humaniores* ever devised. No wonder that visitors to London in which Shakespeare lived and worked made notes of these novel buildings, in which the highest and the lowest, through which the life, the ideals and the inspirations of the time found expression. To such a representation of the representation of the interior of an Elizabethan playhouse—that of the Swan—discovered a few years ago. Now take the views of London drawn and viewed at that period, and what do we see? The pictures drawn in perspective from the south, and the playhouses on the Surrey side are in the foreground, the most conspicuous in view—the Swan, just referred to, the Hope, which conducted in part or alternate connection with the sport of baiting, and the Globe, so intimately associated with the plays of Shakespeare. An earlier playhouse in the same neighbourhood, the Rose, is depicted in the map of John Norden, 1593. In a topographical work of the time there is a plan of the first Globe playhouse, which had been burnt down when the riverside views were drawn.

Now the suggestion is that on a site in the area to be cleared for the new thoroughfare into the Strand a reproduction of one of these playhouses should be erected as a memorial to the Elizabethan poet who gave his countrymen for all time a body of wit and wisdom, that vehicle of universal culture,

which we know as "Shakespeare's Plays." Beyond the graphic representations alluded to above, we possess records full of particulars and details relating to the construction of some of the playhouses. Indeed, the data for the erection of such a building are ample. Here, we may say, is something distinctively national, a purely English invention or product, which would be an object of interest throughout the British Empire. It is proposed to appeal to the London County Council to grant a site for the realisation of this patriotic idea, which shall exist as a visible sign not gorgeous or ornate, but picturesque, simple and effective, to show that the poet is not without honour at the centre of the Empire. Surely it is fitting that he should be celebrated in the place where his influence and inspiration were originally imparted in a building such as this on a stage like unto that which this building will contain by means essentially national, of which such a building was the ultimate cognisable expression and result.

The suggestion here made as to the site arises from what is regarded as a good opportunity, but is not vital to the scheme itself. In the printed petition it was pointed out that Battersea Park offers a parallel to Paris Garden and Bankside, which would realise more completely the surroundings of the Surrey-side playhouses in Elizabethan times.

In connection with the suggestion as to the new thoroughfare along the west side of Lincoln's Inn Fields there is a point reserved for future consideration, viz. the possibility of erecting in the neighbourhood of the proposed playhouse some Tudor houses on the model of the ancient London street which proved so attractive at one of the exhibitions at South Kensington some years ago. The work then accomplished by Mr. Birch is in itself a lesson and an incentive which may bear fruit when the present scheme comes to be worked out. These houses would, of course, be lettable for business purposes, and for a certain class of shops would command high rentals. Such surroundings would obviously increase the value of the object-lesson which it is the design of the memorial to furnish.

It may be pointed out that the proposed playhouse building itself would be available for various uses—as a County Council museum of London antiquities, especially of relics and memorials of the Elizabethan period; lectures and meetings; above all, the representation of plays as they were produced and acted in Shakespeare's time. Uses such as these suggest revenue, and indeed there is reason to think that the memorial would be largely self-supporting.

The present year will in all human probability be remarkable for the number of visitors from the colonies and from America. What an attraction, what a source of interest such a building would be to them if it were in existence. Looking to the future, when it is hoped that London will witness representatives from the Britains over seas in session here on Imperial matters, and when the circulation of British blood through the heart of the Empire from all its limbs shall be a constant current, it is felt by those who framed the petition that it is incumbent upon them to seek the most effective means to place the proposal for a Shakespeare memorial in London before the British public. It is hoped that St. George's Day next, April 23, the anniversary of Shakespeare, may not pass without some public recognition in London, and that in the near future we may witness adequate Shakespeare commemorations within the suggested memorial building. In the meantime I shall be happy to receive the names and addresses of London ratepayers who desire to sign the petition, and also of those who would be disposed to assist on a committee.

## THE ENCLOSURE OF STONEHENGE.

ON Wednesday in last week an inquiry was held in the Council Chamber, Salisbury, by the Hon. Percy Wyndham, the Marquis of Bath and Mr. J. M. F. Fuller, M.P., on behalf of the Wilts County Council, into the enclosure of Stonehenge and the alleged obstruction of public rights of way leading thereto. Mr. Birkett represented the petitioners, the Amesbury Rural District Council; Mr. G. J. Shaw Lefevre appeared on behalf of the Commons and Footpaths Society, the National Trust Fund, the Kyrle Society, and a number of scientific gentlemen who sent a petition to the county council asking them to vindicate the rights of the public in respect to Stonehenge; and Mr. J. Hammond appeared for the owner of Stonehenge, Sir Edmund Antrobus.

Mr. Birkett called a number of witnesses, who stated that from time immemorial the tracks across the downs leading to Stonehenge, which had been obstructed by the wire fence erected by Sir Edmund Antrobus, had been used by the public without interruption of any kind.

Mr. Shaw Lefevre said he visited Stonehenge over the tracks described more than fifty years ago, and he did not think anybody could look at the tracks without seeing that they had been used from time immemorial. On the part of the societies he represented he disclaimed any hostility to Sir



Edmund Antrobus, who he thought had been actuated in what he had done by public motives. He was apparently advised that it was necessary to protect Stonehenge for two reasons. In the first place, it was feared that the sale to the Government of land in the vicinity of Stonehenge would introduce a number of bad characters into the district and that the stones might be damaged; in the second place, it was thought necessary to effect certain improvements and to replace certain stones in their original position. And, to give further protection, a barbed-wire fence was erected around the stones. These things cost Sir Edmund Antrobus considerable expense, and it was to recoup himself that he charged 1s. per head for admission to the stones. Two evils had resulted from his action. The erection of the fence was unsightly, and it had altered the character of the monument and destroyed much of its charm and beauty. The erection of the fence had also interfered with rights of way which had been enjoyed by the public from time immemorial. In his opinion, if Sir Edmund Antrobus was anxious to preserve the monument, he should have placed it under the Ancient Monuments Act. He would have remained the owner still, and the cost of protecting and preserving the monument would have been borne by the State. He ventured to say that Sir Edmund should be reimbursed for the expense he had been put to, on the understanding that the monument was to be placed under the protection of the Act he had referred to.

Mr. Hammond pointed out that for many years Sir Edmund Antrobus and his father before him had employed a custodian to look after Stonehenge, and showed that they had always been regarded as the owners of the stones. It was true that the public had used tracks over the downs to reach Stonehenge, but it was by Sir Edmund's permission that it was done and not as a public right.

The committee of inquiry will in due course report to the county council.

### THE VICTORIA MEMORIAL HALL, CALCUTTA.

THE following is the official Note which Lord Curzon has prepared on the Victoria Memorial:—A year having now elapsed since the melancholy event which gave occasion for the foundation of the Queen Victoria All-India Memorial Fund, with the object of creating a great memorial hall in Calcutta to be perpetually associated with the late Queen's name, a fitting opportunity presents itself for offering to the general committee and to the public some account of the steps that have already been taken, and of the stage that has now been reached in the prosecution of this undertaking. The appeal a year ago was addressed to the whole of India, and it is from the whole of India that the response has come. A sum of over Rs. 38 lakhs, calculated upon the assumption of a one lakh limit to individual subscriptions, has been promised, and of this total over Rs. 20 lakhs have already been paid in. Considerable additional contributions are still anticipated. Inasmuch as the collection of these funds was necessarily centred in one place, a provisional committee was appointed in Calcutta in January 1901, to receive the general contributions of the entire country, and to conduct the particular collection in Bengal. This committee, under the successive chairmanship of Sir P. Playfair and Mr. M. C. Turner, has been most successfully and energetically pursued, and is now approaching the termination of its labours. There still remain large numbers of outlying subscriptions to be collected, and communications are in course of being addressed to the various provincial committees as to the proportion of their funds which it has been decided to hand over to the All-India Memorial. When these objects have been attained, there will be no occasion to make a further demand upon services of the provisional committee, which will be dissolved. A small and strong executive committee will require to be appointed to conduct the future proceedings in connection with the Victoria Memorial Hall. We are now passing from the stage of collections to that of plans, designs and buildings, and the principal work that lies before us is about to begin. I propose to constitute this executive or building committee without delay.

In the meantime I will here give an outline of the point to which matters have progressed, and of the work that now lies before us. The general public, from whom we have derived so much of our support, will desire to know something of the manner in which it is proposed to utilise their contributions. From the discussion which took place a year ago, the following decisions emerged:—That the building in memory of the late Queen-Emress should take the form of a memorial hall, which should be primarily commemorative of herself, but should also recall the famous persons and events of Indian history, and that it should be erected upon the Maidan at Calcutta. During the year that has since elapsed anxious attention has been given to the following points:—(1) The style in which the building should be erected, (2) the material of which it

should be composed, (3) the exact site on which it should be placed, and (4) the best method of procuring suitable material. Upon each of these points I will say a few words.

#### *The Style of Architecture.*

1. The question of style has been examined in both to the objects of the building and to the nature of its surroundings. At first sight it might be thought that a building erected with Indian money on Indian soil should be in Indian style, but there is no distinctively Indian style. There are the various styles that have been connected with the periods of Indian religious or monumental art, Brahminical, Jain or later Hindu; there are also the Mohammedan, Saracenic and so-called Hindu-Saracenic styles. None of them, however, is indigenous to Calcutta, and none is suited to the purposes of a gallery or museum. If the style of architecture were adopted we should challenge comparison with the masterpieces of the past and invite certain criticism. There could be no greater rashness than to attempt a new style. None of the other styles admit of the large, spacious, lighted halls that are required for the display of sculptures, paintings, or trophies of whatsoever description.

It results from this examination that the only style indisputably suited to the object is the Classical style (which may be termed Greek, Italian, or Palladian), in which the building has been built every, or as nearly as possible every, art and museum in the world, a consensus of opinion that cannot be attributed to mere accident, but is admittedly due to unequalled merits and capacities of the style. In the case of Calcutta building, there is greater reason for such a choice than the fact that the style recommended is that in which 90 per cent of the larger buildings of Calcutta have already been constructed. It would be a dangerous experiment to plan a building on the Calcutta Maidan any great fabric that was completely out of harmony with the whole of its surroundings. Their style is not particularly good, but such as it is, it is uniform. If an Italian style, and there can, I think, be little doubt that the safest plan will be to erect a building which will not be spoiled by their neighbourhood nor make them look ridiculous.

#### *The Material.*

2. In one of my speeches last year I indicated that the material of the hall should, in all probability, be a pure white marble. This is recommended on the grounds of its purity and beauty, because of its peculiar suitability to the surroundings of a great park and garden, and because a surface, capable of receiving a polish, is more likely to resist the influences of a moist climate than ordinary stone. The choice then indicated appears to have been universally approved by public opinion, and there will probably be few to dissent from it.

An examination has been made of the leading quarries of white marble which are to be found in the States. Their capacity is no longer what it was in the past when they are alleged to have provided the material for the Taj and the pearl mosques of Agra and Delhi. It does not appear to be likely that slabs of any great size could be procured from them. There is a good deal of streaking and colouration in the modern marble, and a continuous wall-surface of uniform tint and texture could not easily be obtained. The greatest obstacle to the employment of Indian marble on a very extensive scale is the cost of land transport by rail to Calcutta. This is absolutely prohibitive. I may give an illustration. When I was ordering the white marble for the reduction of the Holwell Monument, which I am about to erect at the corner of Dalhousie Square, I procured estimates from the Rajputana quarries and from Europe. I found that an Indian firm, procuring the marble from Rajputana, could only land the completed monument in Calcutta at a cost of half as great again as the same article could be quarried, chiselled and shipped from Italy and deposited on the Calcutta wharves. When we come to deal with the enormous quantities of marble that will be required for the Victoria Hall, at a far from excessive sum of money at our disposal, the question of cost becomes a serious consideration. Nevertheless, although the bulk of our marble may have to be imported from abroad, I think that, as far as possible, we should make use of local material, and I am prepared to employ the Jeypore or Jodhpore or other marbles to the fullest degree compatible with the capacity of the quarries, qualified always by the consideration of expense.

Among foreign marbles to which we may have recourse have compared specimens of Greek and Italian marbles. The latter from the Carrara, Sicilian and other quarries are well known. The most famous Greek marbles were the Parian and Pentelican. The marble of which the Parthenon was built is still hewn from the slopes of Pentelicus at a distance of about 10 miles from Athens. The Parthenon is unquestionably the most beautiful white marble edifice in the world, always excepting the Taj, and the Pentelican marble is as good as it ever was. Its richness of texture, the faint streaking of iron pyrites in its composition relieving the dulness of ab-



and giving it a sort of sunny radiance as contrasted with the glassy and soulless lustre of the Italian marble, render it peculiarly suitable for building on a large scale.

#### *The Site.*

When I first broached the subject of the Victoria Hall at Calcutta, I indicated the north-east corner of the Maidan as the most suitable site, and I proposed that the ground about it should be converted into exquisite public gardens, in the centre of which should stand the memorial building. Since then I have made frequent detailed inspections of the site, and have tried it with every other possible locality on other parts of the Maidan. The only other at all eligible sites are the space between Eden Gardens and the Law Courts, and the site now occupied by the Presidency gaol, which the Bengal Government is anxious to vacate. The former plot of ground is much cramped. No view of the new building could be procured anywhere. No fine approach to it would be possible, and the building would be shut in between the cricket ground, the river, the courts and Government House Gardens. A great Classical building in marble would jar with a great Gothic building in stone, and yet the two would be separated at most only by a few yards. On the other hand, the site of the gaol is too far removed from the more populous quarters of the town, and the building would not attract as many visitors, or be as accessible to the public as it will be if placed at the nearer end of the Maidan. A third site has been mentioned near Prinsep's Ghat. Here, also, the space is too confined; there is no scope for an approach to the building, which could not be well except from the river; and I should not like to expose the exterior or the contents of the hall to the smoke of the funnels of the steamers always pouring across the Strand from the funnels of the river and the sooty chimney-stacks of Howrah. It appears on examination that the site originally suggested has no superior to any other.

Proceeding a little further, it may be laid down that the essentials to be borne in mind in determining the exact site are that the orientation of the building shall be such to make it askew with the principal neighbouring structural roads; that it shall have a fine approach; that its front shall face in a direction where it can be seen from the river, and that, if it is to contain, as has been suggested, a public hall, this shall be on a side where it will be easily accessible from the town, without interfering with the remaineries of the building. A careful correlation of all these results in the conclusion that the four sides of the main hall should face the four points of the compass, that the hall should be on the Chowringhee side, and that the western front should look straight towards the Maidan river, the axis of its main entrance being determined by the road which runs from Eden Gardens past the Lawrence Road from due west to due east. The porch of the Victoria Hall should be in a direct line with the centre of this road, after passing round the Hardinge statue, will then, by a sweep or otherwise, approach the main terrace of the hall and the great central flight of steps. In this case the Victoria Hall will be the main object from every part of the Maidan. It will emerge into view to anyone coming from Old Council House Street directly the corner of the Esplanade Row is reached. It will confront the visitor coming from the river with the full line of its main façade, dome and entrance arch will appear at the end of a fine approach already provided for the purpose.

The acceptance of the site here suggested will involve the removal of the Ochterlony Monument, since, although the Victoria Hall will not actually encroach upon the site of the monument, the south wall of the hall will be so near to it as to the juxtaposition of the two objects impossible and undesirable. Now if I am to be quite frank myself, I must confess I regard the Ochterlony Monument as the reverse of what I would like, and that in my opinion a bronze statue of that brave and distinguished commander would provide a more fitting commemoration of his illustrious services and career than the peculiar structure. But I recognise that to many it has become dear as a landmark of old Calcutta, and I may remark it is not a very old Calcutta, since the monument has only been standing for seventy years. I would, therefore, in this way. My own inclination would be to substitute a statue of Sir David Ochterlony in a prominent position on the Maidan or in the grounds of the Victoria Hall. Far more people would learn to know who he was by what he did by gazing upon his features in bronze climbing up the interior staircase of a brick and mortar pillar. In so far as the latter is required for the purposes of outlook, I will undertake to provide a better from the dome of the Victoria Hall, which will be at least as high as the Ochterlony Monument. Should, however, there be an over-expression of public opinion in favour of a reproduction of the Ochterlony Monument in its present form, then we might consider the re-erection of it on some other part of the Maidan. In such a case, however, I should greatly

fear the reproaches of posterity as to the narrow range of the artistic perceptions of the present Viceroy and his advisers.

#### *Procuring Designs.*

4. The remaining subject to be discussed is the best method of procuring designs. At first sight nothing seems better than to appeal to public competition in India and elsewhere, but a little reflection will reveal the deficiencies of this method. In India itself we have not many architects, though we have some who are qualified to erect, and have erected very pretty buildings in different varieties of the Hindu and Saracenic styles. It is doubtful, however, whether we could discover anyone with technical training or practical experience to undertake what ought to be one of the architectural masterpieces of the world. The last experience of Government, when we threw open designs for the new military secretariat at the north end of the Maidan to open competition, were not such as to encourage me to expect from this method the most satisfactory results. The difficulties as regards home competition are even greater, as if designs for a great public building in Europe are called for, every competitor can go in a few hours, or at the most, a few days to the spot. He can familiarise himself with the site and surroundings, while he will receive from the supervisory committee in personal interviews and consultation the most detailed information as to what is required. Here all is different. We cannot import a number of English architects to Calcutta to look at the ground and to study our conditions. Without any knowledge of Calcutta or of the Maidan, or of the Bengal climate, or of labour conditions and resources of India in marble and stone, an architect sitting in his chambers in London and drawing plans would be entirely at sea. We have not yet, until we know how much money we are likely to raise before the subscription lists are finally closed, been in a position to say what are the scale and character of the building that will be required, or what should be its internal arrangements. Even had we been ready with all these particulars, had we published them in suitable quarters at home, and had we received in response several hundred drawings, as I doubt not that we should have done, who is there among us who would have been qualified to choose from among them? And had we chosen, and had our choice fallen, as it probably would have done, on the design that seemed externally the prettiest to the majority of our number, who could guarantee that the architect who had drawn the most elegant elevation would be competent, in a foreign land of which he knew nothing and where everything is so different from Europe, to translate his paper design into a concrete structure? These difficulties and drawbacks are in reality so obvious as to need no further exposition. They were enhanced by the knowledge, which I derived from the most authoritative quarters, that the best English architects would decline to enter any such competition, and that we should to a large extent be dependent upon chance. In these circumstances I consulted those authorities in England who, in connection with the English memorial to the late Queen, had been brought in contact with all the most prominent English architects, and who were aware of their attainments and inclinations.

I was strongly advised to invite out to India Mr. William Emerson, president of the Institute of British Architects, to confer with me on the matter and to give me his advice. Mr. Emerson has had the advantage of having worked for many years of his life in India, where he has built some of the most important edifices at Allahabad and elsewhere, and consequently of being thoroughly familiar with Indian conditions, climate, materials and labour. He is also the architect who was accorded the first prize in the competition of designs for the Liverpool Cathedral, a building to be erected in the Classical style. I entered into communication with Mr. Emerson and invited him to Calcutta, where he spent ten days at the beginning of the year. There was no question connected with the building, its site, style, design, material, dimensions, structural arrangement, decorative features, accommodation and contents, which we did not thoroughly discuss. Between us we had already procured many scores of photographs of the most beautiful or famous Classical buildings in the world, and we were not less ready to borrow from the wisdom of the past than we were to formulate new conceptions. Relying upon the somewhat full description that I had given a year ago of the probable style and requirements of the Victoria Hall, Mr. Emerson had already prepared himself with many sketches and plans. These he revised and reconstructed while staying with me, and I am now in a position to discuss with the new committee the steps that should next be taken. I should add that no sort of arrangement has been made with Mr. Emerson, nor has any pledge been given to him. I have not the authority to bind anyone in the matter. A stage has, however, now been reached at which it will be necessary to decide whether Mr. Emerson be asked to furnish detailed drawings, or whether fresh and independent measures should be adopted. In order to furnish some idea of the line upon which Mr. Emerson, if



invited, would probably be inclined to proceed, I will briefly describe the nature and appearance of the design which was the outcome of our deliberations.

The nature of the soil in the Maidan is such that the foundations cannot be sunk to much greater depth than 4 feet. If a building of great size and weight is to be placed upon it, the foundations will therefore have to be continued above the surface of the ground. In other words, the fabric will have to be raised upon a terrace several feet in height. So far from regarding this as a defect, it seems to me a great advantage. It is an architectural device familiar in the cases of nearly all Mogul monuments, notably the Taj, and of many of the finest buildings in the world. Height and dignity will be given to the fabric if it be thus lifted, while the appearance of the white marble terrace balustrade around, ascended by a great flight of steps and supporting this main pile, will in itself be one of the main features of beauty. This terrace would probably be from 350 to 400 feet in length, and the building upon it of somewhat smaller dimensions. It is suggested that the form of the fabric should be a parallelogram, of which the main faces would be eastern and western, terminating in towers, and connected at the ends with curving, open colonnades. In the centre of the building would be the Queen's Hall, a circular marble chamber under a lofty dome rising to a height of some 160 feet from the floor. On either side, north and south of the central hall and dome, would be the interior garden court, surrounded by a two-storeyed loggia or arcade. We will suppose the visitor were entering this building from the main or western front. Perhaps an idea of its appearance and contents may be conveyed by attempting to follow in his footsteps. From the Maidan he would climb the great flight of marble steps to the level of the terrace. Upon this terrace, in front of him to the right and left would stretch the main façade of the building. In the centre would be a colossal entrance archway, under which would be placed upon its pedestal Mr. Frampton's bronze statue of the Queen, which was ordered at the time of the Jubilee in 1897, and which, having recently arrived in Calcutta, is about to be placed on a temporary site at the entrance to the Red Road. Mr. Frampton has been consulted on the matter, and it is his own desire that his statue should, if possible, be furnished with such a framework and background as the entrance to the Victoria Hall would provide. To the right and left of this main archway would stretch the white marble front of the building, terminating at the extremities, as has been said, in towers. The right hand or southern tower would be in immediate proximity to the site of the present Ochterlony Monument.

Entering under the archway, and passing the seated figure of the Queen, the visitor would proceed into an entrance hall or vestibule devoted to the collection of objects connected with her history, personality and reign. Here would be hung the series of pictures depicting important incidents in her life, which have already been presented to us by His Majesty the King. Passing through this, he would enter straight into the space under the dome. In this hall, the centre and core of the building, I contemplate that no other object should be placed but a white marble crowned statue of the Queen as a young woman raised upon a pedestal. Outside in the porch she will be depicted in bronze in a sitting posture as she was in advanced years; inside I would represent her standing as she appeared in her girlish grace when first she ascended the throne. Around the hall I would place the inscriptions in different tongues which I spoke of last year. Through the domed hall one would proceed to the similar exit on the eastern or Chowringhee face. Retracing our footsteps for a moment to the vestibule of the Queen's relics, we will suppose the visitor intends to inspect the remaining galleries of the building. If he turns to the left he will enter the great sculpture gallery, where he will see marble images of Warren Hastings, of Cornwallis, of Wellesley, of Hastings, of Dalhousie, and of many another *clarum et venerabile nomen*. This gallery will terminate in the left tower, with rooms for the curator, attendants, and lift. If he turns from the Queen's vestibule to the right he will enter the gallery of pictures, where he will see a long procession of likenesses of the men who rendered India famous during the last two hundred years. Through this he will pass to the right-hand tower, where the smaller rooms will be devoted to collections of prints, engravings, coins, and the like. The curving open colonnades will at either end connect these towers with similar towers at the extremities of the eastern façade. Should additional internal accommodation ever be required, the colonnade could be filled in or replaced by separate galleries. We will now suppose that our visitor, after inspecting the Queen's statue under the dome, intends to pass out towards the Chowringhee approach. In correspondence with the Queen's vestibule on the west side, he will enter the Hall of Princes on the eastern side, where the Indian princes will be invited to place such collections on gifts or on loan as they may be willing to offer. Here, as before, he will be able to branch off to the right or to the left. If he proceeds to the right he will pass

into a two-storeyed gallery, one floor of which will be devoted to Models (of famous buildings, sieges, battles, &c.), the other the Hall of Arms, where will be a collection of trophies, uniforms, weapons, flags, medals and guns. Passing to the left he will enter the great Durbar Hall, which will embrace two floors, and will occupy the entire north wing. This hall will be used for any ceremonial purposes, such as investitures, that may be held in Calcutta, and also be available, under strictly defined conditions, for other purposes, such, for instance, as the meeting held last year in commemoration of the late Queen. It should be the finest public hall in India. Placed in close proximity to the Chowringhee entrance, it will be readily accessible to the public and can be utilised quite independently of the Victoria Hall and without any interference with the latter. On the eastern façade there would be an exit facing the big clump of trees which occupies that part of the Maidan, round which a broad sweep would lead to Chowringhee.

Such, so far as words without a plan can bring it to the mind, is a rough sketch of the Victoria Hall as I like to see it planned. There remains only to be discussed the question of the surroundings. Here we must, to some extent, be guided by pecuniary considerations. The enclosing the plot by a large space of ground as a public garden, fencing it in with handsome iron railings, and the provision of suitable gates, will be a very expensive affair. But I everywhere conceded that such a building as it is proposed must in no wise suffer from lack of an adequate site, and that the grounds must be ample and beautiful. The site that seems most naturally to fall within the desired limits is that section of the Maidan that extends from Esplanade Row on the north to the intersection of the tram line and carriage road at the Mayor statue. The plot of ground included within these boundaries is about 30 acres, and embraces a part of the Maidan that is not used for games, but that is also year by year becoming increasingly shabby and denuded of grass. Tastefully laid out and with a simplicity worthy of the fabric that it will contain, the garden ought to be a great addition, both to the beauty of Calcutta and to the enjoyment of the public. It will be open by day, but not, of course, by night. The excavations for the foundations of the Victoria Hall will at the same time provide a suitable means of reclaiming the remainder of the Dhurrumtollah Tank, which has already been partially filled in.

These are the rough outlines of the work that is contemplated. For its successful execution a term of many years will in any case be required, while the sum at disposal of the committee is not yet such as to free the public from anxiety, or to render us reluctant to accept any further contributions that may be offered to the fund. Perhaps in the course of the years donors may be found to help us with independent gifts of railings, fountains or gates, while there is reason to hope for subscriptions in many quarters from which no response yet come. It must further be remembered that, in addition to the outlay upon the building and garden, considerable will be required for the purchase of the contents, up to the endowment.

## TESSERÆ.

### Ratio of Breadth to Height in Churches.

Too much stress is often laid on the greater proportion of height to breadth in the French Gothic architecture. It is not a general feature, the great majority of such visible countries alike having the height equal to twice the breadth. A higher proportion is confined to buildings of the largest size, for the larger they are the greater may this proportion be without appearing excessive. In England the chief exception of a proportion higher than the double breadth are at Salisbury, Winchester, Canterbury and Westminster, which is only in the building, both absolutely and in its relation to the site, which is as three to one. In France the same ratio is in the largest buildings, and is not exceeded either in Chartres, Paris, Orleans or Rouen cathedrals; but in the neighbouring St. Ouen and the colossal Amiens have the proportion of three and a half to one, which (especially in the latter) appear too great. St. Wulfram, at Abbeville, seems to still loftier proportion, or else, not being on a particularly high scale, this proportion is felt to be excessive. It might be supposed that the introduction of arching, by enabling wide openings to be covered than by lintels, while at the same time requiring more extent of abutment (for the same width of opening the higher it was raised above the ground, would for the same reasons have led to openings of a lower and wider proportion both in windows, arches, avenues and entire buildings. This was not the case, at least not in ecclesiastical buildings, designers of which continued to be fully alive to the necessity of tall proportions, even when obtained at the expense of cost and convenience, and they never, till the latest period,



admitted archways for any purpose, great or small, lower than their breadth.

### Early English Docks.

The first wet-dock for commercial purposes made in this country was formed in the year 1708 at Liverpool, then a place of no importance. It went by the name of the "Old Dock," but it was filled up at a later time and the site was taken by the Custom House. The first commercial wet-dock constructed in the port of London was for the accommodation of vessels employed in the Greenland whale-fishery, and was provided with the necessary apparatus for boiling the blubber. This branch of trade having almost entirely left the port of London, the dock was opened for the reception of vessels employed in the European timber and corn trades, and was given over to the latter a range of granaries was built. This dock, which is now known as the Commercial Dock, is situated at Rotherhithe. Up to the end of the eighteenth century all ships arriving in London, with the exception of the Greenland whale-ships, discharged their cargoes into lighters in the river. The continually increasing inconvenience thus caused by the growing trade of the port was much aggravated during a time of war by the presence of the West India ships arriving together in great numbers under convoy. To remedy this inconvenience a scheme was projected in 1793 for constructing wet-docks for the accommodation of ships employed in the West India trade, but it was not until 1799 that the scheme was sanctioned by Parliament, and that an Act was passed incorporating a company for the purpose with a capital or joint-stock of £1,380,000. Docks constructed under this Act of incorporation are known as the West India Docks. Their construction was commenced in February 1800, and was prosecuted so vigorously that in less than two years and a half from that time the works were fully advanced to admit vessels for unloading. The West India Docks were commenced in 1801, and were opened in 1804, owing to the want of accommodation in them. The St. Katherine Docks were constructed and opened in 1804, and the docks at Bristol were commenced in 1804, under the authority of an Act of Parliament obtained by Geo. III., and were first opened in 1809. They were formed by digging a new course for the Avon south of the old one, and by converting the whole of the old channel, from the old dam erected above the Bristol Bridge in St. Philip's parish to the entrance lock at Rownham, including the branch quays within the quays of St. Augustine and St. Andrew, into one floating harbour about three miles in length.

### The Greek Canon of Proportion.

The Greek canons of human proportion may be taken as a standard into law, the innate taste of the Greeks, their theories of studying and their loving study of the subject, leading to invest their conclusions with an authority which has since been questioned. They divided a perfectly proportioned human figure into ten or eight parts—ten if the face be taken as the divider, eight if the head—the face into three parts, from the root of the hair to the spring of the nose, the nose, one; and one from the nose to the bottom of the chin; from the root of the hair to the top of the head gave four parts, and constituted what is technically called a canon. To the heroic human figure were given eight heads or eight times the height of the head in the lengths. In like manner heads or parts of heads were measured the length of the upper and lower extremities, and also of the trunk. Whether or not these measurements were actually found among the beautiful inhabitants of Asia we do not know; but they are not the average proportions of modern dwellers in the cities of Europe, the head, and especially the face, being usually disproportionately large. It is common to find the relative proportions of the limbs corresponding with the Greek measurements, with rather a tendency to shortness of the lower extremities; but the small head is so far unusual that it is remarkable and justly considered a great beauty. Attention may be called to the fact that bigness and smallness are not the same things, though commonly confounded together. A person may be of tall proportions on a small scale and of short proportions on a large one. A model of a man may be 2 feet high, preserving the heroic or divine proportions, tall as a god, while a model of a dwarf may be 1 foot high, having still the stumpy proportions of a dwarf.

### Counterfeit Styles of Art.

It is greatly for the health and strength of early art as Italy as in Germany that it did not begin with imagination and what is true of the progress of a school is true of the progress of an individual, for the young painter who begins with imagination (and this was the fatal mistake of Blake) is at the wrong end of the art. Hogarth painted portraits of groups before he began to invent, and the angels of the Christian painters were but a higher order of the attendants

of the altar, while the attitudes and expressions, and generally the garments of their saints were suggested by the realities that were every day before their eyes in churches and convents. But in proportion as the imaginative faculty developed itself the painters ceased to introduce into sacred subjects priestly habits, and the practice was entirely laid aside by Michelangelo and Raphael, in whose hands the art became truly poetic and entirely Catholic. Eastlake says that "among the merits or recommendations of the cartoons may be reckoned their being interesting in all places and to all classes of Christians. But for this circumstance, perhaps, we should not now possess them, for when the treasures of art collected by Charles I. were sold, and such pictures as were deemed 'superstitious' even ordered to be 'forthwith burnt,' the cartoons would hardly have been repurchased by Cromwell, to whom we are indebted for preserving them to the nation, if they could have been considered to come within the proscribed class. Nothing can more strikingly show the universality of Raphael's mind. But the young painter is now told that he must 'ascend to the fountain head, that he must study Duccio and Giotto that he may paint like Taddeo di Bertolo and Masaccio—Taddeo di Bertolo and Masaccio that he may paint like Perugino and Lucca Signorelli—and Perugino and Lucca Signorelli that he may paint like Raphael and Michelangelo.' But why should he aim to paint like any, even the last of these? Why attempt that which never has and therefore never can be accomplished? namely, the reproduction of the exact style of any age or master. Northcote was told that a picture had been painted by a living artist that might be mistaken for a Claude. 'Then I know,' was his reply, 'that it is good for nothing; if you should tell me that a picture were painted as fine as a Claude it would be quite another thing, for to be equal to Claude a painter must be as distinct from him as he was from all the painters before him. He must have looked at nature for himself, as Claude did, availing himself of the assistance of previous art only in the degree in which Claude did so.'

### Impost Mouldings.

The horizontal mouldings serving as a sort of cap or cornice to the piers of arches, and on which the archivolt or curved mouldings and facie surrounding the arches themselves rest, are known as an impost. Like these latter, the impost is made plainer or richer, according to the order employed or to the general character of the design. And when the archivolt of the arches are omitted, either the impost is omitted likewise or a plain band is substituted for it. This is generally done in basements beneath an order, they being usually rusticated, and the joints of the rustics sufficing for decoration and giving the requisite architectural expression. Imposts are contrary to the genius of the Pointed style, but, except in the case above alluded to, essential in Roman and Greco-Roman architecture. We have, however, a few instances in which impost has been omitted, and the archivolt of the arch continued vertically down the edges of the piers. This was a favourite practice with Soane, both in his designs and many of his executed buildings, and it was also adopted by Burton in the arches of the Ionic screen and opposite gateway, Hyde Park Corner, Piccadilly; but the effect is by no means happy, especially in external architecture, though it may be tolerated in buildings on a small scale, or which make no pretensions to correctness of style.

### The Basilica.

As Milman remarks, in referring to the Roman basilicas, that "as these buildings were numerous, and attached to any imperial residence, they might be bestowed at once on the Christians without either interfering with the course of justice, or bringing the religious feelings of the hostile parties into collision." Still, the instances of actual transformation are exceedingly rare—in most cases it must have been impossible from the erection of the early Christian churches on the graves, real or supposed, of martyrs and apostles, which, according to the almost universal practice of the ancient world, were necessarily without the walls of the city, as the halls of justice, from their connection with everyday life, were necessarily within. It is in some such grounds as these, we imagine, that M. Bunsen conceives there must have been something in the type itself of the basilica, at least not uncongenial to the early Christian views of worship, independent of any causes of mere accidental convenience. There were reasons for the rejection of the temple plan, although familiar to the Romans. There was now a church, a congregation, an assembly, which could no longer be hemmed within the narrow precincts, or detained in the outer courts of the heathen *temenos* or enclosure; where could they be so naturally placed as in the long aisles which had received the concourse of the Roman populace, and which now became the nave of the Christian cathedrals? Whatever distinctions existed in the Christian society were derived, not as in the Jewish temple, from any notions of inherent religious differences between different classes of men, but merely, as in the Jewish synagogue, from considerations of



order and decency, and where could these be found more readily than in the separate places still retained by the sexes in the aisles of the basilica, or the appropriation of the upper end of the building to the clergy and singers, from whose ministration it became transformed into the choir or chorus? There was a law to be proclaimed, and a verdict to be pronounced by the highest offices of the new society, and what more natural than that the bishop should take his seat on the lofty tribunal of the prætor, and thence rebuke, exhort or command with an authority not the less convincing because it was moral and not legal? There was, lastly, a bond of communion between all the members of that assembly to which the occupants of the temple and the basilica had been alike strangers—what more fitting than that the empty centre of the ancient judgment hall, where its several avenues and aisles joined in one, should now receive a new meaning, and that there, neither in the choir nor nave, but in the midst of them all, should be erected the altar or table of that communion which was to belong exclusively neither to the clergy nor to the people, but to bind both together in indissoluble harmony?

#### The Panorama of Rome.

It is the peculiar distinction of Rome to have been not merely a capital, but the capital of the world, in a sense in which no other city has been or is likely to be again—that though never, until lately, the capital of Italy, it yet did eventually become the capital of the ancient civilised world. And it is precisely of this closing period—not of the period of its growth and of its struggles—that the Roman ruins bear the deepest impress. What a mist is rolled away from our eyes the moment that we are allowed to trace the course of the Via Sacra up to the Temple of the Capitoline Jupiter on its rightful place upon the Tarpeian rock, and to find the true direction of the Forum in the open space between the Capitol and the Colosseum. How naturally does the execution of the Catilinarian conspirators rise before us, when, in the substructures which lie immediately beneath the scene of their imprisonment in the Mamertine prison, we recognise the basements of the Temple of Concord, in which the Senate was convened to pronounce the fatal sentence. How lively is the interest with which we regard the three pillars which stand immediately in front of the ancient Treasury, hewn out of the Capitoline rock, when we discover in them the remains of the Temple of Saturn, whose gates the Tribune vainly endeavoured to defend against the attempts of Cæsar to appropriate the treasures of the State which lay behind it. Still, when from particular details we turn to the general effect of the whole scene, there can be no doubt that it is not Republican but Imperial Rome which rivets our attention. It is almost startling to observe the peculiar significance of almost all that remains of that time, when its material and outward aspect most truly represented its inward life. Let any one look over the mass of ruins within the city, as he stands on the tower of the Capitol—the Temple of Vespasian, vindicating by its solitary grandeur its just title, which connects it with the restorer of the city after the desolation which had laid it waste from Galba to Vitellius—the crash of the Palace of the Cæsars on the hill from which it derives its name—the huge mountain of the Amphitheatre of Titus—the three triumphal arches, each with the mark of destiny on its front; or let him gaze on that perhaps yet sublimer view without the city, which is commanded by the terrace of the Lateran Church—the desolate Campagna, with the ever-varying lights and shades empurpling its deep indentations—the long files of broken aqueducts advancing, as if in melancholy cavalcades, towards the city which they never reach; and he will feel that he has seen the ruin of the most august power that was ever enthroned upon the earth—he will understand how truly the Apocalyptic Seer saw in the imperial city which sat upon the Seven Hills, though in a greater and more awful form, a true revival of no less than the ancient Babylon.

#### GENERAL.

**Mr. Seymour Lucas, R.A.**, has had the honour of submitting a picture of the reception of the mission from the Sultan of Morocco by the King at St. James's Palace, which he is painting for His Majesty.

**A Memorial Tablet to Charles II.** has been set up at Chalmouth, where the monarch spent a night waiting for a boat which was to be provided at Lyme Regis, and another tablet at Ellesdon farmhouse. A third will be unveiled to-day at Broadwindsor.

**M. Léon Noel**, the actor, who is now appearing in Paris in the "Courier of Lyons," has informed an interviewer that his country house has been constructed with materials derived from a church dedicated to St. Firmin at Arc-en-Brie, and erected by St. Louis in 1257.

**M. Theobald Chartran**, the French artist, who is intimate friend and comrade in the field of the late Regnault, is now in America. Among his latest portraits are those of Mrs. Roosevelt and Miss Roosevelt, the daughter of the President.

**Mr. J. Oldrid Scott** prepared the design for a silver mace presented last Saturday to the Dean of Salisbury by the ladies of the diocese, for use in the services at the cathedral.

**The Municipal Architects** of Paris have begun the completion of the revision of the cadastral survey which occupied them during three years. It has been ascertained that there exist 74,025 properties in houses, and 1,000 buildings.

**Mr. G. H. Chance**, the formerly well-known French painter, has died in London at the age of ninety-five. He was assistant to the elder John Linnell, father of the late painter, and afterwards succeeded to the business.

**Calcutta** is to be improved by driving wide open roads through the slums of the city at a cost of 10 millions sterling.

**A Builder** was fined 10s. and a working painter 5s. for costs in the Marylebone police court on Tuesday for obstruction, annoyance and danger of persons passing the street by standing on a window-sill for the purpose of looking out of the window, such sill being more than 6 feet from the ground, without supports sufficient to prevent falling.

**The First Exhibition** of the Society of Illumination opened yesterday in Paris. Not more than forty members were admitted. The president is M. Atalaya, and the vice-president M. Foucher.

**The Swiss Parliament House** in Berne was opened on Tuesday. The buildings, which have cost 8,000,000 francs, were designed by Professor Auer, of St. Gall. Swiss and Swiss material were employed in the embellishment of the building. The new palace, which is surmounted by a cupola, is placed between the two Government palaces, whole now constituting one building.

**A Stained Glass Memorial East Window** and a gate were dedicated on Saturday last at the old church of St. James's, Shere. The lych-gate is of local construction, the design of Mr. Lutyens.

**An Official Inspection of Bridges** in France is now accomplished every five years, but henceforth one-fifth of the steel bridges on railways and public roads will be inspected each year.

**Mr. Peter S. McIntyre** has been appointed to a scholarship in the British School of Archaeology in Rome by the University of St. Andrew. This is understood to be the first appointment of the kind that has been made by a Scottish University.

**Mr. T. W. Shore, F.G.S.**, has come to the conclusion that the "Round Table" in the Castle Hall, Winchester, dates about the year 1252-53, and that the term "Round Table" was the name for a knightly order, or knights assembly, or tournament, such as kings were wont to hold at Winchester, the days when the city was a royal place of residence.

**The Exhibition** of royal portraits at the New Gallery will not be closed until Saturday, the 12th inst.

**Mr. George James Frampton**, sculptor, was at the general assembly of the Royal Academy elected an Associate Academician. He was born in 1860 and obtained the gold medal of the Academy in 1887. He worked in the ateliers of M. Bouveret and M. Mercié in Paris.

**The Court of Governors** of the University of Wales, Aberystwith, have decided to extend the department at a cost of about 5,500*l.* Upon the question of a national museum for Wales, the governors believe that regard to the geographical and educational condition of the Principality, the objects in view would be best served by the libraries or museums of a national character in the centres of university education in Wales.

**The Works** of Messrs. Doulton & Co. at Lambeth were visited on Wednesday next, at 2 30 P.M., by students of the Institution of Civil Engineers.

**Archbishop Eyre** died in Glasgow last week. He was not a Scotsman, from the time he was called to the see he devoted much study to its ancient buildings. He was an earnest supporter of the Glasgow Archaeological Society.

**The Series** of Saturday afternoon excursions of the Geological Field Class, conducted by Professor H. G. F.R.S., will commence on April 26, when a visit will be made to Erith, and the excursions will be continued on each Saturday (except on Saturdays before Whitsuntide and Coronation week) until July 12. Further particulars may be obtained from the hon. general secretary, Mr. R. Bentley, 43 Gloucester Road, Brownswood Park, N.



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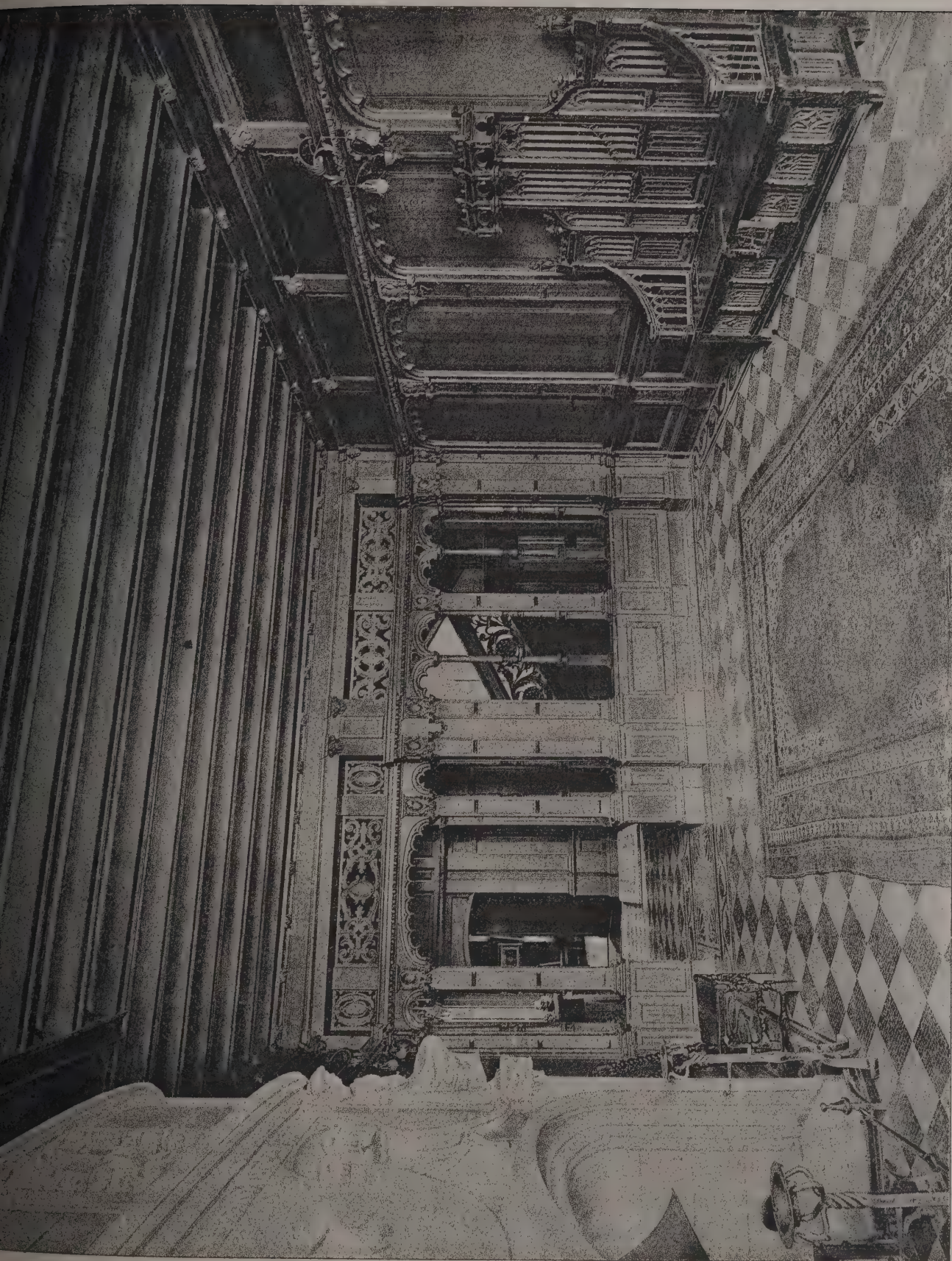


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"AUCHENNAN," BALLOCH, N.B.: THE HALL.

A. W. PATERSON, M.A., Architect.

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"AUCHENDENNAN," BALLOCH, N.B.: DINING ROOM.

A. W. PATERSON, M.A., Architect.





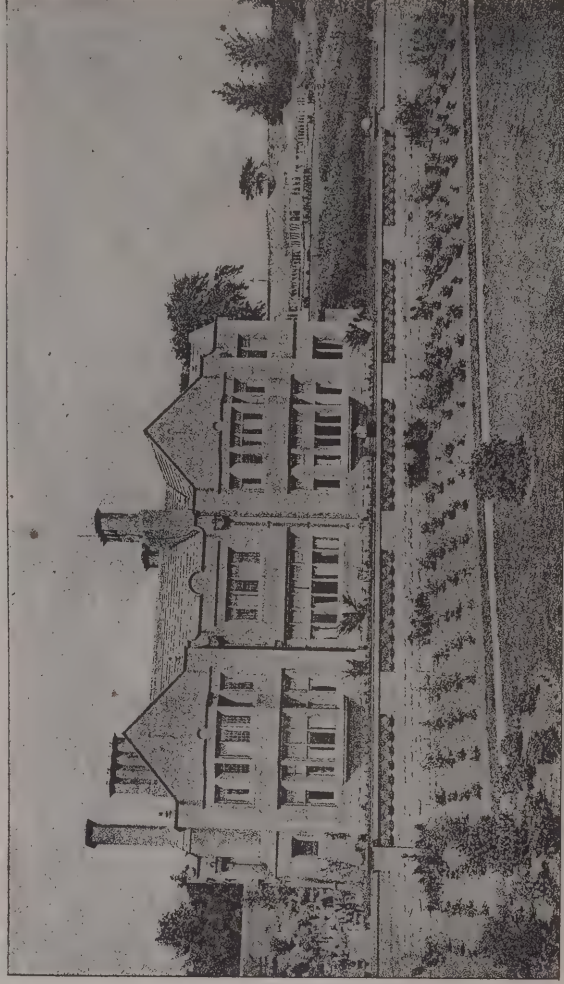


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SOUTH-WEST ELEVATION.



SOUTH ELEVATION.



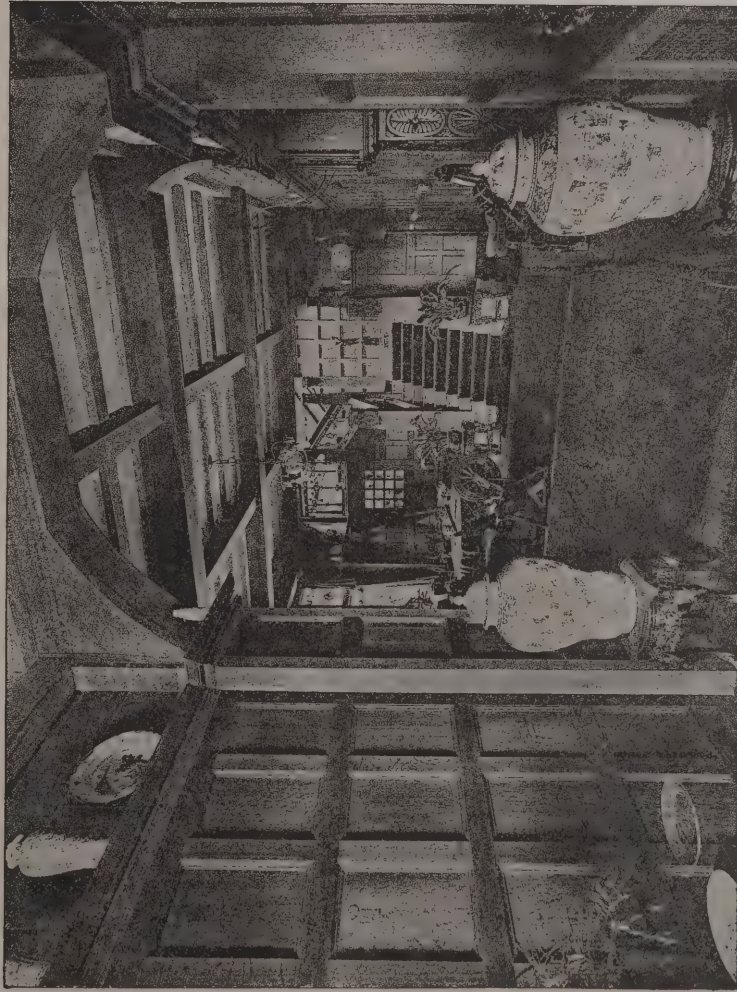




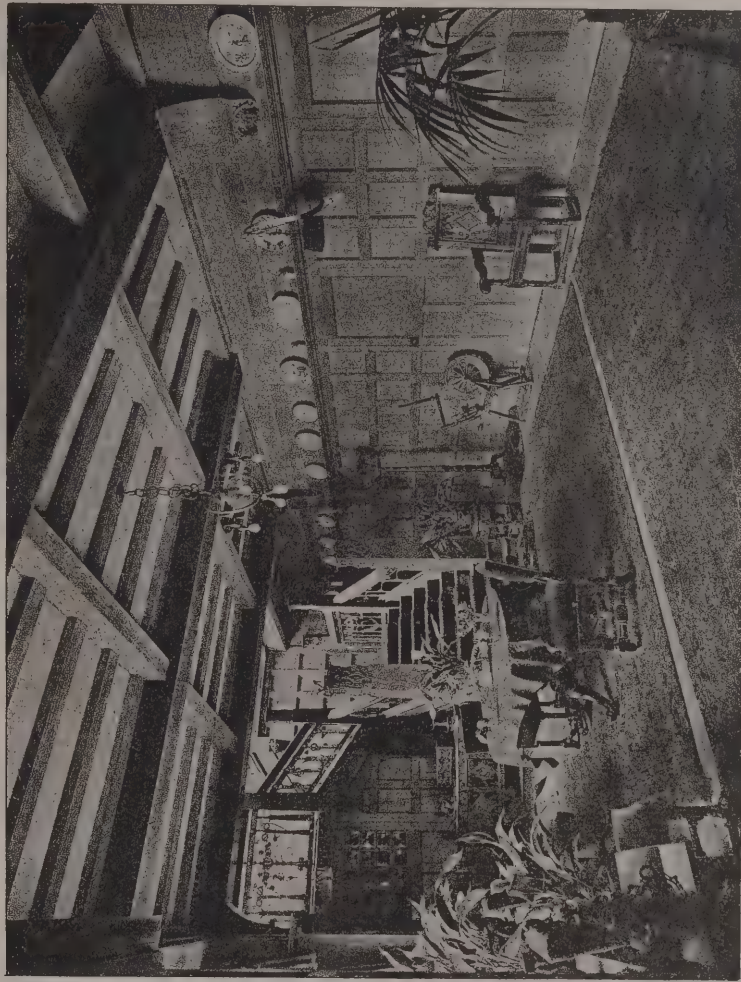
MORNING ROOM.



BILLIARD ROOM.



HALL.



HALL.

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Messrs. ADKIN & HILL, Architects.



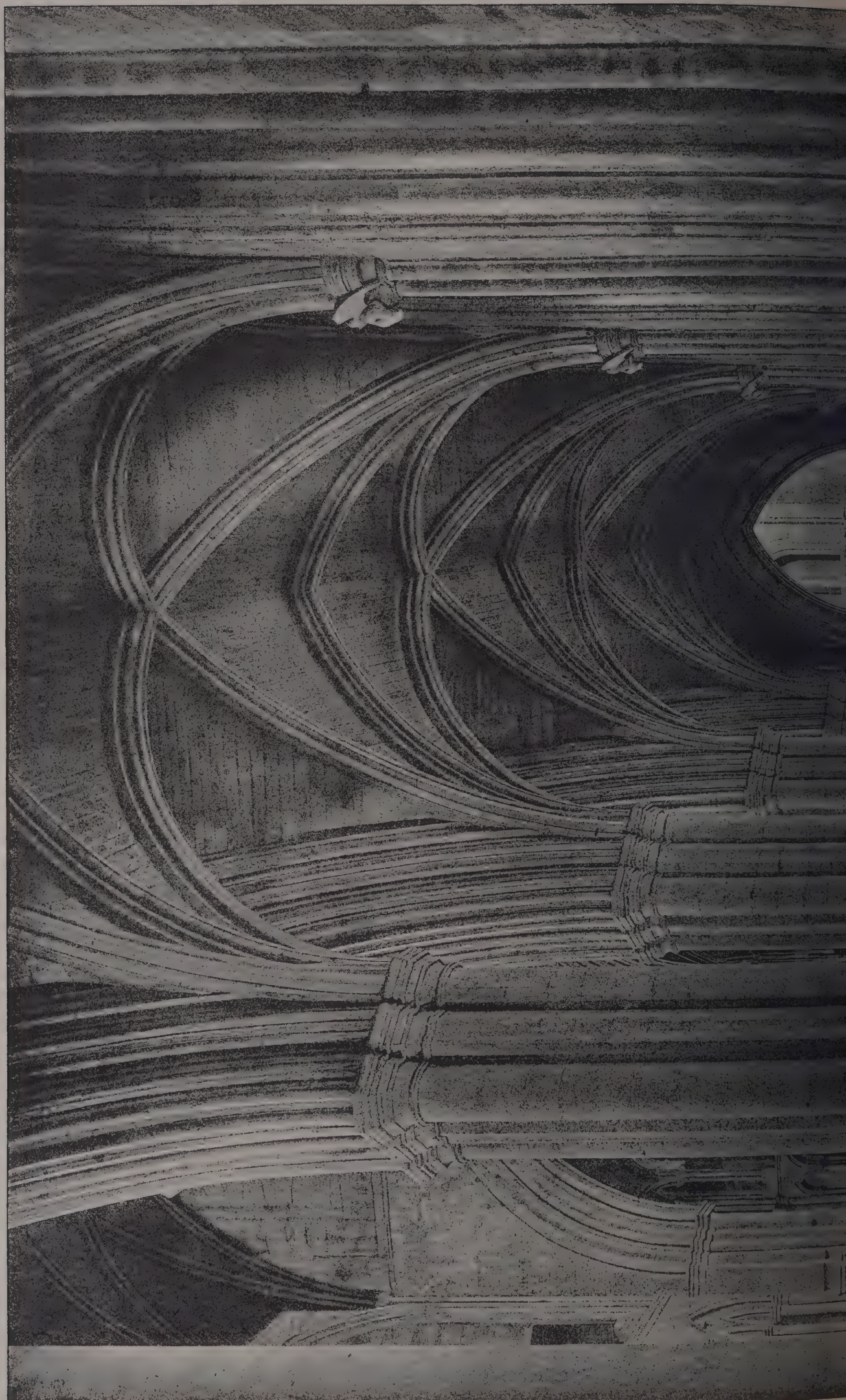




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The Architect, April 4<sup>th</sup> 1902.







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CATHEDRAL SERIES, No. 383.—RIPON: THE SOUTH NAVE AISLE, LOOKING EAST.







THE  
Architect and Contract Reporter.

## EDITORIAL NOTICES.

few of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

## TENDERS, ETC.

A great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

STRALIA.—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West.

HARROGATE.—May 14.—Designs required for a new town. Premiums, 150*l.*, 100*l.* and 75*l.* Mr. F. Bagshaw, town engineer, Harrogate.

GLASGOW.—April 21.—Designs are invited for twenty-five men's houses for the Coleraine Urban District Council. Premiums, 10*l.* Mr. W. Henry, clerk to the Council.

GLASGOW.—April 21.—Prizes of 20*l.* and 10*l.* respectively awarded for the first and second schemes in order of merit for utilising to the best advantage a plot of ground offered by the Council for the erection of about twenty-five men's houses in Coleraine. Mr. William Henry, clerk, Coleraine.

KNARESBOROUGH.—June 1.—The Harrogate and Knareborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital at Thistle Hill, Knareborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

MEXBOROUGH.—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25*l.* and 10*l.* are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

OLDHAM.—April 8.—Competitive drawings are invited for erection of new market hall and shops in Albion Street and Henshaw Street. Premiums will be awarded to the authors of the three selected designs, viz. 50*l.* for the design placed first, 30*l.* for the design placed second, and 20*l.* for the design placed third. Mr. S. A. Pickering, borough surveyor, Oldham.

SCOTLAND.—April 30.—Designs are invited for a branch library for the Anderston district, Glasgow. Sir J. D. Marwick, town clerk, Glasgow.

SUNDERLAND.—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

YORK.—May 1.—Designs are invited for a Memorial to the late Queen Victoria to be placed in the Guildhall, York. The design must include a representation of Her Majesty, and be accompanied by an estimate of the cost of the work complete, such cost not to exceed 1,000*l.* A prize of 50*l.* (to merge in the commission) will be given for the accepted design. Mr. W. H. Andrews, town clerk, Guildhall, York.

## CONTRACTS OPEN.

ALDERSHOT.—April 15.—For erection of eight cottages, stabling with harness-room, coachhouse, &c., eight prisoners' cells and sundry alterations and additions at Aldershot police-station. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

ASHFORD.—April 18.—For supply of a four horse-power self-contained vertical engine at the schools at Ashford, Middlesex. Mr. F. G. Beeching, clerk to the managers, Ashford, Middlesex.

BARROW-IN-FURNESS.—April 15.—For alterations to the Hindpool Road Wesleyan chapel. Messrs. Sames & Henshaw, architects, Abbey Road, Barrow.

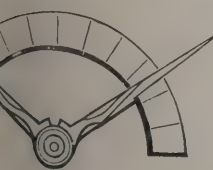
BARTON-ON-HUMBER.—April 15.—For erection of a mission church at Barton-on-Humber. Mr. C. Hodgson Fowler, architect, Durham.

BATH.—April 14.—For sundry works at the Bath Statutory Hospital, Claverton Down. Mr. F. W. Gardiner, architect, Barton Street, Bath.

BEAMINSTER.—April 8.—For erection of an institute and public hall at Beaminster, Dorset. Messrs. Kitson & Trotman, Fleet Street, Beaminster.

BEXLEY HEATH.—April 28.—For the supply of tramway rails and accessories, and the supply and erection of engines, alternators, dynamos, &c. Mr. T. G. Baynes, clerk, Public Hall, Bexley Heath.

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**BLACKBURN.**—April 22.—For erection of premises in Darwen Street, Blackburn, for the Lancashire and Yorkshire Bank, Ltd. Messrs. Stones & Stones, architects, 10 Richmond Terrace, Blackburn.

**BLACKPOOL.**—April 8.—For erection of public mortuary and post-mortem chamber, off New Road. Mr. John S. Brodie, borough surveyor, Town Hall, Blackpool.

**BRADFORD.**—April 9.—For erection of a shed at Eastwood Mills, Bradford. Messrs. Empsall & Clarkson, architects, 7 Exchange, Bradford.

**BRADFORD.**—April 15.—For erection of bakery at Great Horton. Messrs. Morley & Co., King Cross, Halifax.

**BRIDLINGTON.**—April 8.—For construction of a road bridge (steel girders and brick abutments) over the Hull and Scarborough railway at Bessingby Road crossing, Bridlington, for the North-Eastern Railway Company. Mr. C. N. Wilkinson, secretary, York.

**BUXTON.**—For alterations and additions to the Catholic schools. Messrs. Garlick & Flint, architects, Terrace Road, Buxton.

**BURNHAM-ON-CROUCH.**—For additions to the schools. Messrs. Chancellor & Son, architects, Chelmsford.

**CALLINGTON.**—April 7.—For erection of a dwelling-house at Woodland, near Callington. Mr. John Sansom, architect, Liskeard.

**COCKERMOUTH.**—April 7.—For erection of a greenhouse at the cemetery. Mr. T. Cuthbert Burn, clerk to the Burial Board, Main Street, Cockermouth.

**CROYDON.**—April 7.—For erection of a cottage at the electricity works, Factory Lane. Mr. E. Mawdesley, town clerk, Town Hall, Croydon.

**DERBY.**—April 9.—For erection of a stone retaining wall, with wrought-iron parapet railing. Mr. John Ward, borough surveyor, Babington Lane, Derby.

**DURHAM.**—April 10.—For erection of a dwelling-house at Burnopfield. Mr. Geo. T. Wilson, architect, 21 Durham Road, Blackhill.

**FALMOUTH.**—April 18.—For erection of coastguard buildings at St. Anthony's Point, near Falmouth. Particulars will be supplied by the Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.

**GATESHEAD.**—April 7.—For construction of a mortuary at Dunston. Mr. Thomas Lambert, clerk, Hall, Gateshead.

**GATESHEAD.**—For improvements to schools. Mr. Harding, clerk, or to Gateshead School Board, Gateshead.

**GLOUCESTER.**—April 21.—For erection of an infants' school in Linden Road. Mr. H. Medland, architect, 15 Clarendon Street, Gloucester.

**GRAVESEND.**—April 8.—For erection of an additional wing to the hospital, Denton, near Gravesend. Copies of the drawings and specification will be forwarded upon application to the City Surveyor, Guildhall, E.C.

**HAWKSWORTH.**—April 10.—For erection of a Wesleyan chapel school and caretaker's cottage at Hawksworth, Yorks. Messrs. Walker & Collinson, architects, Arcade, Bradford.

**HITHER GREEN.**—April 10.—For erection of an engine house at the Park Fever Hospital. Specification prepared by the surveyor, for the Metropolitan Asylums Board. Specification, conditions of contract, &c., may be obtained at the office of the Metropolitan Asylums Board, Embankment, E.C.

**ILFORD.**—April 14.—For erection of a junior mixed school for 500 children, with latrines, playsheds, caretaker's house, &c., on the Loxford Hall estate, Ilford. Mr. C. J. Dainton, architect, 7 Bank Buildings, Ilford, Essex.

**IRELAND.**—April 7.—For construction of a lean-to shed on the west side of the goods shed on Donegall Quay, Belfast. Mr. W. A. Currie, secretary, Harbour Office, Belfast.

**IRELAND.**—April 8.—For erection of four villas at Whiteabbey, Belfast. Mr. James G. Lindsay, architect, 1 Gloucester Place, Belfast.

**IRELAND.**—April 9.—For erection of Crown post office and caretaker's residence at Omagh. Mr. J. L. Donnelly, town surveyor, Omagh.

**IRELAND.**—April 9.—For erection of a church at Lisnacorney, Drogheda. Mr. Frederick Shaw, architect, Drogheda.

**IRELAND.**—April 11.—For erection of a pair of detached villas in Deramore Drive, Malone Road, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

**IRELAND.**—April 12.—For erection of two villas on the Purdysburn Estate, Belfast. Messrs. Graeme-Watt & Thompson, architects, 77A Victoria Street, Belfast.

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IRELAND.—April 14.—For erection of a parish church at [unclear], diocese of Ross. Mr. M. A. Hennessy, architect, 74 [unclear] Hall, Cork.

IRELAND.—April 17.—For erection of a parochial hall at [unclear], Portadown. Mr. J. W. Walby, architect, Portadown.

IRELAND.—April 21.—For erection of houses as follows, for Great Northern Railway Company (Ireland):—Stationer's house (two storey) at Ballybay, 26 miles from Dundalk; stationmaster's house (one storey) at Aldergrove, near [unclear]; four gatekeepers' cottages on Hill of Howth, near [unclear]; porter's cottage at Duleek, five miles from Drogheda; signalmen's cottages at Donabate, 11½ miles from Dublin; signalmen's cottages at Fintona Junction, near Omagh; terrace of ten workmen's houses at Dundalk. Mr. T. [unclear], secretary, Amiens Street Terminus, Dublin.

IRELAND.—April 23.—For alterations and improvements [unclear] house buildings, Glennamaddy. Mr. Robert J. Kirwin, architect, Glennamaddy.

IRELAND.—April 24.—For supply and erection of (Sec- [unclear]) engine-house plant—one 300 kw high-speed dynamo [unclear] accessories, with pipes; (B) extension of switchboard— [unclear] and instruments for dealing with above; (C) electricity [unclear] mains, at Rathmines. Mr. F. P. Fawcett, town clerk, [unclear] Hall, Rathmines.

KENDAL.—April 19.—For erection of two shops, billiard- [unclear] &c., at the Railway hotel, Kendal. Mr. Joseph Bintley, architect, 7 Lowther Street, Kendal.

AMBETH.—April 15.—For erection of offices, nurses' home, [unclear] station and lodge adjoining the infirmary in Brook Street, [unclear] Road, S.E. Mr. S. R. J. Smith, architect, 14 York [unclear] ings, Adelphi, W.C.

LEATHERHEAD.—April 22.—For erection of a brick wall at [unclear] John's Foundation school, Leatherhead. Rev. Sutton [unclear] son, 1 The Sanctuary, Westminster Abbey, S.W.

LONDON.—April 10.—For erection of a gate porter's lodge [unclear] in addition to the steward's house at the Northern Con- [unclear] tent Fever Hospital. Mr. T. Duncombe Mann, clerk, [unclear] Metropolitan Asylums Board, Embankment, E.C.

LOWESTOFT.—April 9.—For erection of a house at Carlton [unclear] Scott Cockrill, Lowestoft.

MANCHESTER.—April 7.—For erection of two electricity [unclear] sub-stations at Didsbury and Rusholme. Office of the City [unclear] Surveyor, Town Hall, Manchester.

MANSFIELD.—April 10.—For erection of an organ chamber, [unclear] &c, to St. Peter's Church, Mansfield. Mr. C. Hodgson [unclear] Fowler, architect, Durham.

MIDDLETON-ON-THE-WOLDS.—April 10.—For erection of [unclear] Wesleyan chapel and schools at Middleton-on-the-Wolds. Messrs. Gelder & Kitchen, architects, 76 Lowgate, Hull.

NANTWICH.—April 7.—For erection of electricity works [unclear] and refuse-destructor. Mr. W. F. Newey, surveyor, Market [unclear] Street, Nantwich.

OLD BRENTFORD.—April 14.—For erection of schools for [unclear] 550 children in Ealing Road, Old Brentford. Messrs. Nowell [unclear] Parr & Kates, architects, 5 Brent Road, Brentford, W.

OLDHAM.—April 9.—For complete electrical equipment of [unclear] new tramcar dépôt at Wallshaw. Mr. S. A. Pickering, borough [unclear] surveyor, Town Hall, Oldham.

POOLE.—April 8.—For additions to infants' schools, [unclear] Lagland Street. Mr. H. F. J. Barnes, architect, Towngate [unclear] Street, Poole.

PORTSMOUTH.—April 16.—For erection of a Wesleyan [unclear] church in Twyford Avenue, North End. Mr. G. E. Smith, [unclear] architect, 145 Victoria Road North, Southsea.

RAWCLIFFE.—For erection of a house at Rawcliffe, Yorks. Mr. E. C. B. Tudor, architect, Burlington Crescent, Goole.

ROTHERHAM.—April 11.—For erection of minister's house [unclear] with cottage adjoining, Rawmarsh Hill, Parkgate. Mr. J. [unclear] Platts, architect, High Street, Rotherham.

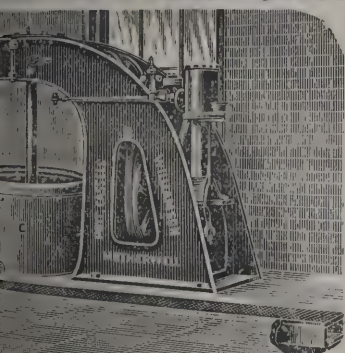
SALFORD.—April 11.—For erection of a nurses' home ad- [unclear] joining the union infirmary, Eccles Old Road, Pendleton. Mr. [unclear] H. Lord, architect, 42 Deansgate, Manchester.

SANDWICH.—April 21.—For carrying out alterations to the [unclear] sewage-disposal works for the parish of Ash, near Sandwich, [unclear] Kent. Mr. F. S. Cloke, clerk to the Easry Rural District [unclear] Council, Sandwich.

SCOTLAND.—April 4.—For strengthening west quay wall of [unclear] West Dock with tie-rods, &c, for the Burntisland Commis- [unclear] sioners. Mr. T. A. Wallace, clerk to the Harbour Commis- [unclear] sioners, Burntisland, Scotland.

SCOTLAND.—April 12.—For the supply and erection of [unclear] three 100-kw. steam dynamos (vertical enclosed high-speed

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SCOTLAND.—April 12.—For construction of sewage-tanks and filter-beds and the laying off of land filters in connection with the sewage disposal works, Bathgate. Mr. Wm. Allan, town clerk, Bathgate.

SCOTLAND.—April 15.—For erection of a public slaughter-house on the farm of Thirdmailing, West Kilbride, Ayrshire. Mr. Andrew McQuaker, architect, Glenbank, Dalry.

SCOTLAND.—April 21.—For erection of a dwelling-house at Bridgefoot, Wardhouse. Mr. John Craigen, solicitor, 193 Union Street, Aberdeen.

SCOTLAND.—April 28.—For erection of a Gothenburg public-house, shops and dwelling-houses at Lumphinnans. Mr. William Birrell, architect, 200 High Street, Kirkcaldy.

SLAITHWAITE.—April 10.—For erection of a villa residence at Wood Top, Slaithwaite, Yorks. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

SOUTHEEND-ON-SEA.—April 8.—For supply and erection at the electricity works of one balancer, two boosters, one motor-generator, two battery switches, &c. Mr. William H. Snow, town clerk, Southend-on-Sea.

SUTTON SCOTNEY.—April 17.—For erection of a pair of cottages on Lower Cranbourne Farm, near Sutton Scotney, Hants. Messrs. W. & G. A. Bell, architects, Andover.

SWINDON.—April 12.—For erection of a Primitive Methodist Sunday-school, Manchester Road, Swindon. Mr. R. J. Beswick, architect, 35 Regent Street, Swindon.

TENDRING.—April 22.—For alterations and additions to the workhouse, Tendring, near Colchester. Mr. F. Whitmore, architect, 17 Duke Street, Chelmsford.

UCKFIELD.—April 25.—For erection of police buildings, consisting of residences for a superintendent, sergeant and two constables, charge-room, four cells and stabling, at Uckfield, East Sussex. Mr. F. Merrifield, clerk of the County Council, County Hall, Lewes.

UPPER EDMONTON.—April 8.—For erection of married couples' quarters at the workhouse, Silver Street. Mr. A. A. Kekwick, architect, 18 Outer Temple, Strand.

WALES.—For erection of workshops at 17 Penybryn, Wrexham. Mr. John Davies, cabinetmaker, 17 Penybryn.

WALES.—April 8.—For erection of a villa at Resolv, Messrs. J. Llewellyn Smith & Davies, architects, Aberdare.

WALES.—April 9.—For (1) widening main road and constructing a footpath at Skewen; (2) widening Blackbrook bridge, Cardiff, Glamorgan. Mr. T. Mansel Franklen, clerk of the Glamorgan County Council, Westgate Street, Cardiff.

WALES.—April 9.—For erection of additional classroom and other improvements and alterations at the infant department of the Griffithstown Board school, Griffithstown. Messrs. Lansdowne & Griggs, architects, Newport, Mon.

WALES.—April 12.—For extension of the premises Treorky Industrial Co-operative Society. Mr. J. Rees, architect, Pentre.

WALES.—April 14.—For erection of schools and classroom &c., Rhosllanerchrugog. Rev. R. Roberts, Laurel House, Rhosllanerchrugog.

WALES.—April 14.—For erection of a laundry building &c., at Freehold, Pontnewynydd. Mr. D. J. Lougher, Barristers, Chambers, Pontypool.

WALES.—April 15.—For erection of a cottage near Crum (High Level) station, Mon, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

WALES.—April 16.—For erection of an operating theatre the Llanelly hospital. Mr. Wm. Griffiths, architect, Fallowbridge, Llanelly.

WALES.—April 19.—For repairs and improvements at Fochriw and Gelligaer Village Board schools. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

WALTHAMSTOW.—April 14.—For alterations and erection of new classrooms and cloakrooms in the boys and girls departments at the Higham Hill and Forest Road schools. Mr. T. W. Liddiard, clerk to School Board, High Street, Walthamstow.

WARRINGTON.—April 12.—For supply of one 20 h.p. motor. Mr. William H. Grimsdale, borough electrical engineer, Electric Light Station, Howley, Warrington.

WATFORD.—April 14.—For erection of a new hair-pick and disinfecting buildings and boot-room at Leavesden Asylum near Watford, Herts, for the Metropolitan Asylums Board. Mr. T. Duncombe Mann, clerk to the Board, Emburyment, E.C.

WIMBLEDON.—April 22.—For extending the free library in Hill Road, Wimbledon. Mr. R. J. Thomson, architect, 47 Hill Road, Wimbledon.

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WINDERMERE.—April 16.—For extensive additions to otherfield Works. Mr. Robert Walker, architect, Windermere.

WORKINGTON.—April 7.—For erection of six dwelling-houses at Frostoms, Workington. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

YORK.—April 19.—For restoration of Holy Trinity Church, Cklegate, York. Mr. C. Hodgson Fowler, architect, Durham.

## KENT MAIN-ROAD TENDERS.

The bridges and roads committee of the Kent County Council met at Maidstone on Wednesday in last week for the purpose of receiving tenders for the maintenance of the main roads of the county for the next three years. The committee had been in full power to deal with the contracts, and much interest, therefore, centred in the meeting, at which there was a full attendance of members. The proceedings were private, but the *South-Eastern Gazette*, that there was a considerable discussion with regard to the form in which the specifications had been issued, it being contended that quartzite, contrary to an express undertaking given to the County Council on behalf of the committee was unduly favoured to the practical exclusion of other material. In the end it was decided that fresh specifications should be drawn up and new tenders invited, the explanation to the public to be that an error was made and to have occurred in drawing up the specifications and conditions first issued. The turn thus given to affairs caused a considerable amount of surprise amongst those interested, and there was much discussion on the subject of the committee's action in contracting circles after the meeting. The trouble, however, arose in consequence of hand-broken material being used in the first specifications, contractors finding it impossible to guarantee compliance with this condition except by introducing quartzite. The new tenders are to be in by April 21.

At Darlington sanction has been given to build on the Corporation Road a new Wesleyan church and classrooms, at an estimated cost of 6,000*l*.

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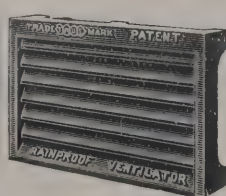
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### CORK.

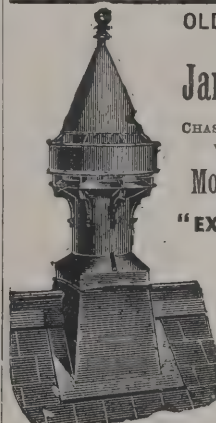
For erection of a gentleman's residence and offices on the Donovan Estate, adjoining Queen's College grounds. Messrs. W. H. HILL & SON, architects, 28 South Mall, Cork.

J. DELANEY & Co, Henry Street (accepted) . £1,111 0 0

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**DANBURY.**

For works in connection with water supply at Danbury, Essex, viz. the laying of a line of 5-inch cast-iron pipes, about 825 yards in length; construction of a small concrete collecting tank; laying about 170 yards of collecting drains, and other works incidental thereto; laying a 12-inch stone-ware pipe protecting drain, about 106 yards in length. Mr. JAMES DEWHURST, engineer, Avenue Chambers, Chelmsford.

T. W. Pedrette . . . . .	£335	7	0
J. Jackson . . . . .	324	5	10
P. Green . . . . .	324	4	0
Case Sea Defence Co., Ltd. . . . .	317	5	8
Wilson, Borderer & Co. . . . .	295	15	5
A. T. Catley . . . . .	280	0	0
J. RAYNER, East Hanningfield (accepted) . . . . .	265	12	0

Note.—Cast-iron pipes and other castings provided by the Council.

**DEVONPORT.**

For erection of a retaining wall at the St. Levan Road extension works. Mr. JOHN F. BURNS, borough surveyor.

T. Jenkin & Son . . . . .	£837	0	0
J. Coles . . . . .	738	3	2
R. H. B. Neal . . . . .	704	0	0
F. J. Stanbury . . . . .	626	0	0
Pearce Bros. . . . .	618	5	0
W. J. Oliver . . . . .	581	14	6
W. Goad . . . . .	580	15	0
STEER & PEARCE, Plymouth (accepted) . . . . .	491	9	11

For erection of workmen's dwellings in Ordnance Street. Mr. J. F. BURNS, borough surveyor.

A. J. Jewell . . . . .	£22,506	15	3
Allen & Tozer . . . . .	19,445	0	0
Pearce Bros. . . . .	19,379	0	0
W. E. Blake . . . . .	18,800	0	0
W. T. Jenkin . . . . .	18,654	19	3
T. May . . . . .	18,483	0	0
Steer & Pearce . . . . .	17,987	4	9
S. Roberts . . . . .	17,627	6	1
A. N. COLES, Valletort Building Yard, Stone-house, Devon (accepted) . . . . .	17,520	0	0

**DONCASTER.**

For alterations and additions to the sewage outfall works Thurnscoe, including the construction of four new filter the erection of a caretaker's house and the laying-out land for surface irrigation. Mr. J. SIMMONS, engineer, Bank Chambers, Doncaster.

D. Gill & Son . . . . .	£2,200	0
B. Roberts . . . . .	2,098	9
M. Hall & Sons . . . . .	2,046	1
Jones Bros. . . . .	2,030	
G. Pugh & Son . . . . .	1,954	10
C. SPRAKES & SONS, East Laithegate, Doncaster (accepted) . . . . .	1,855	0
G. H. Burrows . . . . .	1,698	14

**FENNY STRATFORD.**

For sewerage and sewage-disposal works. Mr. J. CHADWICK, engineer, Bletchley, Bucks. Contract No. 1. comprising the construction of covered sewage tanks, bacteria beds, storm-water filter, the preparation of land and other work; (2) comprising the construction of sewer ejector chambers, manholes, flushing tanks and other work; (3) comprising the laying of cast-iron sewage air mains, and the erection of sewage ejectors, compressors, and engines and other work.

**Contract No. 1.**

G. Bell . . . . .	£10,203	9
W. Manders . . . . .	9,364	7
J. Jackson . . . . .	8,508	18
J. & T. Binns . . . . .	8,459	11
W. York, Green & Co. . . . .	8,390	11
Lock & Andrews . . . . .	8,064	16
J. Cunliff . . . . .	7,937	11
C. Carden . . . . .	7,904	0
Bower Bros. . . . .	7,675	0
Grounds & Newton . . . . .	7,541	10
SIDDONS & FREEMAN (accepted) . . . . .	7,050	0
R. L. Tonge . . . . .	6,300	0

**Contract No. 3.**

J. & T. Binns . . . . .	4,690	18
J. Jackson . . . . .	3,848	11
Hughes & Lancaster . . . . .	3,792	9
J. Cunliff . . . . .	3,699	12
Bower Bros. . . . .	3,475	0
SIDDONS & FREEMAN (accepted) . . . . .	3,399	0

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**FENNY STRATFORD—continued.***Contract No. 2.*

Jackson.	£7,442	9	2
W. York, Green & Co.	7,384	13	9
G. Bell	7,264	7	0
Bower Bros.	7,161	0	0
W. & T. Binns	7,035	12	6
W. Manders	6,735	14	3
Lock & Andrews	6,622	13	8
Hiddons & Freeman	6,490	0	0
Cunliff	6,349	16	8
R. L. Tonge	6,320	0	0
ROUNDS & NEWTON (accepted)	6,114	14	6

**HALIFAX.**

Erection of model bakery, two shops and offices and stabling in Horton Street. Messrs. WALSH & NICHOLAS, architects, Museum Chambers, Halifax.

*Accepted tenders.*

T. Mitchell, Warley, mason.
Hey & Son, Northgate, joiner.
T. Boocock, George Street, plumber.
J. Bancroft & Son, Winding Road, slater and plasterer.
G. Greenwood & Son, Brunswick Street, concreter.
J. Berry, New Bank, iron and steel.

**HANWELL.**

street works, &c., in Shirley Gardens. Mr. SIDNEY W. BARNES, surveyor, Church Road West, Hanwell, W.

J. Boyer	£1,441	1	9
Nowell & Co.	1,330	9	9
Morecroft	1,296	0	0
Elkin & Watson	1,260	0	0
Lawrence & Thacker	1,241	8	11
Macklin	1,223	6	11
Wimpey & Co.	1,218	5	0
Ballard, Ltd.	1,217	1	9
Woodhams & Sons	1,180	14	5
NEAVE & SON (accepted)	1,165	10	0

**KEIGHLEY.**

For erection of a residence in Woodville Road. Messrs. MOORE & CRABTREE, architects, York Chambers, Keighley.

*Accepted tenders.*

M. Sunderland, Oakworth Road, Keighley, mason.
A. Fortune, Ingrow, joiner.
T. Nelson, Manningham, slater.
W. & J. Harrison, South Street, Keighley, plumber.
J. King, Russell Street, Keighley, plasterer.

**LEEDS.**

For erection of warehouse offices in York Place, Leeds. Mr. T. H. RHODES, architect, 17 Hyde Terrace, Leeds.

*Accepted tenders.*

J. H. Wood, builder	£1,670	0	0
T. Milnes, carpenter and joiner	824	0	0
Perkin & Co., engineer and ironfounder	514	13	0
T. Barrand, plumber and glazier	244	0	0
R. Barugh, painter	182	12	5
W. Watson, plasterer	122	0	0
J. Atkinson & Son, slater	80	0	0

**LIMEHOUSE.**

For erection of a block of dwellings on the Queen Catherine Court area, Dorset Street. Mr. W. JAMESON, borough engineer.

J. Chessum & Sons	£5,999	0	0
Dove Bros.	5,685	0	0
R. & E. EVANS, 8 Lisford Street, Peckham, S.E. (accepted)	5,408	0	0
C. G. Hill	5,596	0	0
Holliday & Greenwood	6,377	0	0
H. N. Holloway	5,657	0	0
H. Lovatt	5,873	0	0
F. G. Minter	5,587	0	0
B. E. Nightingale	5,765	0	0
Patman & Fotheringham, Ltd.	5,553	0	0
A. Porter	5,765	0	0
Sabey & Son	5,527	0	0
J. Smith & Sons, Ltd.	5,729	0	0
Todd & Newman	5,678	0	0
Martin, Wells & Co.	6,315	0	0
Wilson Bros. & Lamplough	5,695	0	0

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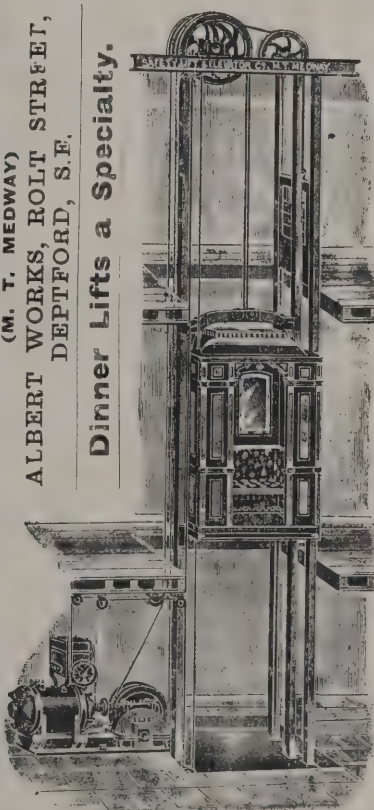


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## LONDON SCHOOL BOARD.

For periodical inspection of lifts, Head Offices of the Board.

R. Middleton	per annum	£60	0	0
Moffatt & Eastmead, Ltd.		50	0	0
W. T. Rounsivell		33	0	0
R. Waygood & Co., Ltd.		29	10	0
Easton & Co., Ltd.		25	0	0
Clements, Jeakes & Co *		24	0	0
C. & A. Musker, Ltd.		20	0	0

\* Recommended for acceptance.

## LONDON.

For (1) 12,400 superficial yards of wood paving on concrete foundation in Fulham Road and North End Road, and (2) erection of cleft oak fence in Townmead Road. Mr. FRANCIS WOOD, borough surveyor.

Accepted tenders.

Contract No. 1.

Acme Wood Flooring Co., Gainsborough Road, Victoria Park, N.E. £7,285 0 0

Contract No. 2.

Rowland Bros., Fenny Stratford, Bletchley, Bucks 177 10 9

## LOUGHBOROUGH.

For taking-down and rebuilding property in High Street and the Market Place, Loughborough, Leics. Mr. A. E. KING, architect, Baxter Gate, Loughborough.

Brown & Son	£3,286	0	0
A. B. Clarke	3,248	0	0
Ford & Co.	3,119	0	0
E. Orton	3,095	0	0
W. F. Harding	3,070	0	0
T. Barker & Son	3,070	0	0
A. FAULKES, Sparrow Hill, Loughborough (accepted)	2,950	0	0
J. Hutchinson & Son	2,890	0	0

## NEWBIGGIN.

For road works and the erection of a retaining wall on building estate at Newbiggin, Northumberland.

J. McLAREN, Newbiggin (accepted) £688 0 0

## NEWPORT (MON).

For erection of power station buildings, chimney shaft, car repair sheds.

A. S. MORGAN &amp; CO., Newport (accepted) £23,549 10 0

## NORWICH.

For erection of the Silver Road schools, Norwich. Mr. BROWN, architect, Cathedral Offices, Norwich.

Haydon & Daniels	£14,931
Scarles Bros.	14,900
Downing & Son	14,740
J. Youngs & Son	14,598
C. Roper	14,370
G. E. Hawes	14,300
J. S. Smith	14,290
S. Chapman & Son	13,795
T. Gill *	13,746
H. S. Watling	13,244
H. C. Greengrass	12,934

\* Accepted provisionally.

## ORMSKIRK.

For supply and erection of four cast-iron fire-escape stairs works in connection therewith at the industrial school, Wigan Road. Mr. DODD, architect, 16 Exchange Buildings, Liverpool.

R. TAYLOR &amp; SON, Derby Street West (accepted).

## PAIGNTON.

For erection of cottage flats. Mr. W. G. COULDREY, architect, Paignton. Quantities by Mr. VINCENT CATTERMOLE BROWN, Paignton.

E. Westlake	£3,120
R. Harris	3,106
C. Webber	3,090
C. & R. E. Drew	3,070
H. WEBBER & SONS (accepted)	2,970

For erection of five dwelling-houses and shops. Mr. W. COULDREY, architect, Paignton. Quantities by VINCENT CATTERMOLE BROWN, Paignton.

Lethbridge	£13,300
Parker Bros.	12,559
C. & R. E. Drew	12,167
H. Webber & Sons	12,085
E. Westlake	11,865
E. P. Bovey	11,835
YEO & SONS (accepted)	11,250

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Very Comfortable Grandfather Easy Chair, with seat, covered serviceable tapestry, and finished with brass nails, £115s.



PURLEY.

er erection of a pair of semi-detached houses in Brighton Road, Purley. Mr. FRANK WINDSOR, architect, 9 and 10 Bank Buildings, George Street, Croydon.

First pair.

J. Horrocks *	£1,890	0	0
F. Clarke	1,586	0	0
Ludlow & Martin	1,525	0	0

\* Accepted, subject to reductions.

RAMSBOTTOM.

er erection of the Hazlehurst Board school, Ramsbottom, Lancs. Mr. THOMAS BELL, architect, 14 Grimshawe Street, Burnley.

Accepted tenders.

Platt & Castle, mason.  
D. Shilton, joiner.  
W. Walton, ironfounder.  
H. Tomlinson, slater.  
Schofield, plumber.

T. Ashworth, gates and railing.

Note.—Plasterer and painter's work not yet settled.

ROTHWELL.

er supply of about 5,000 tons of whinstone, granite and dross, and a quantity of kerbs, flags and setts during year ending March 31, 1903. Mr. J. T. PEARS, surveyor.

Accepted tenders.

Ord & Maddison, Darlington, whinstone.  
undrit & Co., Dale Street, Liverpool, and Threlkeld Granite Co., Keswick, Cumberland, granite.  
est Yorks Coal and Iron Co., Leeds, M. Lynch, Hunslet, Leeds, and J. Hunt & Sons, Canal Wharf, Leeds, dross.  
L. Naylor, Northowram, near Halifax, flags.  
J. & W. Wyld, Shipley, kerbs and flags.

ST. MARKS WYKE

er erection of vicarage at St. Marks Wyke, Surrey. Mr. GLENDINNING MOXHAM, architect, Swansea.

BILLINGS (accepted) £1,842 0 0

SALTBURN-BY-SEA.

For repair of part of Milton Street with tarred macadam, and Hilda Place and part of Milton Street with ordinary macadam, including concrete flagged footpaths, kerbing, &c. Mr. G. S. L. BAINS, surveyor.

Hilda Place and Milton Street.

J. Pearson	£2,169	10	8
North of England Asphalte Co.	2,089	8	9
J. R. Smiles, Ltd.	1,958	16	11
J. Carrick	1,565	17	8
J. G. SPOONER, Stockton-on-Tees (accepted)	1,389	6	8

SCOTLAND.

For additions to Home Farm steading, Delgaty. Messrs. JAMES DUNCAN & SON, architects, Turriff.

Accepted tenders.

J. Paterson & Son, Turriff, builder.  
W. H. Skene, Turriff, carpenter.  
J. Gillespie, Turriff, slater.

SEAFORD.

For providing and laying about 2,500 lineal feet of 12-inch by 6-inch Purbeck edge kerb, 650 lineal feet of 12-inch flat Keinton channel, 870 yards super of 2-inch tinted patent stone paving blocks, &c, on the parade at Seaford, Sussex, and for the construction of an 1,800-gallon brick and cement flushing chamber, fitted with Adams's 9-inch automatic siphon, &c.

Paving works.

H. A. Chambers	£677	6	0
B. COOKE & Co. (accepted)	645	0	0

Flushing tank.

H. A. Chambers	89	5	0
B. COOKE & Co. (accepted)	80	0	0

STOCKPORT.

For sewerage works in Birch Road (portion of), passage No. 1 off Birch Road, and passage No. 2 off Birch Road (portion of). Mr. JOHN ATKINSON, borough surveyor.

Hayes Bros.	£313	11	0
W. H. EVA, Cheadle Heath (accepted)	308	19	4

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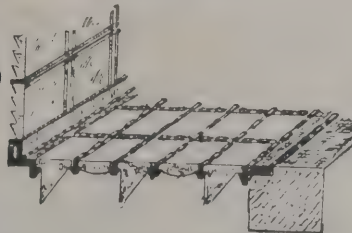
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**SEVENOAKS.**

For street works in St. Botolph's Road.

G. Osenton . . . . .	£4,447	3	6
C. Peerless, Dennis & Co. . . . .	4,344	19	4
T. Free & Sons . . . . .	4,318	9	0
T. Adams . . . . .	4,209	6	4
J. Jackson . . . . .	4,011	5	7
G. Bell . . . . .	3,948	0	0
Lawrence & Thacker . . . . .	3,892	3	4
E. Iles, jun. . . . .	3,822	14	1
T. PHILBRICK, Leicester (accepted) . . . . .	3,512	9	4

**SOLIHULL.**

For supplying and fixing a steam-engine with steam-pipes, pump, &amp;c., at the workhouse.

BALL &amp; HORTON, Stratford-on-Avon (accepted) £107 16 0

**SOUTHEND-ON-SEA.**

For supply and fixing complete of two storage batteries at the electric lighting station, London Road. Mr. W. E. J. HEENAN, borough electrical engineer.

Chloride Storage Co. . . . .	£2,714	11	0
D.P. Battery Co. . . . .	2,130	19	0
Verity's, Ltd. . . . .	2,050	15	0
Tudor Accumulator Co. . . . .	1,906	0	0
W. Rooper & Co. . . . .	1,895	3	0
Hart Accumulator Co. . . . .	1,838	4	0
Electrical Power Storage Co. . . . .	1,807	1	6
Ashmore, Benson, Pease & Co. . . . .	1,740	10	0
A. Kramer . . . . .	1,680	0	0
Accumulatorem Werke (W. C. Horne & Sons, agents) . . . . .	1,512	0	0
BRITISH POWER TRACTION CO., York (accepted) . . . . .	1,511	14	0

**SWANNINGTON.**

For construction of 180 yards of 6-inch pipe sewer, two man-holes, one lamphole and one ventilating shaft at Hoo Ash.

Hatter, Hugglescote . . . . .	£66	0	0
Hewes Bros., Coalville . . . . .	65	0	0
Fowkes, Ravenstone . . . . .	45	7	0
Harvey, Swadlincote . . . . .	44	10	6

**TENTERDEN.**

For supply of about 1,200 cubic yards of Cherbourg quartz uniformly broken to a 2-inch gauge. Mr. W. L. TURNER, borough surveyor.

QUARTZITE COMPANY, 29 Mark Lane, London, E.C., 16s. 1 per cubic yard (accepted).

**TYLDESLEY.**

For erection at the gasworks, Tyldesley, of a steel tank gasholder.

CLAYTON, SON &amp; CO., Leeds (accepted).

**WALES.**

For alterations to 2 Glanmor Crescent, Swansea. Mr. GLENNING MOXHAM, architect.

J. & F. Weaver . . . . .	£315	0	0
Bennett Bros. . . . .	315	0	0
H. Billings . . . . .	308	15	0
J. DAVIES (accepted) . . . . .	308	15	0

For alterations to the Bungalow, Sketty, Swansea. Mr. GLENNING MOXHAM, architect.

WALTERS &amp; JOHN (accepted) . . . . . £564 0 0

For completion of shops and premises, High Street, Swansea. Mr. GLENNING MOXHAM, architect.

B. LEWIS (accepted) . . . . . £1,928 0 0

For erection of a pair of cottages, Skewen, near Swansea. Mr. GLENNING MOXHAM, architect.

J. Goodridge &amp; Son . . . . . £560 0 0

WALTERS &amp; JOHN (accepted) . . . . . 536 0 0

For erection of vicarage. Mr. GLENNING MOXHAM, architect, Swansea.

R. L. WILLIAMS (accepted) . . . . . £989 0 0

For erection of a pair of villas, Sketty, near Swansea. Mr. GLENNING MOXHAM, architect.

J. &amp; F. WEAVER (accepted) . . . . . £1,290 0 0

For construction of settling and straining sewage tanks, manholes, and subsidiary stoneware pipe carriers, and laying-out the necessary land for filtration, with all incidental works, the sewage farm, Gwaunybarra, near Caerphilly. Mr. A. O. HARPUR, surveyor.

J. H. James . . . . . £4,524 0 0

E. H. PAGE, Castle Street, Cardiff (accepted) . . . . . 3,670 15 0

G. Rutter . . . . . 3,561 15 0

A. J. Rossiter . . . . . 3,304 0 0

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& F. Weaver	2,891	0 0
Richards	2,850	0 0
Marles & Son	2,850	0 0
ennett Bros.	2,835	0 0
Goodridge & Son	2,830	0 0
oyd Bros.	2,790	0 0
Davies	2,740	0 0
omas, Watkins & Co.	2,669	3 4
Davies	2,655	0 0
Davies & Co.	2,486	4 0
BILLINGS (accepted)	2,420	0 0

WESTCLIFF-ON-SEA.

erection of residence, stabling, &c., Westcliff-on-Sea,  
Essex Messrs. GREENHALGH & BROCKBANK, architects,  
Bank Chambers, Southend.

Ventriss	£1,980	0 0
& E. Davey	1,930	0 0
West	1,900	0 0
vis & Leaney	1,876	0 0
E. Davey	1,792	10 0
rris & Rowe	1,770	0 0
Stubbs	1,647	16 0
BAND, Chancellor Road, Southend-on-Sea		
accepted)	1,598	0 0
ss	1, 40	0 0

WANDSWORTH.

For erection of officers' quarters and waiting-hall at the  
receiving wards of the infirmary. Messrs. LANSDELL &  
HARRISON, architects, 65 and 66 Basinghall Street, E.C.

R. Neal	£17,442	£242
R. A. Jewel	17,327	250
Wilson Bros. & Lamplough	17,184	200
Viney & Stone	16,750	50
W. Keys	16,684	200
Foster Bros.	16,668	35
T. G. Sharpington	16,298	—
W. Wallis	16,184	190
Lorden & Son	15,888	111
J. R. Ward	15,547	—
Sabey & Son	15,545	160
Smith & Son	15,400	200
Whitehead & Co.	15,399	424
C. G. Hill	15,355	165
TURTLE & APPLETON, Wandsworth		
(accepted)	14,980	250
E. Triggs	14,950	200
J. Appleby	14,700	50
Edwards & Medway	14,690	170
E. Chamberlain	14,478	35

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For erection of an electric generating station and offices at  
Quadrant Street, Canning Town. Mr. J. G. MORLEY,  
borough engineer.

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G. Wise	59,773	0 0
Leslie & Co.	58,795	0 0
Shillitoe & Son	57,000	0 0
F. G. Minter	55,994	0 0
Johnson & Son	55,848	0 0
GREGAR & SON, Stratford (accepted)	53,999	0 0
Thomas & Edge	53,965	0 0

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For erection of National schools, Weybridge. Mr. ARTHUR H. RYAN-TENISON, architect, 12 Little College Street S.W. Quantities supplied by Mr. E. R. BABBS, Westminster.

Palmer	£5,948	5	0
John Barker & Co.	5,506	0	0
A. & H. Quibell	5,381	0	0
H. P. Hill	5,052	13	0
Potterton	5,008	5	0
Turtle & Appleton	4,940	0	0
H. Somerford & Son	4,857	0	0
Nightingale	4,774	0	0
Mitchell Brothers	4,722	10	0
C. Horsell	4,569	10	10
Gathercole Brothers	4,564	0	0
Stanly Ellis	4,520	0	0
W. Smith & Son	4,473	0	0
Vigor & Co.	4,439	0	0
William H. Gaze & Son	4,419	0	0
Edmund Chamberlain	4,326	10	0
Higby & Rabson	4,220	9	0
Newland & Higgs	4,218	0	0

## WINDSOR.

For erection of dwarf walls and iron fencing at the Goswell Pleasure Grounds.

Butcher & Hendry	£497	0	0
Hollis & Sons	494	0	0
A. H. REAVELL, Windsor (accepted)	465	0	0
G. Chesswas	434	0	0

## WIVENHOE.

For erection of a brick wall and iron palisading and gates for enclosing about two acres of ground forming the site of the new burial-ground at Wivenhoe, Essex. Mr. R. H. BARRELL, surveyor, Wivenhoe.

A. & G. Carter	£478	0	0
E. & D. Chapman	387	0	0
Doubleday & Young	385	0	0
A. E. Diss	375	0	0
H. WINDSOR & Co., Clapham Junction, S.W. (accepted)	355	0	0

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## BRIGHTON.

For painting King's Road, Grand Junction Road, and Steine enclosures. Mr. MAY, surveyor.  
GATES & SON, Brighton (accepted) . . . £265 0  
For painting Marine Parade and Madeira Road.  
T. F. HOLLAND (accepted) . . . £210 0

## CUCKFIELD.

For making-up, &c., of Woodland Road, Hassocks.  
MCINTOSH, surveyor.  
KETTERINGHAM (accepted) . . . £689 17  
For Ardingly drainage works.  
KETTERINGHAM (accepted) . . . £710 10  
For Balcombe Road drainage works.  
ANSCOMBE & HEDGECOCK, Lindfield (accepted) . . . £1,983 0  
Ketteringham . . . 1,965 0

## NORTHWICH.

For straightening the road between Norley and Delam station.  
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T. ROWLANDS (accepted) . . . 99 0

## SALISBURY.

For painting woodwork of the workhouse, Salisbury.  
JENKINS, Queen Street (accepted) . . . £237 7

WE have been requested to announce by Messrs. H. Y. & Co., Limited, their change of address from Eccleston Iron Works, Pimlico, to Nine Elms Iron Works, London, S.W., where all communications should be addressed.

THE Leeds branch of the Painters and Decorators' Union is seeking to obtain an alteration in the working rules. Negotiations with the employers are in progress. It has been agreed that the time-and-a-quarter rate of overtime shall be abolished, but that after 8 P.M. the rate shall be time-and-a-half. What the length of the working day shall be is still under consideration. The masters, it is understood, want 10 hours, with no interval for breakfast, whilst the operatives desire to commence work at 6.30 and have a breakfast-time. The men are paid by the hour.

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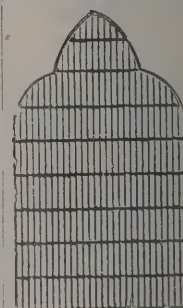
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### TRADE NOTE.

ESSRS. DUKE & OCKENDEN, artesian well borers, of Littlehampton and 126 Southwark Street, London, have been successful in securing the contract from the Jockey Club for watering of Cambridge Hill Tan Gallop, and the deepening the existing well on Newmarket Heath. The engineers are Messrs. John Taylor, Sons & Santo Crimp, of Westminster.

### ELECTRIC NOTES.

E sanction of the Local Government Board has been given to the application of the Manchester Corporation to borrow 477,000*l.* for electricity purposes.

ON Saturday evening last for the first time St. Paul's Cathedral was lighted by electricity. The effect was eminently satisfactory, and is a great improvement on the dim religious light of the past.

A SERIOUS breakdown of Glasgow electric light took place this morning of the 28th ult. The electric current became weak about half-past one o'clock, and at two o'clock there was general extinction of the light throughout the city. The cause was due to one or two faults in the mains. A partial restoration of the light was immediately effected, and by four o'clock three-fourths of the lamps were burning again. Usual darkness prevailed in Glasgow at the time, owing to a thick fog which settled over the city shortly after daybreak.

THE new electric station now in course of erection at Deege for the Corporation of Aberdeen was inspected on the 28th ult. by the members of the Town Council. The engine-house is capable of containing about 6,000 horse-power and dynamos together, with the necessary switchboards, condensing plant, &c. In connection with the works a subway from the electric station to Union Street, via Queen Street. It is 2,480 feet long, is 7 feet 6 inches in height and 6 inches in breadth, and is designed to carry cables capable of 10,000 horse-power, capable of extension to 15,000 horse-power. By this method all the cables for lighting and tramway purposes can be inspected, added to or altered without interference with the street. The new station when completed will cost about 150,000*l.*, and it is expected to be finished in the course of a few months.

THE Normanby Ironworks Company have just introduced at their Cargo Fleet Ironworks, near Middlesbrough, an extensive electrical plant for the operation of the pig-iron bed crane, the pig-breaker and the blast furnace hoist, as well as for the lighting of the shops and offices. The change has been made with a view to facilitating the conveyance of the raw materials from the base level. The hoist motor is arranged to develop from 120 to 150 b.h.p. when running at a speed approximating 450 revolutions per minute. An automatic brake is fitted to the motor, so as to bring the hoist to a standstill in the event of the current being cut off either intentionally or otherwise. The liquid switch is fixed at the bottom of the hoist, and is fitted with automatic steering gear to throw the switch out of action when the cages reach a certain level without being stopped by the attendant.

### VARIETIES.

ADDITIONS to the Wandsworth Infirmary are about to be carried out. The architects are Messrs. Lansdell & Harrison, of Basinghall Street, London.

A NEW laundry is about to be built for the Hackney Guardians in the Gainsborough Road. The architect is Mr. W. A. Finch.

A NEW Oddfellows' hall in connection with the Whitchurch Loyal Good Samaritan Lodge (Manchester Unity), the richest lodge in Shropshire, was formally opened on Monday.

THE historic oak under which John Wesley preached in Savannah, Georgia, has been cut down to make room for a trolley-car track.

A NEW Baptist chapel, which has been erected at Walsgrave-on-Sowe, near Coventry, at a cost of 1,300*l.*, was formally opened for public worship on Tuesday.

THE London Parcels Delivery Company are about to erect at Eltham, Kent, a new dépôt. The architect is Mr. Henry Poston, of 39 Lombard Street, E.C., who is also the architect for the new hotel which is about to be built at Manor Park, Essex.

THE sinking of the flagging on the north side of the outer ward of Alnwick Castle, between the barbican and the old guard chamber (now the porter's lodge), has led to an interesting discovery in the exposure of the ancient moat way and the massive masonrywork on which the drawbridge rested when

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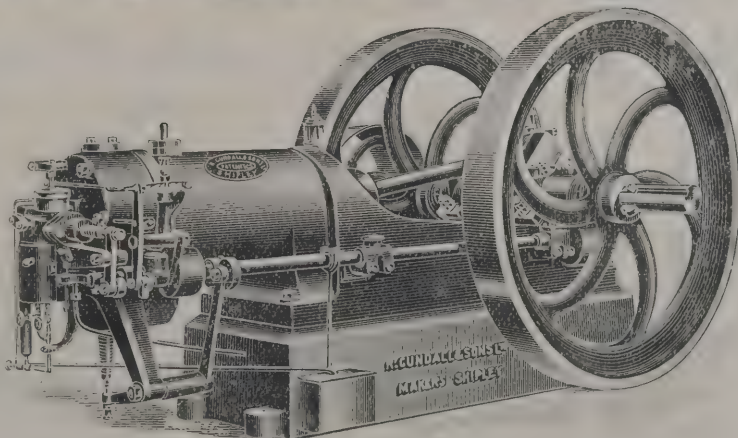
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lowered; also a dungeon underneath the old guard chamber. All these are in a wonderful state of preservation after being buried for so many years.

At Beverley on Sunday the Vicar referred to the new bell "Great John," which has recently been placed in the north-east tower of the Minster, stating that a heavier hammer was being prepared for it. The statues on the exterior had been completed, and the porch was now one of the finest in the country. With the exception of Lichfield, no cathedral in the kingdom was adorned by so many statues.

THE Strangeways branch of Williams Deacons' Bank was entered by burglars on the night of the 20th ult., and a most determined attack was made upon the Chatwood safe, containing the cash and valuables. Apparently the burglars worked all night undisturbed, but were completely baffled. The safe bears many evidences that the cracksmen were exceptionally well equipped and very skilful. Among other appliances a powerful oxyhydrogen blowpipe, as well as drilling tools, had been tried. All efforts to break into the safe were fruitless.

THE officers and clerks' committee of the Corporation of the City of London have fixed Monday next, the 7th inst., as the last day on which applications for the vacant office of town clerk of the City can be received. Subsequently they will meet to select five candidates for the ultimate choice of one of them by the court. Up to the present about twenty candidates have come forward, including the town clerks of Leicester, Plymouth, Croydon, Westminster, Fulham, Kensington, Shoreditch, and other provincial and London municipalities, besides others whose names have been mentioned. The salary is fixed at 2,000*l.* a year, and candidates must be under fifty years of age.

DURING the last few years a great development has taken place in the quarrying and preparation of whinstone at North Queensferry, and so much difficulty has been experienced in finding housing accommodation for the workers that Messrs. Alexander Brunton & Son have erected two rows of houses, which are already occupied by twenty-six families. Near to the houses the firm have built a hall, which, when seated for an entertainment, can accommodate 300 persons. Primarily, however, the building is intended for recreative purposes, and not only the workmen at the quarries but any of the inhabitants of the village will have the use of it on five nights a week on payment of a merely nominal subscription. Ten tables have been provided at the sides of the hall for the playing of chess,

draughts and other games, while in the centre there are ping-pong tables. The institution is to be managed by a committee chosen from the Messrs. Brunton's workmen, and formal opening took place on Saturday afternoon.

MR. HENRY PRICE, now chief of the architectural department and surveyor of buildings to the Birmingham Corporation, has been appointed the first Manchester city architect. The salary is 600*l.* a year and the duties of the office will be "to prepare all plans and specifications for and superintend the erection of all Corporation new buildings (excepting otherwise ordered), in accordance with instructions that he may receive from time to time from the City Council or the committees, to prepare plans and specifications for and to supervise the alterations and repairs to existing buildings of the Corporation, to check accounts of all moneys expended on such works, and to prepare and issue to the committees certificates of the moneys due therefor."

PLANS have been filed at the Bureau of Buildings, Manhattan, for the first Carnegie library, to be erected at Nos. 1 and 224 East Seventy-Ninth Street. The building will have three storeys and basement in front, and four storeys and basement in the rear. It will have a frontage of 40 feet and depth of 92 feet. It will cost 50,000 *dols.* The fourth storey will be used for a janitor's apartment. The design of the building is Classic, based on the Ionic order. The front is limestone. The structure will be fireproof throughout. It will be heated directly and indirectly by hot water. Special attention has been paid to lighting. The front windows will be large, and at the rear of the first floor there will be a prismatic skylight, which will extend across the entire width of the building. Besides this, the plans provide for a generous supply of gas and electric lights. The building will be equipped with two electric dumb waiters, one for the conveyance of books and the other for the janitor's use. The building will be finished in October. James B. Lord, of No. 160 Fifth Avenue, is the architect. He designed the Appellate Division of the Supreme Court building and the Delmonico building. The architect was unable to say how many books the library would accommodate, as the shelving was not part of the contract.

ST. NICHOLAS'S CHURCH, Gloucester, which was badly damaged by fire on December 2 last, having now been completely renovated, was reopened on the 23rd ult. The interior looks very clean and bright. When the roof was being attended to a great beam in the roof of the vestry was found

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in a most dangerous condition, and while the workmen were it was decided to have the vestry enlarged, so that the Bible class could be held in it on Sunday afternoons. A vestry has been added, and a new entrance to the vestry through the churchyard. A low pressure hot-water system has been provided, which distributes the heat equally throughout the church. The church is now thoroughly up-to-date as regards heating and lighting—the latter being by means of electricity. Some necessary repairs have been done to and improvements effected in regard to the old organ, which, in order to enlarge the vestry, it was found necessary to move forward, and this has been done with advantage to the sound. The work of restoration and addition has been carried out carefully and with care, so that the new portions may harmonise as far as possible with the old fabric. The total cost about 670*l*.

THE new isolation hospital for the Bromsgrove, Droitwich and Redditch Hospital district has been opened. The buildings are situated on a commanding eminence at Hill Top, a district between the town of Bromsgrove and Grafton Manor. They consist of two main blocks, capable of accommodating twenty-two beds, and at the rear are two isolation blocks, divided into wards, which provide accommodation for another twenty beds. There are the usual sanitary arrangements, which consist of a capacious laundry and drying-rooms, a Threshing machine, &c., and arrangements are also made for supplying water for the whole of the buildings, steam for the distillation and dry air for the drying chamber. The administrative block consists of a surgery, two sitting and dining-rooms, general stores on the first floor, bedrooms to the number of ten on the first floor and three additional ones on the second floor. The cost of the whole buildings, including fitting out, has amounted to 13,282*l*, and is about 3,700*l*. in excess of the original estimate.

#### BUILDING AND BUILDERS.

Foundation-stones were laid on Monday of a new Primitive Methodist church to be erected in High Street, Edgbaston, Birmingham, which will accommodate 900 persons, the estimated cost of which is 4,500*l*.

A SITE has been purchased on the south slope of the Little Heath, 900 feet above sea level, and within a short distance of Keswick, on which it is proposed to erect a sanatorium for the open-air treatment of consumption.

A NEW Rowton House in course of construction in Whitechapel, containing 816 cubicles, will be completed and opened in the course of next month. There are already four Rowton Houses in the Metropolis in full operation—Vauxhall, with 484 cubicles; King's Cross, with 678; Newington Butts, with 804; and Hammersmith, with 816.

THE sewerage committee of the West Bromwich Corporation in their report state that they have considered tenders for the works necessary for the treatment of sewage by the bacterial process, and recommend the Council to accept the tender of Mr. W. Cunliffe, of Kingston-on-Thames, for construction of the works.

At a meeting of Berwick School Board on Wednesday a letter was read from the Board of Education sanctioning the erection of a new infant school at Bell Tower Close, to accommodate 252 infants, at a cost of 4,302*l*, the repayment of which is to be spread over thirty years. The architects are Messrs. Nicholson & Dotchin, Newcastle.

BUILDINGS, to cost 20,000*l*, are about to be erected on the western side of the Borough Polytechnic. One of the two new blocks will be devoted to the special evening classes for women and the work of the girls' domestic economy school. The other block will be used for the engineering and building trade classes and the boys' day school. There are now 3,465 evening students on the rolls, in addition to those attending the technical day schools.

THE great reservoirs between Ashford and Staines, whence it is understood three of the metropolitan companies—the Grand Junction, West Middlesex and New River—are to be supplied with additional water taken from the Thames above Staines Bridge, are now much advanced. After running from the intake for a mile or so along the aqueduct to the powerful pumping station near the London Road, Staines, the water will be forced into the storage reservoir, and pass thence as required to the filtering beds at Hampton, lower down the river. The works, which are being carried out by Messrs. J. Aird & Co., are of an extensive character, and have already occupied several years in construction.

THE memorial-stones have been laid of the Wesleyan new Sunday school which is in course of erection at Eastwood, Rotherham. The architect's designs for the building show a handsome elevation, with an outside measurement of 68 feet long and 53 feet broad, and the building will consist of five rooms, viz. assembly-room; two classrooms, one infants' room and one

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church parlour. The assembly-room has a gallery, and the rear block has two storeys. The building will be of brick with stone front, and is estimated to cost about 3,000/.

A SPECIAL meeting of Arbroath Town Council was held on the 31st ult., Provost Grant presiding, to consider a recommendation by the gasworks and electric-lighting committee for the erection of a new retort bench on the semi-stage regenerator plan, and to enter into contracts for the execution of the work. Plans and specifications of the proposed improvements were laid before the meeting and adopted. The works will cost 2,600/.

THE Stafford Town Council have had under discussion in committee an important building scheme. The matter came before the Council in a report presented by the public health committee, who recommended the sale of building plots on the Lammascote farm. The portion of the farm which it is proposed to sell faces Weston and Tixall roads, and the principal part of the area laid out is the old cricket field. The plan of the proposed allotment was exhibited in the council chamber, and it showed the division of the land into streets with some 640 building plots, varying in size from 148 to 300 square yards. The proposal is to sell the plots outright as freehold. After considerable argument as to the expenditure that would be entailed by the scheme, the Council adopted it.

A SERIES of conferences took place on the 24th ult. between the master builders of Birmingham and representatives of the bricklayers, carpenters, masons, plasterers and plumbers, concerning the notice served on the men some time ago relating to a reduction of wages and for the unification of hours. The conferences, over which Mr. Albert S. Smith presided, were private, and lasted all day. At the conclusion, the following official statement was issued to the Press:—"The committee appointed by the general meeting of the trade held on March 20 met the several branches of operatives in conference to-day, at the Acorn Hotel, Temple Street, when prolonged discussion took place upon the proposed alterations in the working rules, with the result that, with the exception of one or two points, a settlement of the matters in dispute was agreed to. As it is not proposed to reduce the existing rate of wages, it is confidently anticipated that no difficulties will be raised by the operatives to prevent a friendly settlement."

THE finance committee of the London County Council have been considering the two new schemes for erecting dwellings

for the working classes at Preston's Road and Norfolk Street, Poplar, and Old Oak Common Lane, Hammersmith. The total accommodation to be provided on the Preston's site as proposed will consist of five-storey balcony dwellings containing 250 tenements of two and three rooms. On the Norfolk street site it is proposed to build fourteen cottages each of three rooms. The estimated total cost of the buildings to be erected on the sites amounts to 56,151/., and toward the School Board will contribute 10,359/., as 1,030 of the persons to be housed have been displaced by new educational establishments. The net capital cost, therefore, of building the two sites will be 45,792/.. The Hammersmith site consists of 50 acres of flat land to the south-west of Wormwood Street, near the Convict Prison, which will be acquired from the Ecclesiastical Commissioners at 550/., an acre. The housing managers have prepared estimates for the development of the estate, which are based on an average of twenty-five cottages to the acre. Under such a scheme of development accommodation would be provided for about 9,200 persons in 1,250 cottages of different classes. The finance committee consider that there should be a small annual surplus on the former proposals, and that the latter should cast no burden on the county rate.

### DUFFY'S WOOD-BLOCK FLOORING.

THE Acme Wood Flooring Company, Ltd., invited on the 27th ult. a numerous party of architects and others interested in such matters to Messrs. A & S. Gatti's newly decorated Adelaide Gallery Restaurant, Strand, to inspect the new flooring which they have just laid there. This flooring, which is on Duffy's patent immovable system, consists of British co. woods (1½-inch East India teak and West Australian jarrah) laid in herring-bone fashion on top of an ordinary boarded floor. In addition to the durable qualities which these woods have proved to possess, the diversity of colour which they produce produces an eminently pleasing effect.

In case any of our readers are unacquainted with the details of this particular system of flooring, the following brief particulars may not be out of place:—

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Duffy and the *modus operandi* adopted by him. Into the concrete foundation, covered with a floating of cement, are a series of what are termed "bonding blocks," the top of the blocks being level with the cement floating. When this is thoroughly dry and hard the flooring blocks are laid upon, each separate block being secured to its neighbour by means of dowels fitting into corresponding recesses in the cement blocks. By this means a union or "bond" of the test strength and tenacity is effected, the blocks being held in position at every joint. The fit of the blocks is carefully accurate, the joints being scarcely perceptible; this is obtained by the exactness with which the special machines employed by the firm turn out the blocks of any size, the holes for the dowels or pins being bored with a similar exactitude, and thus mathematical accuracy is secured throughout—an extremely important point, as all parts of the floor are interchangeable. The appearance of the floor is laid, even in the cheapest form of deal, is excellent, and is no comparison between it and the unattractiveness of ordinary boarded floor. Also where enhanced decorative effect is required, an ornamental surface is obtained, in no way inferior to parquet.

In addition to the individual keying of the blocks together, a superposed block floor is at suitable intervals firmly secured down to the "bonding blocks," already referred to, being built into the concrete foundation, by means of screws (the heads of the screws being rendered invisible on the surface of the finished floors), thus preventing the possibility of upheaval of the superposed floor from the foundation upon which it is built. Longitudinal > shape grooves are also cut along the bottom edges at the sides of the flooring blocks, which, before being laid, are dipped into a preservative composition (while the latter is in a heated fluid or fluid state), which coats the under surface of each block, and serves as a bedding for same. This composition fills the > shape grooves, and when it sets hard forms an additional "key" or "bond." By the means above described the solidity of the floor is as complete as if constructed in one piece.

In certain cases the concrete foundation above referred to can be dispensed with, as would occur when an ordinary boarded floor—and particularly a worn or partially worn one—has to be covered with block flooring. An instance of a boarded floor thus covered presents itself in the case of the flooring of the Adelaide Gallery, as above mentioned, under inspection.

Very large stocks of timber are held by the company. Thus, on July 31 last, the value of the timber on the company's premises amounted to 174,464*l.* 18*s.* 7*d.*, as per the accountant's certificate attached dated November 7, 1901. The wood for the flooring blocks is thoroughly seasoned before being cut, and, when cut to the flooring sizes, they are seasoned in the open air for long periods. In addition, every block undergoes treatment by special process which completes the seasoning in a thoroughly efficient manner.

It is worthy of note that the company guarantee their "Immovable-Acme" system of wood-block flooring for five years.

### BRITISH AND AMERICAN BRICKLAYING.

The following letter from Mr. J. Oldham, of Manchester, has appeared in the *Times* :—

Will you kindly allow me to state my views *re* the above? As a bricklayer of twenty-five years, at present engaged in running work for one of the largest employers in England, and who has also done work for various firms in America—where I have spent upwards of seven years in many large towns from the Atlantic to the Pacific; have been delegate for a branch of the International Union of Bricklayers of America; and have done work that has terminated successfully from a contractor's point of view—I claim that I am qualified to speak of American bricklayers' work, both in quality and quantity.

Mr. Stewart states that his rate averaged in December 1,800 a day, and 2,250 for common work. Knowing many of the men Mr. Stewart employed and their capabilities as bricklayers, I assert that this was not done. In December 7½ hours only per day are worked. To lay 2,250 bricks would mean that each and every bricklayer would have to pick up five bricks a minute, to say nothing of picking, spreading the mortar, plumbing quoins, turning arches and other work outside the actual laying of bricks that go to take up bricklayers' time. Remembering that the walls of the Westinghouse are 18 inches to 23 inches thick, I admit a man can do more on these walls than on an ordinary dwelling-house, but at the same time to lay the number of bricks given in ten hours is an impossibility in the class of work given by Mr. Stewart. In spandrels between large arches, such as railway work, buttresses, piers, wide foundations, &c., where men sometimes drop trowels and place bricks in with both hands (thrown to them by labourers) on a bed previously prepared (or as is better known to the trade as

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"larried") by labourers, this is possible for one or two successive days, but could not be regularly performed by the most efficient and physically capable of bricklayers. His American figures, to anyone who knows anything of American brick-laying, are, to say the least, characteristic of that country. Although their bricks are much lighter and smaller than ours, my experience is that nothing like the quantity stated by Mr. Stewart is ever even thought of there. Their bricks are 8-inch by 4-inch by 2½-inch, taking 1,170 to measure what 880 English ones do; so in a day's work given by Mr. Stewart 2,340 would be equal to 1,760 of ours. In working in America for what are called "front lumpers," and who pay a dollar a day more than the trade union rate of wages, every satisfaction is given when 500 to 700 bricks are set, according to the class of work. I have worked on tenements (their lowest class of work), the average on these being less than 2,000 a day, the quality of work not bearing comparison with English. Mr. Stewart is probably aware that there are very few Americans employed on face work in New York. In fact, New York has been built by Englishmen, and the most successful contractors in the class of work where it is possible for the largest number of bricks to be laid are Englishmen. Mr. Stewart puts his "success" down to three causes:—1. Good wages. 2. Good superintendence. 3. Newest mechanical devices.

What mechanical device has Mr. Stewart got that can make it possible for a bricklayer to lay more bricks than he can pick up? I also agree with him about Englishmen working equally as hard as Americans; they were able to do this before they saw America. They are always preferred by American contractors to any other.

#### ADAMANT PLASTER.

At the Warwickshire assizes the action *Bassett v. The Adamant Company* was heard. Mr. John Bassett, manufacturer of adamant plaster, Sherborne Street, Birmingham, sued the Adamant Company, Ltd., of Commercial Street, Birmingham, who are in the same line of business, for damages for libel.

It appeared that the plaintiff had been engaged in the manufacture of adamant plaster for a number of years. About 1887 the defendant company was formed for the purpose of carrying on a similar business in Birmingham; they acquired the plaintiff's concern and he became their managing director. In 1890 disputes arose, which led to the dismissal of the

plaintiff, who took proceedings against the company for wrongful dismissal. The case was compromised, the company paying him the amount he claimed. Plaintiff then formed a company with his brother, and continued to manufacture adamant plaster, for which they obtained patent rights. Later on that company ceased to exist, and the plaintiff went into business on his own account. In 1901, through a communication made to him at Llandudno, it came to his knowledge that the defendant company had published a circular which contained the words complained of, as follows:—"As we are the only manufacturers of adamant plaster in the kingdom, and the sole owners of the patents for its production, you will be doing a great service by giving us information that might lead to the discovery of the persons who have practised or made attempt to practise the deception of supplying a material supposed to be adamant plaster, and so enable us to protect the public from the fraudulent use of a worthless article."

Mr. Soall, secretary of the Master Plasterers' Association, said he knew of no other firms than those of the plaintiff and defendant who manufactured adamant.

Mr. William Smithies, president of the National Association of Master Plasterers, said he considered the paragraph in question referred to the plaintiff.

Other evidence of a similar character having been given by Mr. Hugo Young opened the case for the defence. He contended that there was nothing in the circular to indicate plaintiff, and pointed out that in a practical sense the plaintiff was not the only manufacturer of adamant. The reason for publishing the circular was that the defendants found that where it was intended their adamant should be used in buildings, other materials were being substituted. It was not intended to indicate the plaintiff in the circular in question.

Mr. John Wilkinson, managing director of the defendant company, said the paragraph was not intended to refer to plaintiff, but in cross-examination he admitted that the other manufacturers of adamant in Birmingham were the plaintiff and the defendant company.

Re-examined: He never knew the plaintiff's adamant without the qualifying word "Bassett's."

Mr. J. H. Cartland, chairman of the defendant company, also gave evidence.

The jury found for the plaintiff, with 100% damages.

Mr. Amphlett applied for an injunction, when defendant's counsel undertook to remove the offending portion of the circulars in their possession, and not yet issued.

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## TUNNELLING IN LONDON.

the last meeting of the Institution of Civil Engineers the papers read were "The Greenwich Footway Tunnel," by Mr. C. Copperthwaite, M.Inst.C.E., and "Subaqueous Tunneling through the Thames Gravel: Baker Street and Waterloo Railway," by Mr. A. H. Haigh, B.Sc., M Inst.C.E.

The Greenwich footway tunnel was the second tunnel beneath the river Thames undertaken by the London County Council with a view to improve the means of communication between the districts lying north and south of the river and east of the Tower Bridge. It was intended to replace the existing steamboat ferry between Greenwich and the Isle of Dogs, to the working of which, in a crowded waterway like the Thames, there were serious objections and hindrances. The work had been commenced in June 1899, and was now nearing completion.

The subway consisted of a cast-iron tunnel 12 feet 9 inches in diameter, connecting two shafts 43 feet in internal diameter and 1,217 feet apart. One of these shafts was situated in the East Gardens, Poplar, the other being immediately behind the Ship Inn at Greenwich. Access to the subway was provided by lifts and circular stairways.

The tunnel was similar in character to other iron tunnels recently built in London. From each shaft it dipped towards the centre of the river with a gradient of 1 in 15, the middle line being on a gradient of 1 in 277, falling towards the Greenwich shore. These gradients were entailed by the advisability, from motives of economy, of limiting the depths of the shafts, and by the necessity of complying with the stipulation in the Act that the level of the tunnel should be such as to avoid dredging a channel in the river 500 feet wide and 4 feet deep at high water.

The caissons were 35 feet in internal and 43 feet in external diameter, and were formed with two steel skins, the 4-foot space between them being filled with 6 to 1 Portland cement concrete. The skins were formed of horizontal rings built up of plates, which were generally about 4 feet 9 inches in depth and 1 inch in thickness between  $\frac{1}{2}$  inch at the bottom of the caisson and  $\frac{1}{4}$  inch at the top. After describing generally the shafts, the author pointed out that their special features were the absence of any taper on the outside of the caisson and the pro-

vision of two air-tight floors, the one permanent and fixed immediately above the cutting edge and the other temporary and fixed above the tunnel opening. The sinking of the caissons, which had been done under compressed air, had been greatly facilitated by these arrangements, and had been effected with very uniform progress, and without any disturbance of the surrounding ground.

During the sinking of the caissons the opening in each shaft for the tunnel had been closed by a "plug" formed of steel plates fitted between girders in such a way as to be removable singly when the shield was ready to start. The operation of removing this steel plug by gradually substituting, 4 feet behind it, a timber diaphragm, and filling the space between this diaphragm and the face with pugged clay, was briefly described.

The cast-iron lining was similar in character to that used in previous works of the same kind, but some improvements had been made in details to obtain better water-tight joints. All bolt-holes were made with a short portion bevelled off, and when the bolts were put in lead washers were put on them, and on the bolts being screwed up the lead completely filled the space round the bolts at each end made by the bevelled edges of the bolt-holes. This arrangement had proved very successful, and comparatively few bolts had been found to be leaking when the air-pressure was removed. Into the joints between castings soft lead wire was hammered before caulking. The shield was of the "trap" or "box" type. The author gave a short account of the evolution of this form of shield, with diagrams of successive shields built on this principle. The one used for the Greenwich Tunnel was 14 feet 6 inches in length, and had an external diameter of 13 feet. The cutting edge was made in thirteen segments, each segment having two 6-inch teeth cast on it, and immediately behind the cutting edge was a circular built box girder. Certain alterations suggested by experience had been made in the shield, the nature of which was fully described in the paper, as well as the method of tunnelling, which differed from previous similar work only in the use of face-rams for holding up the timbering of the face. The rate of progress had been exceptionally rapid, an advance of 10 feet per working day having been made over all the tunnel except a short length in open ballast on the Greenwich side. This the author attributed mainly to the favourable character of much of the material excavated.

After giving some general statistics as to the health of the



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men employed, the author described an arrangement for drawing vitiated air from the working-front of the shield. An attempt had also been made to eliminate the carbonic acid from the air supplied to the tunnel by means of caustic soda. With this object an apparatus consisting of boxes or rectangular tubes of wood, one above the other, open at one end, and having sliding doors at the other end, had been devised. The ends fitted with doors were connected to the air-inlet of the tunnel by a conical box, the connection with the air-pipe being made air-tight by a flexible joint. By opening one or other of the sliding doors the air could be made to pass through either the upper or the lower tube as required. These tubes had removable sides, and each contained eight movable wire boxes containing pumice-stone broken small, which, before being put into the tubes, were dipped in a saturated solution of caustic soda. A table of results was given, showing some reduction to have been made in the proportion of carbonic acid present in the tunnel.

The second paper described the work of tunnelling under the river Thames for the Baker Street and Waterloo Electric Railway.

In passing beneath the Thames the tunnels, elsewhere wholly in London clay, encountered a bed of clean gravel and sand lying in an abrupt depression of the clay surface. This freely water-bearing bed had necessitated construction under compressed air. The two tunnels, each for traffic in one direction, ran parallel and on the same level for a short distance under the river from the Victoria Embankment at the bottom of Northumberland Avenue, after which the east (up) tunnel had a rising gradient of 1 in 111, and the west (down) tunnel a falling gradient of 1 in 107 towards the south side of the river. On passing under College Street the up tunnel was vertically over the down tunnel.

The temporary stage, from which the working shafts in the river had been sunk, was constructed on piles, parallel with the Embankment and 150 feet away from it. From this stage a temporary foot bridge led to the Embankment. A stage, 370 feet by 50 feet, held the contractors' plant and necessary buildings. Two 16-feet shafts having been sunk, tunnelling northward had been begun from one of the brick chambers at the bottom in February 1899, but southward the river work had been begun in March 1900.

The shield for tunnelling through the gravel was provided with a hood in front to cover the men during excavation, and a fountain trap behind, to afford an air-seal against a hori-

zontal water surface, should a run of water at the threaten flooding of the tunnel. Under the forward top of this trap, which was close behind them when working, the miners could escape in case of necessity. The application had proved perfectly successful in accomplishing its purpose. Laterally the shield was divided into two halves, ahead of the trap, by a vertical girder, which enabled a limited face in half to be attacked, after any accident to the face-plan due to a "blow." The other essential features of the shield were a steel cylinder, stiffened by a circular box-girder in front of the hood, and having behind that a strong ring of cast-iron carrying fourteen hydraulic rams. The cylinder extended behind the ram, forming a tail in which each tunnel ring was built.

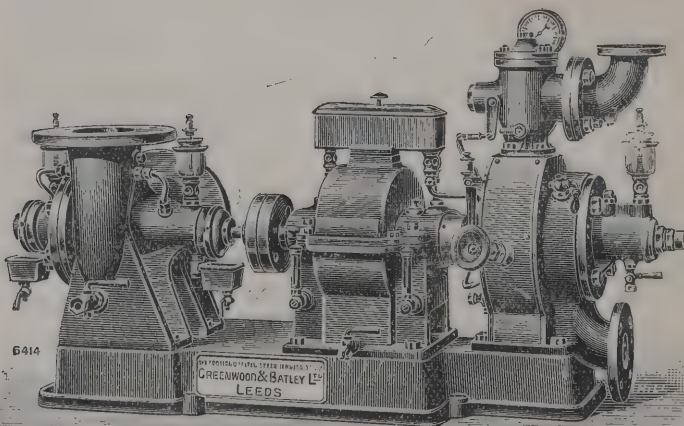
The iron lining for the 12-feet tunnels consisted of rings 18 inches in width. The tunnel was constructed with continuous longitudinal joints, machine faced, and dressed with a mixture of red lead and Stockholm tar before being erected. The joints were caulked with iron-rust cement, and both ends were grummetted where necessary. Blue lias lime grouting was forced through the tapped holes provided in the iron, which were then screw-plugged. For regulating the driving of the shield, plumb-bob lines for the tunnel centre, graduated steel rods drawn by the shield over fixed index marks square to the centre line, a hanging plumb-line in the shield casting in boning-rods behind the shield had afforded every means of determining its position and information for applying the necessary rams in driving, each ram working independently. Setting-out lines had been taken from a 15-feet 6-inch shaft transferred down the shaft by steel wires.

Tunnelling towards Waterloo had been begun at the surface with 17 feet of solid clay and 34 feet of total cover beneath the river-bed. In April 1900 the 8-feet solid air-tight diaphragm wall of brick in Portland-cement mortar had been built across the tunnel and grouted under pressure, with the working in lock and an emergency lock through it, and all necessary precautions. When the clay cover of the shield was only 5 feet thick, the heading in advance of the shield had been discontinued. Compressed air had then been applied with 5 feet of clay covering at a depth of 18 feet below the river-bed. As soon as the cutting edge reached within 2 or 3 inches of the ballast, pocketed pugged clay had been made, close to each other, in advance of the face, forming a soft bed for the skin to enter, wherever the cutting edge would otherwise have encountered the ballast. As the amount of ballast face increased, the handholes, separately excavated and filled, had formed a larger and larger

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ion of an annular bed in front, a close blanket against the  
id-skin behind, and a lining to the ballast over the iron  
nel, securing a space for the grout around the iron, and an  
eal at the tail of the shield where it covered the last tunnel  
The face had been timbered with close horizontal  
king set against a thick plaster of pugged clay, and  
nged by stretchers in two halves, across the face, held at  
against the shield, and afterwards held by up-and-down  
iers, supported by round hollow steel struts passing through  
shield, when driving the shield forward. The normal pro-  
s of the tunnel in ballast had been three 18-inch rings per  
Three eight-hour gangs had been employed. The air-  
sure used had been the exact equivalent of the hydraulic  
l in the river, varying usually during each tide between  
s. and 32 lbs. per square inch.

Medical attendance had been provided for the workers, and  
y provision had been made for their care. Cases of com-  
ed air sickness had been infrequent, and the serious ones  
The amount of air at atmospheric pressure pumped  
gh the tunnel had varied between 30,000 cubic feet and  
oo cubic feet per hour. The proportion of carbonic acid  
ne atmosphere in the working space had varied between  
per cent. and 0.10 per cent.

he East Tunnel had since been driven through the ballast  
e use of the same shield, with a slight modification to  
le the miners to work conveniently while the face was kept  
ether under cover of the hood. An average progress of  
5 feet per working day had been uniformly maintained,  
the amount of air delivered had averaged only 100,000  
: feet per hour.

### DUNFERMLINE'S NEW BATHS.

new baths and gymnasium which Mr. Carnegie has  
nted to Dunfermline will occupy a site on the east side of  
ur Street, along which they extend 260 feet. The main  
is composed of a centre block of two storeys, flanked  
ctively on the right and left by buildings, each of single  
y; and on the extreme left the elevation is extended in a  
ate composition of simple design, forming a group of  
ish baths in two storeys. The central block contains the  
ce hall and a spacious vestibule, on either side of which  
e ticket office and a ladies' room, with costume and shoe

store. Facing the entrance are the main entrances to the pond  
hall on the left and the gymnasium on the right. Both of these  
are behind the main building. The pond hall is a handsomely  
equipped and well-lighted apartment, 92 feet 6 inches by 58 feet  
6 inches, containing swimming pond, 75 feet by 35 feet, also  
two commodious spray-rooms and an instructor's room. On  
each of the two sides of the apartment there are upwards of  
fifty dressing-boxes, and by an ingenious arrangement of hinging  
the box divisions are made to fall aside, and, the side floors  
being staged, the space can be seated for an audience, on gala  
occasions, of about 350 persons, in addition to 400 more pro-  
vided for in the gallery, which is carried round three sides of  
the hall. The gymnasium is a lofty and well-lighted apartment  
103 feet by 45 feet, with a gallery on three sides. Provision is  
made in it for the introduction of all the latest appliances for  
the gymnastic exercises for both sexes. On one side of the  
gymnasium are separate dressing and spray-rooms for the  
sexes, with an additional apartment on the basement floor to  
be used as auxiliary accommodation on special occasions if  
required. The entrance and exit for these apartments are so  
arranged as to secure perfect privacy to each of the sexes  
in passing to and from the gymnasium. In the front building  
to the left of the centre block is the section comprising the  
slipper baths. It is arranged for fourteen plunge and nine  
spray baths, each with a separate dressing-box, the whole  
being grouped in a lofty and well-lighted apartment, but  
with separating passages for the attendant controlling the  
baths under use. Special appliances for ventilation, and  
radiators for heating, are provided throughout. The Turkish  
baths immediately adjoin. They comprise the usual succession  
of hot, shampooing and cooling apartments, Russian vapour  
baths and plunge pond, all being of liberal dimensions and  
fully equipped. To the right of the centre block is a large,  
handsome billiard hall, accommodating three full-sized tables,  
together with oriel and ingle-nook recesses for table games.  
The hall is furnished with a separate lavatory, which is ap-  
proached immediately from the main entrance, so that those  
engaging in the game may not be required to pass the turn-  
stiles placed for ticket-holders to the baths. Committee and  
reading-rooms are provided above the entrance hall in the  
centre block, and over the gymnasium dressing-rooms is a  
commodious residence for the caretaker, who by private pass  
doors has through communication to all parts of the building.  
Under the Turkish-bath blocks are engine and boiler-house  
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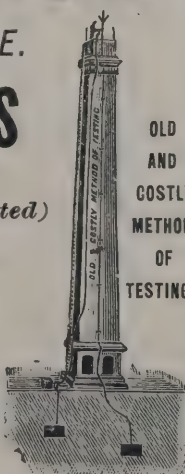
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### MANCHESTER AND SALFORD SANITARY ASSOCIATION.

WITH the object of commemorating the fiftieth anniversary of the formation of this Association, its committee has decided to hold a conference on sanitary reform. It will take place in the Town Hall, Manchester, on April 24 and 25, and from the programme just issued the meetings promise to be highly interesting. After the welcome to members on the first day the president of the Association and of the general committee of the conference (the Bishop of Manchester) will deliver an inaugural address. This will be followed by an address on "The History of the Manchester and Salford Sanitary Association, or Half a Century's Progress in Sanitary Reform," by Dr. Arthur Ransome, F.R.S., a former chairman of the committee. Sir James Crichton-Browne, M.D., F.R.S., will next speak on "Light and Sanitation." The next meeting will be devoted to "Women's Work in Sanitary Reform," on which subject Mrs. H. J. Tennant will speak. "Vital Statistics and their Relation to Sanitary Reform" will be dealt with by Dr. Arthur Newsholme, medical officer of health, Brighton. Mr. T. C. Horsfall, president of the citizens committee for the improvement of the dwellings and surroundings of the people,

will read a paper on "The Housing Question." An address on "The Prevention of Tuberculosis" will be delivered by Wm. H. Broadbent, M.D. Dr. A. Bostock Hill, professor of hygiene and public health at Birmingham University, will deal with "The Relationship of Voluntary Effort to Constitutional Authority in Promoting Sanitary Reform." The Earl of Meath will speak on "Physical Training;" Dr. Niven, medical officer of health, Manchester, on "The Economics of Health." Amongst others who will preside at meetings are Professor Dixon Mann, M.D., present chairman of the Association; Wm. H. Houldsworth, Bart., M.P.; Mrs. Moorhouse; Henry Simpson, a former chairman of the committee; Alan Walton Smith, J.P., chairman of the sanitary committee, Manchester Corporation; Mr. W. J. Crossley, J.P., C.C.; Mr. A. Hopkinson, K.C., principal of the Owens College; the Right Worshipful the Mayor of Salford; Sir J. T. Hibbert, K.C.B., chairman of the Lancashire County Council; and Councillor Huddart, chairman of the Salford health committee.

The address to be delivered by Dr. Ransome, who was one of the earliest members of the committee, and who served many years as honorary secretary and chairman, will be an appropriate record of the work which has secured for the Association that recognition from local authorities and other public bodies directly or indirectly associated with public health administration which has procured for it the influential position it has long held. The Association has not only been the pioneer of most of the important sanitary improvements in Manchester, but has exerted marked influence in sanitary legislation. Its influence with Government departments is illustrated in its report for the past year, and its communications to local authorities surrounding its immediate sphere of operations are always treated with high respect. It is natural, therefore, that its infrequent conferences should attract the attention of such authorities, and on this occasion in particular the desire seems to be general to recognise the unique position of the Association as the oldest health society in the kingdom. Many municipalities, urban district councils and other public bodies have appointed delegates, or intimated that they will be otherwise represented. All local institutions having any connection in common with the Association are represented on the conference committee, including some which are the direct offspring of the Association. As in the case of former conferences the proceedings of this one will be published, and the volume should prove a valuable contribution to sanitary literature.



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# The Architect.

## THE WEEK.

THE munificence of Mr. CECIL RHODES will no doubt be shared in hereafter by some of the sixty colonial scholars who will be destined to follow architecture, and some of the American and German scholars may also turn their attention to the same art. It is evident, however, that Mr. RHODES was captivated by the Oxford notion that so long as professors are forthcoming it does not matter what kind of buildings they teach in or whether they hold forth in the open air. Otherwise, it is remarkable that he should think of sending nearly two hundred additional students to Oxford without allowing a penny to be expended on a building for their use. He may have believed that if a similar number of English students were withdrawn from the University, no loss to the world would arise. Mr. RHODES was a representative man of the present age; but it has been said that he would have desired to be ranked among learned Englishmen. Did he contemplate that his colonial, American and German students would have a like position? If he wished to make them deal with the problems of the future, science rather than literature should be their province, and in that case laboratories of various kinds should be provided for them on a scale which the University of Oxford will never erect or approve unless under compulsion. After hinting that the priorities of Oriel are fools, he directs that they are to expend 22,500*l.* on college buildings, while 17,500*l.* is to be applied to meet any loss of revenue sustained by pulling down property for the buildings. It is anticipated that the rest on that sum will not be equal to what is now recovered from the shops which will have to be removed. Mr. RHODES's trustees are to erect or complete the monument to men who fell in the first Matabele war at Shangani, in Rhodesia, the bas-reliefs for which are being made by Mr. N. TWEED. Eight thousand pounds per annum is reserved for the cultivation of the Inyanga property, but the sum is to include the establishing and maintenance of an agricultural college, besides experimental farming, forestry, market and other gardening, fruit farming and apiculture. His own house, De Groote Schuur, near Capetown, with all furniture and other articles, and all other property belonging to him situated under Table Mountain, is to be retained for a residence for the Prime Minister for the time being of the Federal Government of the States of South Africa. Until there shall be such a Federal Government it may be used as a park for the people. He gives a salary of which the interest will amount to 1,000*l.* per annum, for the keep of carriages and servants and the upkeep of the household.

THE strength of the terracing on the ground at Ibrox, in a south-western suburb of Glasgow, on Saturday, of course, was subjected to official investigation. The terrace has been in use for a couple of years, and as it was planned to accommodate 86,500 people, it is to be assumed that provision was made for sustaining the weight of an additional number. On Saturday the spectators on the western portion of the stand were over 33,000, and, apparently, if not overcrowded, more people were present than could see the playing with any approach to comfort. In the accident there seems to have been overloading in parts of the terrace, and in the eagerness to witness one phase of the struggle between the English and Scottish football teams, it is probable that some of the paving was broken, and, as the weight continued, the terrace was quickly increased until a part measuring 80 feet by 3 feet was opened. In all such cases it is impossible to provide means of control over spectators. Unless there is a system to be mutually accommodating, and for late comers to be satisfied with partial views accidents are almost inevitable. The catastrophe should bring about a revision of the data for calculating the strength of such structures. It is not sufficient to consider a crowd as a dead load, weighing so much per superficial foot. It is evident from what happened at Ibrox Park that a crowd can become a force which is destructive from its action. On that account we should expect the authorities will insist on more than the customary

strength in the stands which are to be put up in the Metropolis for the spectators of the Coronation processions. When so disciplined a people as the inhabitants of Glasgow can under excitement act unwisely, what is to be expected of a miscellaneous crowd including women and children and foreigners?

MR. PETER GRAHAM has so long delighted visitors to the Royal Academy by his paintings of Scottish scenes, his admirers in England will be pleased to learn of his acceptance of an honorary Academic Doctorship from the University of St. Andrews. Professor LAWSON, the dean, described the artist's works in words which will be endorsed in England, and deserve to be recorded. He said:—"In Mr. PETER GRAHAM, R.A., I present to you not only a near neighbour, who lives as it were under the shadow of our tower and has a keen interest in our concerns, but a famous artist of the highest excellence, who has had the rare good fortune by his pictures at once to delight the masses of the public and to please the more critical circle of his fellow-artists. Mr. GRAHAM was admitted an Associate of the Royal Scottish Academy at the early age of twenty-four, and after painting many pictures of pre-eminent merit he was elected an Associate of the Royal Academy in 1877 and an Academician four years afterwards. It has been his privilege to accomplish in art two undertakings of the highest importance. He has revived national interest in landscape painting and intensified the national character of Scottish landscape work. He has also added to it something which has come from the spirit of the romantic poetry of the early nineteenth century, a love for the pictorial effects of light and atmosphere as well as of colour. Like the greater Scottish poets of an earlier time, whose work he continues in the kindred province, he has a genuine love for all that is characteristically Scottish in hill and stream, sea coast and moorland, and, like the poets, he has linked his pictures of Scottish scenery with the humbler life of the field and of the air, as well as with the strenuous labour of men whose presence gives to nature its complete significance. Not the least of his merits is that in a day overflowing with theories of art he has been sparing of theory save by the way and to encourage a brother artist. He is happily contented with continuous artistic production for the enjoyment of his fellow-countrymen. Typically Scottish in his choice of subjects, which are treated with incomparable fidelity and alive with beauty and strength, Mr. GRAHAM is fittingly selected for honour by our University, which perhaps more closely than any other is bound up with Scottish sentiment and history."

THE resignation of Mr. W. A. VALON, who has been an engineer for the gasworks and waterworks of Ramsgate, in order to devote himself to practise as a consulting engineer, will not, it is to be hoped, deprive the town of the benefit of his experience. If at the present time the character of Ramsgate is improved by means of the communication by which the two cliffs ceased to be independent, the credit for the work must be in a large measure assigned to Mr. VALON. Attempts were made from time to time to unite the east and west cliffs, but all the projects had weak points, which were fatal to their adoption. Mr. VALON by his tact was able to overcome the opposition of the Board of Trade, the harbour authority, as well as the objections of property owners and others who had an interest in keeping things as they were. The success of the first part of the work led to the completion of the undertaking. The water supply of Ramsgate was so peculiarly arranged that the inhabitants of the higher districts of the town could not, before Mr. VALON's arrival, obtain a supply until the cisterns in the houses of the lower part were filled. Since 1879 there has been a constant instead of an intermittent supply, and the quantity has been increased almost threefold, while the profits have been nearly doubled. When the gasworks were purchased by the Corporation in 1877 the quantity produced was about 55,000,000 cubic feet; in 1901 it had grown to over 227,000,000; and the works are equal to the production of over 300,000,000. Prepayment meters have been in use during the last ten years, for Ramsgate was the first town to adopt them. The total net profit between 1877 and 1901 has been 77,774*l.* Ramsgate should hold the man in respectful remembrance who has done so much for its welfare.



## FIFTY YEARS AGO.

AT the beginning of the year 1852 anticipation had full scope for its exercise in England. The Great Exhibition of the preceding year elevated industrialism to a height which had not hitherto been attained amidst the nation of shopkeepers. The favourite food of Englishmen, no doubt, was more prized when it was reported that a loin of beef had been knighted, and in 1851 a colossal shop was found to be more attractive to royalty than any collection of works of art or curiosities which was then known. The Sovereign had inaugurated it, her husband was considered to be its chief organiser, an archbishop had prayed for a blessing on it, and poets sung its praises. As old warriors like WELLINGTON and ANGLESEY had walked arm in arm through the courts, it was allowable to assume that henceforth the great victories were to be gained by Peace, and all who took part in the manifold productions of this country could well imagine that a new golden age had arrived. The state of feeling at the time may be judged from a declaration which was issued by the Royal Institute of British Architects, of which EARL DE GREY was then president. It says:—

Among the recent movements of the present age is the exhibition of the Products of the Industry of all Nations, which was opened in the Metropolis, under the enlightened direction and zealous patronage of His Royal Highness the Prince Consort, during the past year. A Royal Commission was appointed to mature the arrangements for this noble project, which embraced a vast variety of objects connected with architecture, artistically and constructively. Considering the important influence which the exhibition must have in many departments of architecture, and desirous of evincing a hearty co-operation in so useful a scheme, fostered by our royal patron, this Institute was the first among scientific bodies to come forward and contribute from its funds to an object so national and so advantageous. This Institute cannot but feel that, great as has been the advance of this country in all matters connected with manufacturing skill, still there is to be desired a more intimate union of fine art in design in the productions of various departments. The Institute may confidently expect, however, that the noble competition recently opened between British and foreign talent will not only call forth a vigorous effort and great exertions in our countrymen for improving the tasteful products of our manufactures, but that we may look forward with confidence to a marked advance in art, as applied to articles of everyday use by even the humblest classes. The exhibition of foreign taste and skill must also have the important result of affording us useful lessons, and of hastening on the period when the English will not tolerate any production which may betray incorrectness of design, crudeness of form, or want of harmony in colour. The advance which recent ameliorations in the excise laws, and a growing taste for the beautiful have produced in glass, in mosaics, in porcelain and other objects of decoration applied to construction, must materially promote a steady progress in the right direction. This may lead us to hope that, ere long, England may vie with France and Italy in wedding the refinements of colour and material, and the attractive efforts of a less sparing embellishment to forms which Greece might have approved, and which Roman or Mediæval art could not have excelled.

On the whole, as was admitted by foreign critics, Great Britain had succeeded fairly well in the international competition. Other nations were possessed of experience in preparation for such displays, and therefore knew how to select objects which would be most effective. In this country we are sometimes disposed to undervalue our work, and there was no hesitation about praising the superiority of the foreign productions. At the same time there was a general resolve to overcome the defects which were thought to cause the inferiority of the British products. The principal differences were believed to be connected with art, and with that object the question of education in design for manufactures assumed importance for the first time.

The Government School of Design had been, it is true, in existence from 1837. The head masters were then J. R. HERBERT, R.A., R. REDGRAVE, A.R.A., and H. J. TOWNSEND, an able artist who afterwards mysteriously disappeared from London. The second masters were R. BURCHETT, W. DENBY, C. J. RICHARDSON, architect, R. W. HERMAN and W. H. DEVERELL. R. N. WORNUM was a lecturer on ornament, and the secretary was W. R. DEVERELL. There was another school of design in Manchester, of which Mr. J. A. HAMMERSLY was the principal.

There were branches in Spitalfields, Birmingham, Coventry, Nottingham, Norwich, Sheffield, Stoke, Hanley, Leeds, York, Huddersfield, Newcastle, Glasgow, Paisley, Dublin, Belfast and Cork. But prior to 1851 the schools were valued.

A rival to the Somerset House school was the National London School of Drawing and Modelling, which was established for the instruction of workmen employed in casting and chasing of metals, masonry, carving, plaster, cabinet-making, house painting and decorating, &c., and true knowledge of form as applicable to the designs, in which natural objects are introduced. FORD MASON, BROWN, Professor DONALDSON, GEORGE GODWIN, GEORGE TRUEFIT and MATTHEW DIGBY WYATT were among the committee, and the master was W. CAVE THOMAS. The fees in the Government School were 2s. a month for either morning or evening classes. In the Camden Town School the fees for adults were 2s. a month, but for youths between twelve and fifteen they were 1s. 6d. Although deprived of the prestige and the prizes available for students in the Somerset House School, the unofficial school was recognised as being able to produce designers and craftsmen who could be described as practical.

It was perceived by the Government that school design of the character then existing would not realise the expectations of the public, who wished to be at least on an equality with foreigners. It was therefore resolved to establish a department of practical art under the Board of Trade. HENRY COLE was appointed superintendent of the business of general management and RICHARD REDGRAVE art superintendent. W. R. DEVERELL became secretary. The head masters at Somerset House were entrusted with the direction of the instruction in the central school, which was also to be rendered useful to the branch schools. One of the consequences of the new arrangement was the resignation of J. R. HERBERT, R.A., who was the principal official. The two superintendents lost no time in preparing a statement to the Board of Trade, in which they appealed for public sympathy, saying, "It is obvious that unless the public as consumers are sufficiently educated to appreciate improved art in manufactures, it will not be the interest of manufacturers to aim at its production, and the labours of this department must be in some measure fruitless."

In order that technical art might be taught, OCTAVIUS HUDSON, who was one of the early pupils of the School of Design, was constituted professor for textiles and paper-staining, and GOTTFRIED SEMPER, the architect, who was a political refugee in this country, for ornamental metalwork. The schools were also removed to Marlborough House, which was temporarily assigned to the new department. One of the difficulties which presented itself was the reduction of books adapted for the use of the students. The publishing trade was then more restricted and united than it is at present, and any interference with the business would be opposed by "the trade," who could easily raise a party question of an invasion of Paternoster Row. Accordingly HENRY COLE sent a diplomatic letter to various publishers in which he said:—"Assuming that the manuscripts of such works, together with any illustrations, will be produced by this Department, will you have the kindness to inform me what you consider would be the most desirable course of proceeding to cause the works to be printed and published:—(1) So as not to interfere with the ordinary rules and channels of trade; (2) so as not to confer any monopoly on any particular publisher without previous competition, if possible; (3) so as to afford the public the means of obtaining the works at a reasonable and moderate price? In suggesting any plan, will you have the kindness to bear in mind that it will be necessary that the Department should have, for its own use only, 250 copies at the cost of paper and print?" After negotiation the firm of CHAPMAN & HALL brought out such books as treatises on geometry and perspective, and on the characteristics of the styles of ornamental art. It will be seen from the preliminaries we have described there were strong grounds for the belief that the Government was earnestly desirous to improve the teaching of art in this country. We need not now, however, discuss to what extent the hopes of the public were realised. Afterwards, when the Department of Practical Art was allowed to degenerate



in accordance with other Government departments, the signs of the time were at once exhibited.

In addition to being used for classrooms, Marlborough House was utilised for an exhibition of various examples of industrial art which had been purchased from the collection in Hyde Park. The works produced in the schools of design for the year ending March 1852 were shown, in order that the character of the teaching could be understood. Another exhibition, and one which was most valued at that period, consisted of examples in which the fine arts of art were neglected. It became known as the "Gallerie of Horrors." The offenders, however, invoked the aid of the law, and as it is disposed towards the side of money-making rather than of art in the form of theories, the collections were prudently withdrawn. But OWEN JONES was able to deliver a course of lectures on false principles of design, as well as on those which were true. Drawings from the schools were submitted to Sir EDWARD EASTLAKE, the president of the Academy, and JOHN RUSKIN, R.A., and they declared that considerable progress had been made in most of the schools. It could be said that the new system started under favourable conditions.

The statement of the Institute of Architects which we mentioned referred to the important influence which the exhibition must have exercised in many departments of architecture. Was there any sign of architectural improvement manifest during the year 1852? A paper was read at one of the meetings of the Institute of Architects by J. W. RUSKIN, at the end of which he asked the pertinent question, "What good has our profession derived from the exhibition?" The answer he gave was that the critics of the daily press had discovered for the first time that the age of foreign superiority in arts was a mistake, and had at last recognised the fact that the examples of English skill—alike in carving in wood and stone, in metal-work of all sorts, in woven fabrics and embroidery, in stained glass and mosaics—were of such a character as at last to refute the often-repeated fallacy that the English people were deficient in taste, while the truth was they were simply very much neglected it. A reply of this kind could not have caused much satisfaction to architects. In the exhibition of 1851 there was no special department of architecture, sculpture being the only fine art which was shown on a fair play, and the one architect who could be considered as having an opportunity to assert himself was JOHN RUSKIN, for the Mediaeval Court was his work. Unhappily he died in September 1852. His illustrious but most productive artistic career shortened life, for he was only in his forty-first year when he died at Ramsgate. If he had lived he might have secured many more commissions, but it is open to doubt whether his skill would have accomplished works surpassing those of his early manhood.

The records do not bring before us many remarkable examples. In the Academy HARDWICKE was represented by the office-room of the Paddington Hotel, the Freemasons' Hall, and St. Coloma's College, Rathfarnham, and JOHN SMIRKE by the gates of the British Museum. JOHN RUSKIN sent his first design for the Abbey gateway in the Broad Sanctuary. The father of Sir E. J. RUSKIN sent an interior of a new entrance hall at Pynes, Mr. AITCHISON, jun., the Palatine Club. In the Architectural Exhibition a much truer indication of the state of architecture was said to be given than in the room at the Crystal Palace. Among the designs shown was a design by C. FOWLER for a colossal arch of masonry over the Avon at Clifton, the abutments containing vaulted houses and cellars communicating with the wharves, and arched galleries over and on the spandrels for public use. E. L. WALTERS contributed warehouses in Manchester, Mr. FERGUSSON sent drawings of Indian temples, Mr. RUSKIN and Mr. J. P. SEDDON Venetian scenes. EDGESTON, jun., the secretary of the Architectural Association, showed a cottage in which iron framing was filled in with slabs of rough clay covered with a very fine coating of porcelain clay, and then glazed.

The Architectural Exhibition was believed to be promoted by the Architectural Association, and in consequence there were many senior architects who held aloof from it. At the opening meeting of the Association for the session

we find Mr. EDMESTON lamenting the difficulties under which architectural students of that day laboured. He also spoke about the everlasting subject of style, and the following will show how far views on the subject in 1852 correspond with those in 1902:—

Time was when fashion, not principle, governed architecture—when it was a purely imitative, not an inventive art. The Elizabethan is no longer the rage. We have had a rage—the Gothic; but under the new influences how different to former imitative efforts. They failed, indeed. Far different the result achieved by those many active, zealous, intelligent minds brought to bear, not on the best mode of exactly repeating something already existing, but in searching out undiscovered principles. And the more this is done and the more it is felt we see the imitative habit thrown off and the inventive faculty called into active action, so that now there is hardly any Gothic church erected which can be pointed at as copied from any example—at least, not by any of the masters in the art. The mass is unfortunately not yet so well instructed but that in some—in many—cases the matter is entrusted to ignorant and imbecile hands. Mr. Dickens finds fault with those who "have put back the hand on the clock-face of time," and a talented lecturer is so far carried away by his identity with the present as to designate Gothic architecture a "galvanised corpse;" a venerable body it may be, yet alive with meaning, principle and science. Let us not forget the immediate and excellent subject it furnished at the right moment for the spirit of investigation, and the discovery of principles which, so far from being exhausted, still offer an almost entirely unworked field for invention. The habit thus once engendered will become fixed, and the art will insensibly leave its leaning-post and learn to run alone.

It was considered by some critics that a corrective for the admiration by Mr. RUSKIN and his followers of Venetian and ultra-Gothic buildings was furnished by the investigation of the Athenian principles of architecture by Mr. F. C. PENROSE, which was published by the Dilettanti Society. It was demonstrated in the most convincing way that the horizontal lines of the Parthenon were set out as curves. It was no doubt a great discovery, but it cannot be said it has been utilised for modern practice. Mr. PENROSE was busy in writing in 1854. One of the papers he read was on the appropriate decorations of St. Paul's, in which he stated that the restoration of the cupola with chiaroscuro with a very large amount of gilding was about to be undertaken. He thought chiaroscuro-decoration should also be introduced in the apse to supplement the gilding. The three small cupolas with their spandrels similarly required chiaroscuro and a great deal of gilding. Figures would be objectionable in the small cupolas, painted coffers being preferable.

One of the incidents that occurred during 1852 was an investigation of the ventilation and lighting of the Houses of Parliament. The effect of divided authority was not advantageous, and the conclusion arrived at was, therefore, that the entire responsibility should be confided to one competent person under the direction and supervision of the Office of Works. Although the arrangement has been in operation for half a century, it cannot be said that the members have no reason to complain of the condition of the building. Judging by the reports, it would appear that Dr. D. B. REID was accountable for no more than the House of Commons, which continues to be the most unsatisfactory part, while Sir CHARLES BARRY's method was employed in four-fifths of the Palace. Another incident was the commencement of the construction of the royal residence at Balmoral, which became the favourite abode of Queen VICTORIA.

A memorial was presented by the Institute of British Architects praying HER MAJESTY to direct inquiry to be made into the condition of the royal monuments in Westminster Abbey, and to order such steps to be taken as might be best calculated to preserve and worthily perpetuate the venerable and deeply interesting memorials of past sovereigns. Subsequently there was a restoration. The necessity of any appeal reveals the general indifference to the Abbey fifty years ago. The change in feeling must be ascribed in the first place to the efforts of Dean STANLEY, aided as he was by architects who explained the real importance of the Abbey as an architectural work.

As we said, there was anticipation in 1852, and at the close of the year, when the gain to art was considered, there must have been disappointment among ardent people.



A year is, however, too short a term for a test. War followed in the next year and progress was delayed. But in time there was a revival, and on the whole the advance of this country if gradual has been certain.

### THE UTRECHT PSALTER.

**A**MONG the most interesting illuminated manuscripts which have survived is one known as the Utrecht Psalter. It has given rise to much controversy among experts. From its character it is generally held to be an example of "opus anglicum," and consequently reproductions of it were made by order of the Trustees of the British Museum. It is sometimes considered that those drawings which are apparently of oldest date are no more than copies of Romanesque work, and on that account may have been produced in France or in other countries where illuminators flourished. In the last number of *L'Art* there is an article on the Psalter by Professor AUGUSTE MOLINIER, of the Ecole des Chartes, who has long been recognised as an authority on illumination and ancient manuscripts.

The manuscript was presented to the University of Utrecht in 1718 by a M. DE RIDDER. In the seventeenth century it belonged to Sir ROBERT COTTON, the zealous collector; Archbishop USHER mentions it, and in 1631 it was in the possession of Lord ARUNDEL. It was accompanied in COTTON's days by a charter relating to the Abbey of Reculver, in Kent, which was dated A.D. 679. As the abbey was in 949 assigned to Christ Church, Canterbury, Mr. DE GRAY BIRCH conjectures that the Psalter with its companion the charter may have been deposited in the cathedral library. M. MOLINIER believes there is something to be said in favour of the theory, and he does not hesitate to say that the Psalter is a fine example of Anglo-Saxon art. The Psalter contains in addition to the Psalms, the Te Deum, the Gloria, together with symbols of the Apostles and St. ATHANASIUS, whose creed is introduced in the manuscript. The text is set out in narrow columns, three on a page, with "rustic" capitals. The titles and first letters of each Psalm are in "onzial." In each Psalm is a pen drawing illustrating the lines of the text that follow. There are 166 drawings, and evidently in arranging the text space was left for them.

In fixing the date the first difficulty arises from the capitals. Letters of that kind were not subjected in the course of time to as many changes as the letters which form the text, and very ancient capitals continued to be employed with more modern forms of lettering. The Psalter was, on account of the capitals, supposed by some experts to date from the fourth century, and by others from the six or seventh. The disposal of the text in three columns should be of some value in ascertaining the date, but in this case there is a belief, as we have said, that the Psalter is only a copy of a more ancient example, and hence that evidence cannot be relied on. From the large ornamental letter "B" with which the volume opens, the manuscript has been taken to resemble two executed in Rheims and Metz in the ninth century. M. MOLINIER is of opinion that it is impossible to be precise about the time of the origin of the Psalter, and he concludes that it may be a reproduction by an Anglo-Saxon monk, executed between 750 and 850, of an earlier manuscript that was possibly Romanesque.

The figures in the drawings are sketches which show unusual facility in the use of the pen. Sometimes there is no outline, as in the wings of angels and the lower limbs, which are shown as covered by stockings. The hands are all remarkably large—that is an advantage in one case, where an organist is seen fingering the keys from behind the instrument—and from the way they are clad some of the figures appear to be hunchbacked. In the buildings introduced arches are common and the gates of cities are represented as elaborate structures. In several of the Anglo-Saxon manuscripts the buildings suggest there was more architectural art in England than is commonly imagined. M. MOLINIER asserts that two artists must have worked on the figures. One had a light hand and rapid stroke; the other was less dexterous and decisive, and in retouching some of his lines deprived them of character.

According to M. MOLINIER, the peculiar style of the draughtsmen indicates that they were endeavouring to copy older drawings. If they were designed by the artist there would be more signs of preparation. With all respect for M. MOLINIER, we must say that it is extremely difficult to realise the attainments of early Mediaeval illuminators. Let us take a parallel case. All who have studied Japanese work will be able to recall examples which seemed to be copies, and yet people who saw work in progress were able to vouch for it as being executed without the aid of any pattern or model or preparatory lines or points. There was probably a division of labour in monasteries, and certain accessories like those we see in the Psalter might have been put in first, and in that way guided the figure draughtsman in his arrangement and disposition of the groups.

The subjects of the illustrations are not strictly confined to attempts at realising King DAVID's thoughts. The wide range are made to suggest scenes which the artist adopted in the way that was best suited to his imagination. If, for instance, in the Vulgate there is mention of a forge, the design represents one, or when a just man is compared to a tree near water, we are shown a man asleep on the bank of a river, and the metaphors are transformed into real figures. The interest of the drawings consequently becomes historical as revelations of the life of the period when the illuminator was at work rather than as aids to the interpretation of the words of the Psalmist. M. MOLINIER points out that in the "Bibliothèque Nationale" there is a Psalter dating from the beginning of the thirteenth century, in which some of the drawings, which are exquisite examples of illumination, have been imitated from the Utrecht Psalter. It may be that both were based on the same original. He surmises there is also some relation between them and ivory carvings of the Carolingian period which represented Biblical scenes. From them pictorial Bibles probably were derived, of which the Utrecht Psalter may be a fragment. In Zurich there is an ivory which resembles an illustration in the Psalter, but which was the inspiring or older work cannot be determined. In any case, the supposition is warranted that several psalters were produced, and in order to expedite them more than one monk might be able to co-operate in the preparation of drawings.

It is not to be imagined that all the scenes are secular. Several are drawn from other parts of the Scriptures, and could therefore be the work of men who knew little of the world around them, while they could rely on other illuminations of the sacred text for models or suggestions. The costumes might be considered classical rather than English, but we know the influence of conventionalism in such matters was powerful, and continued till a very late date. M. MOLINIER says that the architecture is suggestive of Roman work, and the tables with supports in the form of limbs, the thrones and other objects recall those seen in Pompeian frescoes. The illustrations if rearranged could be made to serve as a treatise on archaeology; the only drawback is the impossibility of being able to determine the time in which they were produced. The Utrecht Psalter is, however, not the only illuminated manuscript which is tantalising because it is at once definite and indefinite. The solution which M. MOLINIER seems most acceptable is that one of the numerous Anglo-Saxon clerics who went to Rome, as was customary in the seventh or eighth century, on his return brought with him some old copy of the Psalter, with illustrations which belonged to the Imperial epoch, or about the fourth century, and that it was employed by the artist of a subsequent time. In copying it individual peculiarities might be introduced, as occurred when RUBENS made a replica of DA VINCI's cartoon, and in that way some of the characteristics of the original would be lost in the course of time.

In 1895 M. PAUL DURRIEN put forth the theory that the style of the Psalter recalls some well known work which were produced in Rheims and Metz, and in that region we should seek its origin. M. MOLINIER says it appears to him to be incomprehensible that any paleographer or archaeologist can profess to see a correspondence between the Psalter and the Metz Sacramentaire and the Rheims Gospels. The latter, which bears the name of Epernay, was among the Mediaeval treasures in the Paris Exhibition of 1900. M. DURRIEN relies on the form of



tain letters which he believes were only used Rheims or Metz. M. MOLINIER is opposed to that argument, for, as everyone knows, it was customary for monks to pass from one abbey to another. The artists therefore are not to be accepted as a clue to the origin of the Psalter. As regards the illustrations, it is admitted by M. MOLINIER there is some resemblance between the Book of Gospels and the Psalter. But on a closer examination the differences between them are still more remarkable. The artists of the Utrecht manuscript drew their figures with a few strokes. But in the work which belonged to Rheims every part is elaborated. The style is also unlike, and similar scenes are not treated in the same manner. That there was some common ground in the art of various periods cannot be denied, and the routine in which art was executed in monasteries far from would be sufficient to cause some similarity between the products. M. MOLINIER to the end upholds his opinion that the Psalter of Utrecht is an Anglo-Saxon work, and what he says should be accepted as authoritative. The article is one of the scholarly monographs relating to archaeology which are presented regularly in *L'Art*. It imparts a character to the pages by which the publication is elevated beyond those which, from their titles, would be presumed to have art as an object, and in which volatile opinions are made to do duty for learning, experience and common sense.

## THE CENTRAL LONDON RAILWAY AND VIBRATIONS IN HOUSES.

An article on the report of the committee appointed by the Board of Trade to inquire into the vibration produced by the working of the traffic on the Central London Railway, which appeared in *The Architect* of February 21, it was stated that vibration which is sufficient to cause serious annoyance in many houses, the members of the committee ascertained by personal observation. "There were, however, other causes employed. Mr. A. Mallock was entrusted by the committee with the duty of ascertaining the extent of the vibration demonstrated by special apparatus, and his memorandum on varieties of vibrations under different conditions has been published. The following part relates to vibrations in houses:—In connection with the present inquiry I have made observations not only on the vibrations in the ground caused by trains, but also on the like effects due to ordinary road traffic in streets paved with asphalt, wood and granite setts.

It was found that every footfall of a horse propagated a vibration in the ground sensible for more than a radius of 100 feet. New wood pavement and on asphalt the waves due to this were the only ones which could be distinguished. On granite setts, however, the effect caused by the jolting of the wheels over the successive stones far exceeded, and generally masked, the tread of the horses.

When observations are made of the vibrations of the ground caused by trains, it is found that although a great variety of periods are present in the motion, nevertheless when the vibrations are largest and best marked the chief component is a definite period which is nearly independent of the speed of the train, but differs for different classes of line construction. On the Central London Railway, with the rails on longitudinal sleepers and concrete, the frequency is about 15 per second.

These are the vibrations which have given rise to the complaints made by the occupants of houses in the neighbourhood of the railway, and the reason of their potency is that of the floors in good-sized rooms have natural frequencies of the same order of magnitude.

The origin of the definite frequency of the vibrations is found in the ground by the train is the natural period of the spring-borne load oscillating on the spring of the rails and its supports.

Whenever the vibration causing impulses due to the surface irregularities and variable yielding of the rail and its supports with this natural period, the vibrations excited are larger than they otherwise would be.

Experiments with the recording apparatus showed that the vibration of the walls and solid floors of the basements was very much compared with that of the floors of the upper rooms, so in fact, that by itself it would probably have escaped notice.

From the fact, however, that the room floors act as plates and have natural periods not much out of tune with the chief periods propagated from the train, and also from the "extinction" of the vibrations of the floors being sufficiently small to permit a considerable number of oscillations to be perceived as the result of a single impulse before the motion dies out, a kind of "resonance" effect occurs, so that a very small

motion of the supporting walls may, if properly timed, give rise to many times larger motions in the floor itself. Of course this applies also to any objects attached in any way to the walls, provided they too have the appropriate natural periods.

The observations showed that the most prominent period in the vibration records in the rooms of the houses experimented in was very nearly the natural period of floor of the room.

When an arbitrary harmonic force acts on a stable system so as to cause vibrations, two series of vibrations always co-exist during the early stages of the motion, one being the forced vibrations due to the applied harmonic force, and the other the free vibration necessary to satisfy the initial conditions as to the velocity and configuration of the system.

If the system is subject to little extinction the free vibrations continue for a proportionately long time, but in any case the free vibration is in general as important at first (unless the free period is small compared with the forced period) as the forced vibration.

When the train waves act on the springy floors of houses the forced and free vibrations of two distinct systems have to be considered, namely, the forced and free vibrations accompanying the train in the ground and the resultant which both the series have in causing forced and free vibrations in the floors.

It can be shown that in the circumstances the most prominent period in the resultant would be the period of the system having the smallest coefficient of extinction, and that if the two systems have not very different periods and the same coefficient of extinction, the principal period would appear as the mean of the respective periods of each system.

Since, therefore, the periods observed in the houses are the same or nearly the same as the periods of the floors, and the period excited in the ground by the train is largely that due to the load oscillating on the spring of the rail and its supports, it follows that the vibrations in the ground and in the houses must be looked on as fragmentary series of free vibrations on which are superposed forced vibrations, generally much smaller, following in period and phase the irregularities of the rails.

A somewhat analogous case is that of a ship rolling in a seaway.

Whatever may be the periods of the waves, if the ship rolls, the period of rolling is found to be very nearly the free period of the ship rolling in still water, and it is only in the case of an unusually long train of equal waves that the period, amplitude and phase of the roll approaches agreement with the ordinary theory of forced vibrations with the initial free vibration suppressed.

Perhaps the most remarkable thing which the inquiry on the subject of train vibrations has made evident is the extreme smallness of the actual motions which give rise to complaint.

The amplitudes of the vibrations in the houses examined rarely exceed a thousandth of an inch, and such an amplitude when the frequency is over 10 per second is a genuine source of annoyance.

It is true that a single person walking across the floor will set up much larger vibrations, but as far as the occupants of the room are concerned this does not seem to be noticed. The cause of the disturbance is evident, and the motion of the floor ceases when the people cease moving. The vibrations caused by the trains, on the other hand, are most conspicuous when the house is otherwise quiet.

In the accounts given by complainants occupying houses near the Central London Railway it was often said that the intensity of the vibrations varied much at different times of the day, although the times mentioned were not always the same.

In order to investigate this and also to find out whether any particular locomotives or trains were responsible for the more intense vibrations, concerted observations were made on April 17, 1901, by means of observers placed in houses from which complaints had been received, who noted by estimation the intensity and duration of the vibration caused by each train throughout the day and the time at which it occurred, while at the adjacent stations at Marble Arch and Lancaster Gate other observers timed the arrival and departure of the trains and recorded the distinguishing number of the locomotives.

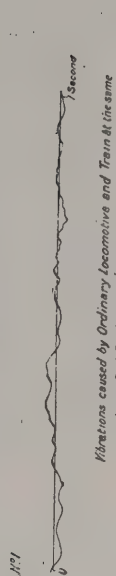
An analysis of these observations showed:—(a) That it was a matter of chance whether a given locomotive caused a slight or a severe vibration; (b) that trains causing severe vibrations in one house were as likely as not to cause only slight vibrations in the others; (c) that different rooms in the same house were not similarly affected by the same train.

Considering the irregularities of the rails and non-circularity of the wheels these results are not surprising. There must evidently be a large element of chance in the way in which the non-circular wheel engages with the irregularities of the line, and it will be a matter of chance also whether one, two or more pairs of wheels are in the best position to cause vibrations at the same time. The irregularities in the wheel are not by any means uniform all across the tread, and it is probable that this is also true of the irregularities of the rail, so that a wheel whose flange was as close as possible to the rail would most

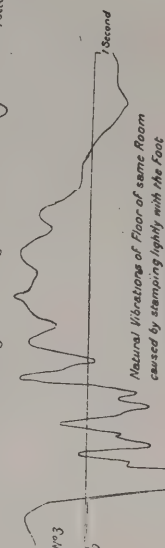


*Vibration in Houses*

Vibrations caused by Ordinary Locomotive and Train on the Metropolitan Railway in 8 Finchley Road in Basement



Vibrations caused by Ordinary Locomotive and Train at the same place in Bed Room on 2nd Floor

*Vibration caused by Road Traffic.*

Vibration caused in the Basement of 3 Victoria Street by Road Traffic Pavement Asphalt



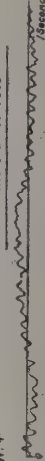
Vibration caused in the Basement of 3 Victoria Street by Road Traffic Pavement Asphalt



Vibration caused on Ground Floor of 21 Abington Street by Road Traffic Pavement Granite Sets



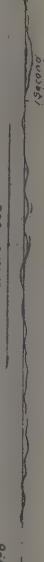
Vibration caused on Ground Floor of 21 Abington Street by Road Traffic Pavement Granite Sets



Vibration caused on Ground Floor of 13 Hyde Park Terrace by Road Traffic Pavement Wood



Vibration caused on Ground Floor of 13 Hyde Park Terrace by Road Traffic Pavement Wood

*Vibration in Houses.*

Vibration caused by Ordinary Locomotive and Train in 19 Hyde Park Terrace 1st Floor. February 18th 1901.



Vibration caused by Ordinary Locomotive and Train at the same place in Basement, February 18th 1901.



Vibration caused by Stamping lightly on the Floor with the Foot at the same place showing natural period of Floor. February 18th 1901.



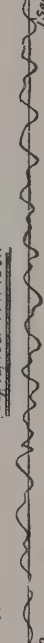
Vibration caused by Ordinary Locomotive and Train in 13 Hyde Park Terrace. Ground Floor. September 14th 1901.



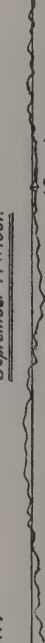
Vibration caused by Geared Locomotive and Train in same place. September 14th 1901.



Vibration caused by Geared Locomotive and Train in same place. September 14th 1901.



Vibration caused by Multiple Unit Train in same place. September 14th 1901.



Natural period of Floor in same place caused by stamping lightly with the Foot. September 16th 1901.



likely experience vertical accelerations different from what it would were the flange as far from the rail as the slackness of the gauge permitted. Small differences of speed also may have a great effect where the rail irregularities have a constant pitch.

In the house (No. 13 Hyde Park Terrace) where vibration tests were also made with all three classes of rolling-stock, the proportion was still more in favour of the geared locomotive and multiple unit motor, the ratio of the vibrations caused by each being 10, 4, 1.

This is probably accidental, and due to the chief natural periods of the lighter non-spring-borne loads of the geared locomotive and multiple unit motor being quicker and further removed from the natural period of the floor of the room.

Comparing the train records at 13 Hyde Park Terrace with the records (taken at the same place in the same room) of the street traffic outside in Bayswater Road, it will be seen that in point of magnitude the street traffic vibrations come between those of the geared locomotive and the multiple unit motor. It appears, then, that objectionable vibrations can certainly be avoided by reducing the non-spring-borne load on each axle to something under 2 tons in the case of a train running at speeds up to 30 miles an hour and on rails laid in any of the

usual ways, and no doubt at present this is much the simplest procedure.

There can be little question, however, that if the surface of the rail could be made nearly smooth or with only very gentle and gentle irregularities, much heavier non-spring-borne loads might be used without inconvenience, and I think this possibility should not be lost sight of, since if train speed of 100 miles an hour or more ever become common, it is almost certain that more care will have to be taken in making the surface of the track uniform than is at present found necessary.

In every house where observations were made it was found that the vibration of solid stone or floors in the basements and of the actual walls (both of which may be considered as moving a part of the ground on which they rest) was very small, not exceeding in general 1 or 2 ten-thousandths of an inch.

Such a vibration if it had the frequency of 15 per second would alter the effective force of gravity plus and minus to 4 per cent. alternately, and would by itself not be noticeable.

The effect of such a vibration, however, if it acts on a system having anything like the same period, will be to set up in that system vibrations many times larger than itself.

The floors of rooms are ordinarily made quite stiff enough



to bend much under the loads they carry, and as long as are sufficiently strong and the bending is not noticeable to the eye, the conditions both as to safety and appearance are satisfied.

Small bendings amounting to a tenth of an inch or less at the centre of a good sized room would not be recognised, and most floors sag to something like this extent when loaded in the usual way may be found both by calculating the deflection from the dimensions of the joists and by actual observation.

But the amount of the elastic yielding under the load is approximately the length of the pendulum which has the period of vibration when made to vibrate up and down. As so much of the load which a floor bears consists of its own weight, the period of the equivalent pendulum will always be less than the period of displacement due to the load, but if it be taken that the effective displacement lies between a twelfth and a twenty-fourth of an inch, the natural period of the floors will lie between one-eleventh and one-fifteenth of a second, and actual measurement of the periods of many floors shows that this is the case.

Hence it might naturally be expected that floors would be ready to respond to outside vibrations such as those caused by the Central London Railway trains, the principal period of which is itself a fifteenth of a second.

Now great the magnification of the original vibration by resonance of the floor may become depends partly on the closeness of the agreement between the periods, and partly on the rate at which the vibrations of the floor would die away if left to themselves.

The closer the agreement between the two periods and the nearer the rate at which the free vibrations of the floor die away the greater is the magnification.

The rate of extinction of the floor vibrations depends to a great extent on good workmanship; hence it is probable that a well-made floor where the joists are bedded on good foundations and the floor boards sound and properly attached to the joists, would be more likely to have large vibrations set up by resonance than one where these conditions are not satisfied.

At the same time, in order that the maximum vibrations be set up there must be a closer coincidence between the periods, and it may therefore be expected that the maximum vibrations will occur more rarely with the less extensible well-made floor than with others, but will be greater when it does occur.

These points are touched upon to indicate the likelihood of different vibration effects being met with in houses differently situated as regards their distance from the railway.

It has been mentioned before that in such vibrations as are set up on either side of the railway the motions of the ground are almost entirely vertical. This was proved by mounting the pendulum weight of the vibration apparatus so that it could move horizontally, and finding that the horizontal motion of the ground was small compared to the vertical motion. The period of the waves in the ground is so large that the wave length of 15 per second waves cannot be less than 300 feet\* on the surface, and will probably exceed 500 feet at a depth at which the surface conditions cease to operate. Hence the horizontal motions which must be caused in the upper rooms of a house by the tilting of the foundations by the wave slope will be small compared to the vertical motions depending on the wave amplitude. The maximum wave slope of

whose length is  $\lambda$  and amplitude  $a$  is equal to  $2\pi \frac{a}{\lambda}$ .

The horizontal displacement in a building at  $h$  feet above the surface of the ground is  $2\pi \frac{h a}{\lambda}$ .

For example, if  $\lambda$  is taken as 500 feet, the horizontal and vertical amplitudes would be equal at a height of 80 feet.

The horizontal motion, however, having regard to the actual amplitudes found for  $a$ , would not make itself felt, and it would be no tendency to cause the floors to vibrate, though it might excite objects in more or less tottering equilibrium to rattle.

It may be noticed here that it is as uncommon to find any large piece of furniture with a natural period as low as 15 seconds as it is to find a floor whose period is much quicker, and it is as regards torsional vibrations (which would be excited by vertical but not by horizontal motions of the floor).

One other point may be mentioned, viz that the vibrations set up in floors by people walking on them far exceed in magnitude the largest vibrations caused by the trains.

Though the impulse given to the floors was in each case by a single tap with the foot, the initial magnitude of the vibrations thus started is not less than twice as great as the vibrations of the train vibrations recorded in the same places.

The lower number is derived from some interference phenomena, which I have observed in surface ground vibrations, and the higher number from earthquake observations and the known values of the volume and density of clays.

## ATHELNEY CHURCH.

THE Rev. A. H. A. Smith, vicar of Lyng, near Taunton, writes:—"I shall feel most grateful if you will kindly give me space to ask for help towards the restoration of the church, the centre of the parish in which is situated the historic 'Isle of Athelney,' which has been most aptly and justly called the 'cradle of England's greatness.' And the name of Athelney is associated, not only with the glorious memories connected with King Alfred, the heritage alike of the mother country, the Empire and of the great Transatlantic Republic but perhaps even more with the recollections of childhood, the burning cakes, the scolding wife, the grave and patient monarch, his entry into the Danish camp disguised as a minstrel, and his final triumph over his enemies. From this our island King Alfred went forth to victory; and here, in gratitude for his deliverance from the Danes, and in remembrance of the privations he endured and the blessings he enjoyed in this little spot, he erected and endowed a monastery, which, like other similar foundations, was swept away by the plundering legislation of Henry VIII. The last stone of the ruins has long vanished, the one venerable building connecting the present with the past being the little church of Lyng, a 'capella' of the abbey, which stands midway between Bridgwater and Taunton, a landmark to all travellers on the Great Western Railway, and, even in its present state, a building of no little beauty, consisting of chancel, nave, with north and south porches, and a western tower. Masonry, flooring and roofing all need very careful repair, but the greatest care will be taken to preserve, as far as possible, all existing features, and only to repair or rearrange old work in stone or wood where it is absolutely necessary to do so. It is hoped that, in addition to the necessary repairs, the restoration may include the filling-in of the beautiful west window with stained glass illustrative of the principal events in the life of King Alfred the Great. As regards the cost, it has been estimated that at least 1,500*l.* will be required to put the fabric into complete repair, and though there is no possibility of raising this sum in the immediate neighbourhood, I trust and believe that many, even of those who have never seen the 'Isle of Athelney,' will feel that an appeal for the preservation of King Alfred's church is deserving of cordial and general support. . . . A small monument on Athelney Hill marks the site of the abbey, and through the praiseworthy and successful energy of Mr. Wyndham Slade, a descendant of the founder, sufficient funds have been raised for its fitting repair; but the little church in its decaying beauty still claims reverential sympathy and generous help. . . . I purposely deferred putting forth my appeal to the public until the conclusion of the millenary celebrations, being anxious to avoid even the possibility of being misunderstood as putting forward, though but in a small degree, a rival, instead of, as it is, a supplementary scheme."

## FITZWILLIAM MUSEUM.

THE Fitzwilliam Museum Syndicate, in their fifty-seventh annual report, state that during the year 1901 the number of visitors was 41,378, and to the Museum of Classical Archaeology 4,520. Among the gifts to the museum the following are specially mentioned:—By the Master of Trinity Hall, the Rev. H. Latham—a collection of 130 bronze medals struck during the reign of Napoleon I, together with other French bronze medals and a collection of twelve Indian gold coins; by the Registry—a portrait in water-colour of Dr. Barnes, Master of Peterhouse, 1788-1838, and also L. Delisle's "Cabinet des Manuscrits de la Bibliothèque Nationale;" by the Rev. W. G. Searle, of Queens' College—a number of coins; by the committee of the Egyptian Research account—a collection of Egyptian antiquities, many fragments of sculpture, notably a finely sculptured sarcophagus lid; by the director of the museum—a collection of Greek antiquities and a set of water-colour drawings of the colleges in Cambridge made in 1825. Mr. Pendlebury, of St. John's, was a donor of twenty-one volumes of music, and Dr. Mann, University organist, gave five volumes. A catalogue of the pictures has been completed by the assistant-director, and will be published during the present term.

Traces of a remarkable Norman fresco have been brought to light during the restoration of the old church at Claverley, Shropshire. At the Reformation, or before, it had apparently been plastered over, and is practically ruined. This is the more provoking since the fresco is of great interest. It is identical in treatment and general idea with the famous Bayeux tapestry. A frieze on which are shown knights in the scale armour of the time apparently represents a fight, the combatants being "laid out" horizontally. Some of the figures, or fragments of figures, stand out with surprising clearness.



## NOTES AND COMMENTS.

WHEN towards the close of the fifteenth century Bishop STOREY paid 10*l.* of lawful money for the ground on which the noble market cross was erected by him in Chichester, the mayor and burgesses guaranteed that they would make no claim nor trouble any poor people who were hereafter to stand or sell within the cross. They were not to allow houses to be built against it or so near as to interfere with access to it, and no toll or other duty was to be levied for standing or selling within it. There was not any agreement about the conservation of the beautiful structure, but from time to time the Corporation voted money to preserve it from collapse. Since 1820 no money has been expended on the cross. Fifty years ago attention was called to the condition of the relic, but without avail. Chichester, like other places in Sussex, is very slow in its resolutions, and from year to year, while the restoration was supposed to be under consideration, the masonry has been decaying. At the present time every policeman who takes up his station under one of the arches risks his life, for at any moment the whole of the upper part of the cross may collapse. It has been estimated that about 280*l.* will be required for the reparation of the masonry and 100*l.* more to provide new clocks. The mayor has offered to subscribe 80*l.* if the remainder of the money is forthcoming. For a city the sum may appear only trifling, but the people of Chichester are at the present time indebted for some thousands of pounds for the payment of law costs in connection with the sewage disposal. They are consequently not in a generous mood. They should, however, remember that one of the objects which attract visitors to Chichester is the market cross, and if by neglect Bishop STOREY's gift should be destroyed, it is no exaggeration to say that less money would be expended in Chichester.

THE architect or engineer who is engaged on public works in India has to submit to regulations which are fortunately unknown to private practitioners in England. One of the most embarrassing forbids him to obtain goods of British manufacturers either directly or through their agents in India, except under extraordinary circumstances. All articles required have to be ordered through the Secretary of State. The original reason for this rule was to find employment for officials attached to the India Office, who were to examine the goods to be sent out before shipment. The waste of time caused by such a roundabout method is incredible. Rarely are public buildings decided on before it is almost impossible to do without them, and hence the architect has to use the utmost expedition in realising his plans. But when everything has to come through Government offices not only weeks but months are at once lost. The alternative of obtaining a special permission to purchase the goods from Indian agents also means considerable delays. For the classes of goods demanded by architects it is only necessary to glance over the advertisement pages of a journal like our own to discover the firms who have an established reputation and who could supply Calcutta, Bombay or Madras, with as much attention to the quality desired as is given to orders from any part of Great Britain. Under existing conditions it is sometimes risky to appoint agents in India, and there is no difficulty in proving that orders sent through the post or by telegram are not only expeditiously but satisfactorily executed. In that way also the mischances of orders finding their way inexplicably to foreign firms would be avoided.

It might be expected that the creation of a Federal city would be looked upon as an opportunity to attract English architects of ability to Australia. But in New South Wales, at least, there appears to be a sufficiency. "The Year Book" lately issued has the following warning:—"There appears to be a strange fascination in the study of architecture, for the number of architects in New South Wales is out of all proportion to the demand for their services, despite the steadily increasing activity in the building trades. Most of the Australian architects have travelled a great deal, and have comparatively little to learn. They all have pupils of more or less promise, and many others are receiving instruction in the Sydney Technical College or in private classes. Not a few of the public and private buildings in the State will bear com-

parison in artistic treatment and boldness of style with the same class in older countries. Hence professional architects intending to settle in the colony would find the ground almost wholly covered. Even in interior decoration there is no lack of designers or artists, but the expenditure in this direction in Australian buildings is comparatively limited. Stained glass is mostly imported, but some is manufactured locally, although not to an extent sufficient to encourage the immigration of design-skilled workers." If the principle of federation succeeds it is possible there may be more hopeful prospects.

THE difficulty of persuading local authorities to take steps for the preservation of relics of antiquity has been again exemplified in Rye. Many visitors have desired that they could live in a town equally picturesque and possessing that glamour which ancient architecture always confers. In Rye several gentlemen have formed themselves into a committee for the safeguarding of what remains of the town, and they have not only given time and attention to the work, but have paid all the expenses, in order that no objection might arise from such an application of ratepayer's money. In a letter from the secretary which was read at last week's meeting of the Rye Town Council it was pointed out that archaeologists and others objected to the removal of the door, &c., on the ground floor (used as a mortuary) of the Ypres Castle, and the Council were requested to consider the advisability of transferring the mortuary from its present position to, say, the square modern tower at the south-east corner of Ypres Castle, known as the women's prison. If the Council consented to those alterations being made, the committee would be prepared to contribute towards the cost of such removal if the same were carried out to the satisfaction of their hon. architect, Mr. HESSELL TILLOTSON. But much opposition was aroused by the proposal, mainly on account of the remote contingency that a little more would have to be expended by the Town Council, and it was difficult to say whether the desirable alteration would be permitted.

THE investigation by Mr. A. MALLOCK of the vibrations caused by the working of the traffic on the Central London Railway will cause much surprise. Apparently the investigation after all that has been said, only "sound and fury signifying nothing." The effect on the flooring of a house is no less than is produced by stamping with the feet. This will seem incredible to those who are able to bear witness to the annoyance of the vibration. But the manner of testing leaves no doubt about the accuracy of Mr. MALLOCK's conclusions. The instrument employed was a mechanically recording seismometer, which at first enlarged the actual motion of the ground to ten times the full size. Afterwards an instrument was used which recorded photographically and gave a magnification of seventy-five. Like all instruments for determining the absolute magnitude of vibrations, where a fixed zero is not available to measure from, it depends on a weight suspended by a spring from a support, which itself moves with the vibrating body. The period of the suspended weight on its spring being very long compared with that of the vibration to be measured. The result is that, when the support vibrates, the suspended weight is left practically at rest, or any motion it acquires is almost entirely a vibration in its own long period, which can readily be distinguished from the quick movements of the support. The relative movement, therefore, of the weight and support, freed from the oscillation of the weight, gives the absolute displacement of the support. For this reason care taken in the observations the results are not likely to be questioned, and it may therefore be taken for granted that, although inconvenience arises, the vibration on underground railways in London does not cause injury to buildings, although it may diminish the value of residences.

## ILLUSTRATIONS.

DUNTREATH CASTLE, STRATHBLANE, N.B.

THE DINING-ROOM, HARTPURY, GLOUCESTERSHIRE.

IVESON HOUSE, FAR HEADINGLEY, LEEDS; DOOR IN SALON.

MACLAREN MEMORIAL CHURCH, LARBERT, N.B.

ELECTRICAL LIGHTING STATION, VICTORIA EMBANKMENT.



## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. William Emerson, president, in the chair.

## Royal Gold Medal.

The PRESIDENT at the opening of the meeting said it would be remembered that the Council had nominated Mr. Bentley for the gold medal of the year. Unfortunately Mr. Bentley died two days before the election of the gold medallist. The Council applied to the King to learn His Majesty's decision in such a circumstance. They were informed that the King was not in favour of the creation of a precedent for the bestowal of a medal on a gentleman of whose selection there was no formal approval. The Council, ruled by the King's decision, had therefore to nominate another candidate for the gold medal, and accordingly nominated Mr. T. E. Colcutt.

The following were elected as Fellows of the Institute:—Mr. R. Langton Cole, of London, and Mr. James Miller, of Glasgow.

As Associates:—Mr. A. E. Biggs, of Felixstowe; Mr. W. Vatkin Ellison, of Erith; and Mr. T. Marshall Smith, of London.

Mr. W. AUMONIER read a paper on

## Inlay and Marquetry.

He said there were two methods of making inlaid wood. The one is to cut the design which is intended to be inlaid and the ground or field out of various sorts of veneers, all of the same thickness, fitting and fixing them together by thin paper on one face and laying this, the open face, downwards as a whole upon a solid ground or board. This is veneered work. The other way is to cut the design out in separate pieces as above, but out of wood 3-16 inch to ¼ inch thick, using the same process of marking out, and then putting the complete print of the design on to a solid ground or board, sinking holes by carvers' tools the required depth and driving the pieces in, thus making a "solid inlay." In speaking of "marquetry" and "inlay," it was never quite understood which sort of work as indicated—whether the solid inlay or the wholly veneered work. As the workmanship of each was so distinct, he would use the term "marquetry" for veneered work and "inlay" for the solid inlay above described. The author then dealt with the technical side of the question, describing the old-fashioned process and that now generally employed, of marking and fitting the design in the wood, shading, &c. In his opinion, strong contrasts or too many different colours on the same panel should be avoided, except, perhaps, in the case of ivory, ebony, or mother-of-pearl in rosewood. One should depend rather upon soft harmonies, such as are seen in the best examples of Louis XVI. work, with their warm soft greys and yellows, or in the golden glow of the magnificent inlay in Pisa Cathedral. A broad effect should be striven for, to be produced by the quality and colour of the wood itself and by the direction of grain in which each piece is placed. On no account should scratching or engraving be used on the surface of the inlay, as of all to express roundness, or relief in form. Dealing with a flat surface, an absolutely flat treatment should be allowed. One should not aim at too great fineness or intricacies and complications of lines in the design. It is useless to emulate the painter and attempt to make too much of a picture—the material is against it.

The author went on to speak of the difference between the quality of marquetry and inlay, taking the words to bear the meaning above attached to them. "Marquetry," being wholly the work of the saw, is apt to become a little too soft and undulating, and perhaps a little bit flabby in parts, under the influence of that more or less mechanical instrument; while "inlay," being partly the saw's work and in part the work of carvers' tools—cutting in and working by hand—is capable of receiving a stronger, more vigorous treatment of outline, and is therefore likely to reach an individual and lifelike character of form unattained by the saw alone, which stamps it as finer work—from an art point of view; and even the occasional inaccuracies of fitting and consequent different thicknesses of joints here and there, give it a distinct charm of its own. It also has a more pleasing quality of surface, especially as in course of time the inlay, being thinner, shrinks more than the solid ground, and thus becomes a little lower than the general surface, making a delightful play on the face of the work.

Solid inlay, with the inlay left in relief and afterwards carved, the author strongly condemned. Carving—as carving is not improved by having its ground made of a different colour from itself. Inlay—as inlay—is not helped by having its surface frittered away by the undulations of carving. In conclusion, he urged them to sweep away all scratchy, uncharacteristic work and get back to the face of nature for inspiration in this as in other arts.

## Wax Inlay.

Mr. HEYWOOD SUMNER in a second paper dealt with the simplest form of inlay in wood, namely, coloured wax stoppings,

a form of inlay which has fallen into neglect. The Victoria and Albert Museum has some very fine specimens of old work of this kind. The effect is produced by incised lines, sunk spaces and dots, all filled in flush with green and red wax. Though after the lapse of 550 years some of the stopping has perished, yet the beauty of design yielded by the firm incisions remains, and these old examples show what fine things can be done in this method by artists who understand the graphic possibilities and the limitations of flat surface decoration. Mr. Sumner went on to describe the method he had employed in some experiments of his own in this kind of work. First trace the design on the panel of wood to be incised, cut it either with a V tool or knife-blade fixed in a tool-handle, clear out the larger spaces with a small gouge leaving tool-mark roughness in the bottom for key; when cut stop the suction of the wood by several coats of white hard polish. For coloured stoppings resin (as white as can be got), beeswax and powder distemper are the three things needful. The melted wax may be run into the incisions by means of a small funnel with handle and gas-jet affixed; it is attachable to the nearest gas burner by india-rubber tubing, so that a regulated heat can be applied to the funnel. When thus attached and heated pieces of wax of the required inlay colour are dropped into the funnel, and soon there will be a run of melted wax dropping from the end of the funnel-spout, which is easily guided by means of the wooden handle, and thus the entire panel may be inlaid with the melted wax. Superfluous surface wax is cleared off with a broad chisel so as to make the whole surface flush. The suction of the wood is stopped by means of white hard polish, otherwise the hot wax will enter the grain of the wood and stain it. Incised panels may be filled successfully with japanners' gold size and powdered distemper colour, using a palette knife to distribute the slab mixture. The melted wax, however, gives a more interesting and accidental result, and is better suited for designs that depend on spaces of colour-stopping for their effect. A close grain is the one thing needful in the wood. As to design, that which is best suited may be compared to a broad sort of engraving. Within certain limits the manner of design is more free than is the case with inlay composed of veneers of hard material. The absence of beauty of material—e.g. pearl, ivory, or choice woods—must be forgotten in the beauty, fancy and austere freedom with which the incised decoration is expressed.

Mr. J. D. CRACE said although he differed on a particular point with Mr. Aumonier, he was glad to move a vote of thanks to the authors of the two interesting papers.

Mr. T. BUTLER WILSON seconded the motion.

## THE ABBEY AND THE OFFICE OF WORKS.

THE following letter has appeared in the *Times*:—

In preparation for the coming Coronation the Office of Works is once more about to be turned loose, as it was in 1887, into the Abbey Church of Westminster. The moment, therefore, seems opportune for invoking your aid against a repetition of the kind of wanton havoc which was played in the church fifteen years ago. Three of the grosser outrages then perpetrated deserve to be specified:—

1. On the north side of the sacrum are three magnificent tombs with lofty canopies. They are some of the best specimens of their class in existence, and are believed to have been the work of one artist. Their date is late thirteenth or early fourteenth century. One of them is the tomb of Aveline Countess of Lancaster (ob. 1273), of whose recumbent effigy a fine engraving was published by Stothard. This figure, specially noticeable for its admirable drapery, was shamefully ill-used in 1887, when large fragments were broken off it. Some of these were lying by the side of the effigy when the Abbey was reopened to the public.

2. Abbot Richard de Ware, who was elected in 1258, shortly afterwards visited Rome, where he stayed two years. From thence he brought a quantity of materials, including porphyry, palombine and serpentine for the paving of the sacrum in mosaic. This exceedingly fine example of "Opus Alexandrinum" was constructed by an Italian workman, Odericus, who accompanied the abbot to England. Obviously nothing could have been easier than to cover Abbot Ware's interesting pavement with a few planks while the works connected with the 1887 Jubilee were in progress. This simple precaution being neglected, the mosaic was badly smashed in various places, apparently by tools and scaffolding being flung down upon it from a height. The largest and worst of these injuries can easily be traced on the south side, a few feet in front of the portrait of King Richard II.

3. The worst and most wanton piece of vandalism was the treatment accorded to the Coronation Chair. Before 1887 its general colour was that ashy grey so characteristic of very ancient wood, while on various parts of its surface were still to be found traces of its original ornamentation in gilded gesso. In



preparation for the Jubilee the chair was smartened up by an ordinary workman with a coat of dark brown polish—a process which obliterated the remains of the antique decoration, and imparted to the venerable relic a spick-and-span look, reminiscent rather of Wardour Street than of Westminster.

Of minor injuries to the fabric of the church there were many, including a number of chips and scratches (as of hob-nailed boots) plainly visible on the triforium arcading and on the diaper work of Henry III's walls.

A long and bitter experience of the ways of the Office of Works shows that it is not fit to be trusted with the charge of historic monuments. Is it asking too much to demand that nothing shall be done during the next three months to the fabric or furniture of Westminster Abbey without the consent of the accomplished surveyor to the Dean and Chapter, Mr. Micklethwaite?

### CHESTER CATHEDRAL.

A PARTY of members of the Chester Archaeological Society went on Easter Monday to Chester Cathedral for the purpose of inspecting the important works of restoration which for a considerable time past have been going on in the south transept of the cathedral, and are now nearing completion.

Archdeacon Barber was a very efficient cicerone. Seats were provided in the transept for the accommodation of the visitors, and before the inspection was proceeded with the Archdeacon read an interesting paper descriptive of the transepts' main features, both artistic and historical. Particularly interesting was his explanation of the artistic designs in the present restoration.

Dealing at the outset with the historical part of his subject the Archdeacon said the story of the great south transept—this unique feature of Chester Cathedral—had often been told, therefore he would content himself with a brief epitome of it. Originally the south transept was of the same size and character as that of the north transept. When the monks of the fourteenth century were anxious to extend the proportions of their church, and to erect chapels dedicated to particular saints, they found it impossible to do this towards the north, as the monastic buildings abutted closely on the church on that side. They must therefore enlarge towards the south. Here their progress was barred by the parish church of St. Oswald (if indeed it bore that title at the time), but a way out of this difficulty was simple, viz. the erection of another church in close proximity for the use of the parishioners. Whether this was done before or after the building of the transept it was perhaps not possible to say with any certainty, and opinions seemed to differ on the point. But one thing was certain—that in the original conception and building of the transept the only entrance to it was through the rest of the church. There was no external doorway in it, and this almost led to the conclusion that a church was first built for the use of the parishioners, and then the building of the transept was proceeded with. That church was dedicated to St. Nicholas, and was now the music hall. The late Mr. J. H. Parker and Sir Gilbert Scott ascribed the date of the transept to Abbot Richard Synesbury about the middle of the fourteenth century, and this theory was supported by the character of the arches. But the first builders only worked to the triforium level, leaving the upper portion to their successors, and probably temporarily roofing in what they had done. This at any rate was the opinion of Sir Gilbert Scott. The clerestory, the large south window (as first erected) and the west windows belonged to the fifteenth century, and were probably the work of Abbot Simon Ripley. In the plate of the series of window-tracery from Chester Cathedral, prepared by Mr. Ashpitel, and published in Mr. Parker's tractate, the date ascribed to the windows of the eastern aisle and the southern extremities of both aisles was 1360, and to the clerestory windows 1490. These considerations to which others might be added by the architectural expert gave us a fairly accurate idea of the date of the building of the transept, and of the time which elapsed before it was completed. Sir Gilbert Scott, referring to this part of the cathedral, said:—"Of the Later Decorated style we have a truly magnificent example in the south transept, whilst of the Early Perpendicular we have specimens in the clerestories of the same transept." In saying this Sir Gilbert Scott was not unmindful of the extreme difficulty which must attend any attempt at disentangling the works of different dates, for he remarked that the Perpendicular work of the nave and transept was so intermingled and complicated as almost to defy such attempt. We could not be too thankful (said the Archdeacon) that the project of recasing and repairing the exterior at the beginning of the nineteenth century did not proceed further than the main south front, where the result was so deplorable, that it had been characterised thus, "As mean a work as that century has produced." He had already referred to the reason of the extension of the church in this direction,

viz. the erection of more chapels with special dedications. The dedication of two of these chapels was known. The southern one was the chapel of St. Nicholas, and the northern one was that of St. Mary Magdalene. There was no record of the dedication of the others. One was described in the plan as "the chancel." Could this have been dedicated to St. Oswald? The other was nameless. We were told that "John Arneway, who had been ten times successively mayor of Chester, and died 1278, is said to be buried before St. Leonard's altar in the south part of the conventual monastic church, where he founded two chantry chapels. But this would be nearly 100 years before the date which has been suggested for the building of the transept. Could it be that the transept not only occupied the site of the parish church of St. Oswald, but also that of the altar of St. Leonard and the two chantry chapels, and that these were continued in an altered position in the enlarged church? Unless evidence was forthcoming from some unknown and unsuspected quarter this must be a mere matter of conjecture. In 1488 the parishioner deserted St. Nicholas Church (which after being desecrated became in 1545 the common hall with a warehouse underneath later a theatre, and now the music hall), and once more claimed and successfully asserted their rights to their old location. The transept became their parish church and so continued until 1880, when the new church of St. Thomas was substituted for it, and St. Oswald's became an integral part of the cathedral. During those 400 years the building must have witnessed many vicissitudes. At first there was perhaps no division, or at any rate only a low screen separating the church on the northern side from the rest of the building, and the services for the parishioners had to be conducted at times which did not interfere first with the devotion of the monks and afterwards with the cathedral services. In 1827 Dean Copleston erected a solid partition reaching to the roof by way of making both buildings distinct, so that the services might be held simultaneously in each. They all knew how unworthy of the rest of the cathedral this portion seemed when it was once more thrown into it. There was the uneven wooden floor on which the pews had been placed; the white wash on the walls and columns, in both of which were large holes where the supports of galleries and pews had rested. When visitors entered the cathedral by the St. Oswald's door they were aghast at the dilapidated and apparently uncared-for condition of the building as they found it. The Archdeacon then described in order the various stages of the restoration or reparation of this transept after 1,000*l.* granted by the Ecclesiastical Commissioners had been expended in 1880 in the necessary repairs of external work. The first thing undertaken was the groining of the eastern aisle. Having explained the representations on the various carved bosses and mentioned that two of the windows were filled with stained glass about this time as memorials to Colonel Twemlow and General Harding, the Archdeacon passed on to the year 1887, when the mean tracery was removed from the great south window and replaced by the elegant and graceful flamboyant tracery which was now to be seen under Sir Arthur Blomfield. The subject of the window was "The Triumph of Faith," and the whole cost of both stonework and glass was borne by Earl Egerton of Tatton, to whose father the first Baron Egerton of Tatton it formed a memorial. In 1889 the eastern aisle was refloored, the divisions between its several chapels indicated and the sedilia and piscina in St. Nicholas's Chapel restored. This last was a memorial to Mr. Timothy Lee. Other windows designed by Mr. Kempe were added as memorials to the husband and father of Mrs. Arthur Potts, and the Hon. H. C. Raikes, M.P. Coming to the restoration now approaching completion, Archdeacon Barber, after explaining its inception as a memorial to the late Duke of Westminster, said everyone would be struck with the transformation which had been effected, and with the completeness and thoroughness of the work which had been done. The columns and walls had been cleared of numerous coats of whitewash, thus disclosing the original stone. Extensive repairs were necessary not only at the bases, but also in other portions of the piers, and this had been carefully and skilfully done so that the newer masonry harmonised absolutely with the old. The vaulting of the roof had been carried out for the first time, and we had now the oak groining in the centre aisle and stone groining in the western one. All the bosses were designed by Mr. Blomfield in conjunction with Messrs. Thompson, whose carvers executed them under the skilful guidance of Mr. Fincher, who carved the bulk of the figures himself. Anyone who was privileged to be present when this was being done could not help being struck with the artistic care and intelligence displayed. Some impression might be formed of the vastness of the work from the fact that the stones out of which the larger bosses were carved weighed three-quarters of a ton. Turning first to the central portion they could not but admire the general effect of the oak groining, and again commend the wisdom of Sir Gilbert Scott and his successors in adopting this mode of treatment. The colour of the stone was such that the two



materials blended together in perfect harmony. There were twenty-nine carved bosses in this portion of the roof. Five of the larger ones represented "Abel kneeling at an altar, on which is a lamb," "Noah's ark with the dove returning with an olive leaf," "Abraham offering up Isaac," "Moses descending from Mount Sinai," and "Joshua crossing the river Jordan." The other larger bosses were coloured and heraldic, representing the arms of the Duke of Westminster, the Archbishop of York, the Bishop of Chester and the Dean of Chester. In the northern bay of the western aisle the large boss represented "The Baptism of Our Lord by St. John," and the smaller ones had reference to the event, for instance, the hovering eagle, the fish with a label inscribed "Ex aqua et Spiritu Sancto," the dragon pierced with a sword, significant, it seemed to me, of the exorcism which used to accompany baptism. In the next bay we had "The Transfiguration" with Our Lord in the act of blessing, holding the orb and cross. The Old Testament saints were called to mind by the bosses on either side. In the next bay we saw "The Resurrection of Our Lord," and in the east and southern bay "The Ascension," with the eleven apostles. In conclusion Archdeacon Barber expressed the hope that these visits of the Society would quicken intelligent interest in the beautiful cathedral, and would also tend to the being and greater prosperity and usefulness of the Society. Mr. H. Taylor having directed attention to an interesting tablet in memory of Ald. John Leche, whose family were a younger branch of the house of Carden, who settled here in the early part of the sixteenth century, Dr. Stollerfoth proposed a hearty vote of thanks to Archdeacon Barber, which was passed unanimously. The company then inspected many features of interest in the restored transept, also several drawings kindly lent by Archdeacon Barber.

## SHALLOW TUNNELS FOR RAILWAYS.

HERE was a time when foreign experience would not have much influence on any question connected with railways in this country. All the world used to derive instruction from England. But all that has been changed, and we are all now disposed to over-estimate the importance of foreign experiments. The Board of Trade having sent the inspecting officer of railways, Lieut.-Col. A. H. Yorke, to examine the Chemin de Fer Metropolitain de Paris, his report has appeared. The following are the most important remarks:—

The complete scheme of underground communication at present authorised in Paris comprises a system of railways in shallow tunnels, having a total length of 38·86 miles. Of the total length seven-tenths is designed to be in tunnel, and the remainder in open cutting or on viaduct. Nearly all the lines are double, the tracks being laid side by side in the same tunnel.

The only portions of the system that are at present completed and open for traffic are the east-west line from the Porte de Vincennes to the Porte Maillot, and short lengths from the Porte de l'Etoile to the Porte Dauphine, and from the Place de la Bastille to the Trocadero. These lines have a total mileage of 10 miles.

In addition to the lines actually constructed and open for traffic, another section, namely, that forming the northern half of the circular railway, about 6·5 miles in length, is now under construction.

The estimated cost of the works to be executed by the Municipality is 3,000,000 francs per kilometre, and of those to be carried out by the contractor 800,000 francs per kilometre. The total cost of the entire scheme contemplated, inclusive of the lines about 8½ miles long not yet authorised, may be expected to reach 300,000,000 francs (12,000,000 £).

The authorised fares are 25 centimes (2½ d.) first class and 15 centimes (1½ d.) second class for any distance. Second-class tickets, available for the rest of the day, are issued at 10 centimes (2d.) up to 9 A.M. The receipts are the property of the working company, but they have to pay to the Municipality a royalty on each first-class ticket of 10 centimes and on each second-class ticket of 5 centimes (½ d.).

The work on the lines already open for traffic was commenced towards the end of 1898, and was completed in fifteen months. The chief difficulties encountered were due to the necessity for removing and reconstructing the main drains and water pipes, &c., along the route of the railway, owing to the small depth at which the tunnels were made. For instance, the main sewer in the Rue de Rivoli had to be completely displaced and two new sewers, one on each side of the old one, substituted for it. No comprehensive system of subways containing all drains, pipes for gas and water, and wires, seems ever to have been undertaken.

The tunnels were constructed as near the surface of the ground as possible, but the depth varies according to circumstances. As a general rule the top of the arch is about 3 feet

6 inches below the surface of the street, but where the line passes below the main sewers of the Boulevard de Sebastopol, and of the Boulevard d'Asnières, or where one line crosses another, the depth is very much greater. On the other hand, the railway emerges into the open near the Place de la Bastille, and crosses the canal Saint-Martin by means of a bridge.

The whole of the tunnelling, except at some of the stations, is arched, the side walls, arches and invert being built of rubble masonry. The width of the tunnel for a single line is 12 feet 9½ inches, and for a double line 21 feet 8 inches, at rail level; the height of the arch above rail level is 13 feet 2½ inches for single line, and 14 feet 9½ inches for double line, the arches in all cases being elliptical. Refuges are provided in the tunnel at 82 feet intervals on alternate sides. The underside of the arch is finished with a coat of Vassy cement, ¾-inch thick, and the walls and invert with Portland cement.

The stations are mostly in arched tunnels, having a clear width at springing of 46 feet 6 inches, and a height above rail level of 16 feet 5 inches. The station platforms are 246 feet long, sufficient to accommodate trains of eight coaches. Arched stations are invariably adopted where the line is below the water-bearing strata of the subsoil.

The girder-covered stations have side walls of masonry which support the main transverse girders, upon which rest longitudinal girders, with jack arches between them. In these cases the roof of the tunnel forms the floor of the street.

All the tunnels are whitewashed inside and the stations are lined with glazed white tiles, and, as the tunnels are lighted throughout by electric incandescent lamps, the effect is remarkably bright and clean.

An attempt was made to use shields for the purpose of driving the tunnels under the streets without disturbing the surface. The result was not satisfactory; several serious subsidences occurred, causing considerable inconvenience to the street traffic. In some parts of the work, therefore, the use of shields had to be abandoned, and the method of "cut and cover" adopted instead. In the Rue de Rivoli it was not possible to employ a shield owing to the presence of the main sewer already alluded to, and here the open cutting system had of necessity to be employed, the street traffic being for a time entirely interrupted. In order to facilitate the removal of the excavated material, four galleries were driven from the tunnel to the bank of the Seine, where stagings were erected, enabling the "spoil" to be delivered into barges.

The permanent way consists of vignoles or flat-bottomed rails, 49 feet long, weighing 105 lbs. per yard, creosoted sleepers of beechwood and gravel ballast. Sole plates are used between the rails and sleepers, and the rails are secured to the sleepers by means of coach screws. The rail joints, which are supported on sleepers, are not opposite each other, and all rails are bonded for electrical purposes by four copper conductors. There are sixteen sleepers to each rail length.

The railway is worked by electricity on the (500 volt) continuous current system. The conductor rails are placed in the 6-foot way at a distance of 13 inches from the running rails, each conductor consisting of two double-headed rails weighing 78 lbs. per yard, supported on sleepers of extra length at intervals of 10 feet. The current is collected from the rails and conveyed to the motors by means of a shoe (*sabot frotteur*) attached to each motor carriage.

The trains are composed at present of four coaches, viz. one motor carriage (*automotrice*) and three trailing carriages (*voitures d'attelage*). All the carriages are four-wheeled and have centre buffers. The motor carriages differ from the rest in having a compartment at one end, and in some cases at both ends, for the driver or motor-man, and also in having a much stronger under frame, but the seating capacity is the same as in the trailers. The motor carriages have two motors of 100 horse-power each, one on each axle.

There are eighteen stations on the line between the Porte de Vincennes and the Porte Maillot, three on the Porte Dauphine branch, and four on the Trocadero branch—making twenty-five in all. But if the three stations at the Place de l'Etoile be counted as one, as in reality they are, the number of stations at present open is reduced to twenty-three. Of these all are arched except eight; seven are constructed with girder roofs, and one, viz. that at the Place de la Bastille, is in open cutting.

The excavation of the stations was the chief cause of obstruction of the streets, as the levels did not permit of tunnelling and the dimensions were too great to permit of the use of the shield.

As a general rule the stations have ordinary side platforms for the up and down trains, but some of the terminal stations and the double station at the Gare de Lyon have island platforms. The terminal stations are in two portions a few yards apart, each with its island platform, one for arrival and the other for departure. These are connected together by a single line loop, with a radius of 100 feet, which abolishes the need of cross-over roads and allows trains to start on their return journey without other operation than running round the loop.



To these stations the term "en raquette" has been applied. It may be mentioned that the trains on this railway travel on the right-hand track instead of the left-hand, as is usual on other lines.

Access to the stations is afforded by stairways leading from the streets to booking-halls, placed immediately below the surface, from which other stairs, and where necessary foot bridges, enable the passengers to reach the platforms. No change is given at the windows where tickets are issued, but the proprietors of the bookstalls are bound by their agreement to supply change to passengers free of charge. The entrances to the stations are situated in the side pavements of the streets, or else in the centre street refuges, and as a rule they are surmounted by a roof or kiosk of more or less ornate design. The stations are well lighted by incandescent electric lamps, about 13 feet apart, and occasionally arc lamps are provided in addition.

The signalling of the line is automatic. Each station is provided with an entering signal (or, as it is called in England, a home signal) and a starting signal, and when the distance between two stations renders it desirable, an additional signal is fixed half-way between them. A separate electric circuit is provided for the signals, which are actuated by means of treadles placed alongside of the rails, the arrangement being such that two signals must be at danger behind each train, or, in other words, there must always be an empty block section between any two trains.

The lines are open from 5.30 A.M. till 1 A.M. Between 5.30 A.M. and 8.30 P.M. the trains succeed each other every three minutes on the main line and every six minutes on the branches. Between 8.30 P.M. and 1 A.M. the intervals between trains become six minutes on the main lines and twelve minutes on the branches. The trains consist of four coaches each capable of carrying fifty passengers, or 200 per train. At three minutes' intervals there are twenty trains in the hour, equal to a carrying capacity of 4,000 passengers in each direction. At certain hours of the day this accommodation is found to be insufficient, and it is proposed to increase it by doubling the length of the trains, which will then consist of eight vehicles, the two first of which will be motor carriages.

The distance from the Porte de Vincennes to the Porte Maillot is 6.6 miles, and the time allowed for the journey is 30 minutes, which gives an average speed of about 13 miles an hour, while the maximum speed does not exceed as a rule 18½ miles an hour. These speeds may seem low, but they are due to the fact that there are 18 stations on the route, each of which, allowing for slowing down, stopping and starting, entails a loss of time of about half a minute, so that the actual running time available is only 21 minutes instead of 30. On the other hand, the stations being so near together, there is not time to permit of the speed being accelerated beyond the maximum mentioned above.

The Metropolitan, as it exists at present, has several features in common with the Central London Railway. The distance from the Porte de Vincennes to the Porte Maillot is 6.6 miles; that from Shepherd's Bush to the Bank 5.77. Both lines follow the direction of one of the main arteries of traffic in their respective cities; they were both opened in the same month, July 1900, the French line on the 19th and the English line on the 30th; they are both railways, as distinguished from tramways; both are underground, and both are worked by electrical power on the continuous current (500 volt) system. The intervals between trains on the Metropolitan (main line) are 3 minutes during the day and 6 minutes at night; on the Central London they are 2 minutes 37 seconds during the busy hours in the morning and evening, 3 minutes to 3½ minutes during the rest of the day and 6 minutes at night. Both lines are open daily for about 20 hours.

The principal difference between the two is in the depth below the surface at which they are respectively constructed, the Metropolitan being as close to the surface as possible, while the Central London is from 80 to 100 feet below the level of the street. They differ also in some other respects. The Metropolitan is in masonry tunnel, the Central London is in iron tube; the former has both up and down lines side by side in the same tunnel, the latter has each track in a separate tube; the tunnels of the former are lighted throughout, the tubes of the latter are without light except at the stations; the former has carriages of two classes, the latter of one class only; access to the stations in Paris is afforded by short flights of stairs, whereas on the London line it is necessary to employ lifts of large dimensions and costly construction to convey passengers to and from the platforms, whereby the working expenses are largely increased.

Other instances of railways or tramways laid in shallow tunnels or subways below the streets of large cities besides the Metropolitan of Paris are:—(1) The extension of the Orleans Railway in Paris from its former terminus at the Austerlitz station to the new station on the Quai d'Orsay; (2) the Inner Circle Railway of London; (3) the railway along the Boulevard Andrassy in Buda Pesth; (4) the tramways below the Common

and Tremont Street in Boston, U.S.A.; and (5) the railways now being constructed in New York.

The extension of the Orleans railway from the former terminus at the Austerlitz station to the grand new station on the Quai d'Orsay is a very fine piece of work. As it is intended to accommodate main line trains only, it does not facilitate local or urban traffic, and serves a different purpose from the Metropolitan, but it may be of interest if I make a brief reference to it here. It is almost entirely in tunnel, the depth of which below the surface is small, and was only authorized on condition that no steam locomotive should enter the tunnel even during construction. A system of electric traction has therefore been installed between the old and new stations on the continuous current (500 volt) system.

The new station at the Quai d'Orsay is unique, every effort having been made to render it artistically worthy of Paris. It is built of white stone, and is of fine proportions and richly decorated both outside and in. The arrangements for transferring the passengers and their luggage from the street level to the trains which are in the tunnel, and *vice versa*, are admirable, and might be studied with advantage by railway companies in other countries. In the matter of railway station Paris has set an example to the world.

In general construction the underground portions of the Metropolitan and District railways of London are not unlike the Metropolitan of Paris, and when the former have been remodelled and equipped for electrical traction, it may be hoped that the resemblance will be much closer.

The Buda-Pesth railway is only 2.2 miles long, and lies below that fine thoroughfare, the Boulevard Andrassy, along which no surface tramway has been allowed to be laid. It is as close to the street surface as possible, the rails being on an average 9 inches below it. The line is double, and there are ten stations on it. It has no connection at present with any of the surface tramways or railways. The working arrangements are very similar to those of the Paris line, but the electric conductor is placed overhead instead of on the level of the rails.

The underground facilities for communication which already exist in Boston, U.S.A., and which are being provided in New York, have been recently reported on by the tramways manager and electrical engineer of the London County Council. The Boston subway is intended for tramway traffic only, and connects with the surface tramways, differing in this respect from the Metropolitan of Paris, and from all the other undertakings referred to in this report. It must, however, be admitted that the difference between these underground railways and tramways is somewhat slight.

The New York scheme is for a railway, but as it provides for four tracks—two for local and two for express trains—it is altogether on a larger scale than the undertakings in either Paris, Buda-Pesth or Boston. The officers of the London County Council regard this as an "ideal form of transit," but no part of it is yet completed.

The subways or tunnels in the three last-named cities—Buda-Pesth, Boston and New York—have one feature in common; they are all rectangular in section, and are constructed of steel girders and columns combined with concrete. In this they differ from the tunnels of the Metropolitan in Paris and of the Metropolitan and District railways in London, which are arched.

It cannot, I think, be doubted that as regards the convenience of passengers and economy of working the balance of advantage lies with the shallow tunnel or subway as compared with the deep-level tube. It is easier of access, affords greater opportunities for escape in case of a breakdown or accident and possesses a purer atmosphere. But the difficulties of constructing such subways along the principal streets in London are formidable. Apart from the unavoidable interference with the surface of the streets, and consequent dislocation of traffic which would cause much inconvenience and dissatisfaction, there remains the still greater difficulty, due to the presence a few feet below the surface of a network of sewers, drains, water pipes, gas pipes, electric-light cables, telegraph and telephone conduits, &c., to which must, in many places, be added vaults and cellars extending under the roadway. All these would have to be diverted and reconstructed, or heavy compensation paid for their abolition. The problem is further complicated in London by the narrowness of the thoroughfares.

Some experience of these difficulties has been gained in the past during the construction of the Inner Circle Railway and more recently during that of the Whitechapel and Bow extension to which allusion was made by the chairman of the Metropolitan District Railway in his address to the shareholders last month.

Where, however, new thoroughfares are in process of formation, the obstacles to shallow subways are not so serious, and advantage may well be taken of the opportunities so offered to build subways for tramway or railway purposes (perhaps even for ordinary vehicular traffic), in the manner proposed by the London County Council along the new street now being made from the Strand to Holborn.



## THE ROMAN FORUM.

THE Rome correspondent of the *Times* writes:—

Signor Boni, director of excavations in the Roman Forum, has made another discovery of unusual interest. It has long been his conviction that the subsoil of a part of the Forum contains the necropolis of the founders of Rome, and he has given the Aryan origin of those founders, the character of the tombs must be in accordance with the Aryan custom of cremation. Critics have displayed much scepticism concerning the theory, as also concerning the traces of Aryan development which Signor Boni has detected in the Forum; but he has once more silenced their objections by producing the object of their existence they had doubted or denied. Last evening he discovered a prehistoric tomb, believed to date approximately the eighth century B.C., containing a large urn, or dolium, the neck of which was full of calcined bones, and several reticulated shaped vases, besides a bowl and a cup with horned handles like those found in the terremare of the Bronze Age. The tomb is situated in the bed-clay some 12 feet below the level of the Sacred Way, opposite the Regia, and close by the temple of Antoninus and Faustina.

In some respects this discovery is the most important yet made in the Forum. One tomb is not a necropolis, but it is unimpeachable evidence of the existence of others. Unless the Government should, to its shame, restrict the funds necessary for the exploration of the lower strata of the Forum, the question will soon be settled. Meanwhile it is to be noted that the reticulated vases of the tomb bear a striking resemblance to the decorated gourd, and that the covering of the funeral urn is a faithful reproduction of a conical hut roof—signs that they date from a primitive period. The tomb may be regarded as the missing link in the further end of the chain of Roman history, as reflected in the Forum and illustrated by Signor Boni in the discoveries of the *cippus* under the Black Stone, the Rostra, the ritual pits, the massive Republican drains (beside which the Cloaca Maxima seems insignificant), the extraordinary underground gallery for scene-shifting, the Lacus and the Fons Aemilia, the Sacred Way, the Heroon of Cæsar, the Regia, the temple of the Vestals, the Basilica Aemilia, and the church of Santa Maria Antiqua—to enumerate only the more important and astonishing results. How vast is the culture and how immense the work required to excavate a site which, within a few acres, contains monuments extending from prehistoric times to the eighth century A.D., can be appreciated only by those who have watched week by week and month by month the progress of the excavations; and people who complain that united Italy has done little for Rome should reflect upon the achievements of a Venetian (who deserves, if ever man deserved, the title of *Civis Romanus*), under the auspices of the Italian State, on a site where, though it was one of the chief centres of civilisation, the Popes were content that cows should graze.

## STRUCTURAL COLOUR DECORATION OF THE INTERIOR OF PUBLIC BUILDINGS.\*

(Concluded from last week.)

MAY be blamed for not referring with greater fulness to the painted wall surfaces and roofs, of which there are many, in modern churches. This work is raising itself above mere commercial expression, and under the direction, and with the cooperation of the architects of these buildings, we have witnessed by many painters of ability and knowledge.

If there is one thing which may strike us in this modern work as being different and inferior to the best work of the old time, it is a very general want of use of the full brush of colour, and instead of being laid through the work with bold and masterly sweep, and binding thereby, in the necessary repetition of a pattern, the banal and accurate repeat so constantly seen in modern work, and never to be found in the old.

What makes so much ecclesiastical decoration of the present day so devoid of interest is just this absence of intelligent handling. We are better without colour if it is not used in a manner consonant with its dignity. We may be sure that even on our wall will be ample if we use it in any other way, such as in the lowest border or diaper as in the picture they surround.

In our theatres and places of public entertainment the same want of expression is, alas! not being made. The desire of the modern theatre manager to build a theatre, and to open it in six months, against the production of anything else than a place in which plays may be produced. We are far behind the French in this respect. In Paris the foyers and staircases of the principal theatres are notably decorated by artists, so that the audience has the privilege of knowing that it is not in a mere box of mystery, but in a temple devoted to the arts. I am inclined

to think that were our theatres of the latter kind the interest of the audience in the art of the drama would be quickened and encouraged.

And now as to the principal methods in use by painters at the present time. Probably the world has never seen a more beautiful method of painting than buon or true fresco, but, alas! its use has not been fully justified in this country. The Royal Commission I have just referred to took a good deal of evidence as to its suitability for the decoration of the Houses of Parliament. A number of painters of eminence spoke against its being attempted. They advocated the use of oil-colour. But the Commissioners, perhaps dazzled by what were then considered the triumphs of modern art—the frescoes at Munich—decided that the new paintings should be in that method.

Dyce, Cope, my father and one or two others were successively commissioned. Exposed, however, to the bad air of their surroundings, these works have in some cases suffered beyond repair. So doubtful were the painters themselves as to the suitability of the scheme that when Maclise was commissioned to paint the walls of the painted chamber he, with the sanction of the Commissioners, proceeded to Germany in order to make researches into the practice of stereochrome or water-glass painting. The result was that he adopted the process in the large wall-painting, "The Meeting of Wellington and Blücher after the Battle of Waterloo;" it was also adopted by Mr. Herbert, who was then engaged on other wall surfaces in the palace.

You will permit me to remind you of what happens in buon fresco. The powder colours mixed with lime water are applied to the last and freshly-spread coat of plaster before it has had time to absorb more than a trace of carbonic acid from the air. The painting ground is in fact saturated with an aqueous solution of hydrate of lime, that is, slaked lime, while there remains a large reserve of this compound in an undissolved condition. When on such a surface a layer of pigment mixed with water is placed, as that water evaporates the lime water in the ground diffuses into the paint, soaks it through and through, and gradually takes up carbonic acid from the air, thus producing carbonate of lime which is the actual binding material.\* The whole painting gains in this chemical action, appearing to absorb light and to reflect it from the sand facets of the ground to the spectator.

But, unfortunately, and here I again quote from Professor Church's interesting book, "The Chemistry of Paints and Painting," "the protection afforded to the pigments by the binding material, this carbonate of lime, is not generally very efficient. In the case of a dry wall, free from soluble saline matter, and exposed to a pure atmosphere, it may remain good for centuries. But in air contaminated with the products of the combustion of coal and gas, and with tarry and sooty impurities, a fresco picture soon perishes. The binding carbonate of lime is converted into the sulphate, breaking up the paint. The same causes will form sulphate of magnesia from the carbonate of magnesia in the plaster, and the paint will scale off."

In our large towns therefore to-day, buon fresco has no chance of lasting.

The stereochrome or water-glass process consists in spraying the painting after completion with a warm dilute solution of potash silicate, or potash-soda silicate, which is obtained by fusing the purest sand obtainable with carbonate of potash or carbonate of soda. The pigments themselves are mixed with some of the fixing liquid. This form of painting is a German invention of comparatively recent date; it has not been frequently used in this country, and we have very little experience of its behaviour.

In the consideration of the possibilities of tempera painting we find ourselves on surer ground, no longer so fearful of the consequences of the contaminated atmosphere of our towns. I am glad to be able to read you a few words I have received from Sir William Richmond as to this medium, which he used on the walls of a modern church at Cheltenham a few years ago. He says:—

"The wall was prepared with lime and sand, the final *intonaco* was in marble dust and well-slaked lime, and it was wonderfully white. The whole design was drawn in charcoal, corrected with care. Egg, Capri wine and powder colours were used. The yoke of egg alone was used, plenty of wine and distilled water. The first painting should be in what the Italians called 'Verdaccio,' namely, raw siena (black and white), with plenty of impasto. In two hours this can be glazed with warm colour and painted into. I am quite certain that the yoke of egg and wine form the very best and most durable medium for wall-painting. Most of the Italian wall-paintings which have lasted were not painted in fresco but in the tempera of yolk of egg, the essential oil of which is a most powerful binding liquid, enabling the painting to dry like a rock."

From a paper by Gerald C. Horsley, read before the Applied Section of the Society of Arts.

\* I am indebted to Professor Church's *The Chemistry of Paints and Painting* for this description.



Sir William further says:—"I prefer yolk of egg and wine even to buon fresco; the colour is almost as pure, not quite so light, and if it is necessary to get rich colour, the medium will give it to any extent."

Professor Church, speaking of the large amount of oil in the egg yolk, says, "This vehicle does not act so effectually as oil and varnish in locking up pigments, and so the protection against change which it affords is less." But I think we may take it that the protection is certainly considerable, while the old method of varnishing the painting with sandarac in oil affords further protection against moisture and impure air.

The well-known spirit fresco, invented by the late Mr. Gambier Parry, differs little from ordinary oil-painting on account of the large quantity of oil in the copal, which forms so much of the medium, the constituent parts of which, I may remind you, are only multiples of these proportions, viz:—

Gum elemi or elemi resin	ozs.	2
Pure white wax (beeswax)		4
Oil of spike lavender		8
Finest preparation of artists' copal		20

With this medium incorporated by heat all colours in dry powder are mixed. It appears that Mr. Gambier Parry gave the name of spirit fresco to the method because oil of spike and turpentine may be freely used as liquids during the process of painting. The beeswax secures, of course, a perfectly matt, or dead surface, but it is liable to produce a kind of bloom in the course of years, and may wholly disappear in the course of time.

Besides the paintings by Mr. Gambier Parry at Higham and Gloucester Cathedral, Lord Leighton's "Arts of War" and "Arts of Peace" at South Kensington and seven paintings by Ford Madox Brown in the town hall of Manchester are examples of this method. They appear to be standing well, though we may expect them to darken, and there are a few signs of the bloom referred to above in the "Arts of Peace."

Professor Church considers that a sound medium is to be found in the proportions of

Oil of spike	ozs.	12
Paraffin wax		4
(The two mixed by heat.)		
Copal picture varnish		20

He advises the pigments being mixed in blown linseed oil rather than in the medium itself, as Parry recommends.

I need not do more than allude to Parry's Ely medium. Briefly it is:—One part pale drying oil; one part strong copal varnish; two parts japanner's gold size; two parts turpentine, and the powder colours to be ground up in the medium. It is just oil-painting over again, with the gold size to give the necessary deadness of surface. He painted the eastern part of the nave, wooden roof, also the octagon and transept ceiling, at Ely Cathedral in this medium.

I have dwelt on the component parts of these wax and oil mediums in some detail, as it is but a step from them to the method which is generally adopted by painters to-day. I refer to the prevalent custom of painting in oil on canvas and then, on completion of the picture, having it fixed, or marouflé, as the French call it, to the wall or ceiling; that is to say, the canvas is fixed by means of a thick paste of white lead, oil and copal varnish, spread upon the wall and simultaneously upon the back of the canvas.

The French painters in the beginning of the nineteenth century, like their German brethren in Munich, painted mural works in fresco, but they were already beginning to discard the practice when we in our wisdom were working in it at Westminster. They also used encaustic painting (Delaroche's *Hemicycle* in the Ecole des Beaux-Arts is an example), but since 1870 the most important works have been painted on canvas fixed in the way I have described; such are the great wall-paintings by Puvis de Chavannes in the Panthéon, in the museums of Amiens, Rouen and Lyons, the Sorbonne, and the library in Boston.

This too is the method adopted in the Royal Exchange at Liverpool, at Glasgow, and by Messrs. J. S. Sargent, R.A., and E. A. Abbey, R.A., in the library at Boston.

Without going deeply into technicalities which would naturally vary with each painter, the colours used are simply oil-colours, with a medium of wax and turpentine. Professor Moira, who has painted in this way at the New Renshaw Street chapel in Liverpool, and at other places, tells me he likes the canvas to be fairly coarse and open, so that there should be no hindrance to the fixing material incorporating itself with the colours laid on. This is better achieved by doing the first painting only in the studio, and completing it *in situ* after it has been fixed upon the wall or ceiling. The painting of the picture *in situ* in this way will I am sure commend itself to all as a most important side of this system of decoration. It is understood that some of the modern works I have named have been painted entirely in the studio; corrected in many cases no doubt when in position. But as a practice it must surely

carry with it its own condemnation. Although scale drawing and models may be made with the utmost care, and cartoon in full size tried in position, all of which should be done, and invariably are done before the painting is begun, unless the work, or at least the major part, is carried out in the building, it is not possible for the painter to be confident as to the correctness of his scale, or what is more important in its difficulty, of his colour. Both these elements, more particularly the last must surely be influenced by the size and lighting of the building, an intimate knowledge of which is revealed by working it. Are we to suppose that the ceiling of the Sistine Chapel would have been as magnificent as it is if it had been painted by Michel Angelo in a studio and then fixed in position? To confess the very thought is sacrilegious, and I tremble suggesting it.

In this connection I am reminded of a painting on canvas in St. Alban's, Holborn, which was painted chiefly on the wall where by its position in a dark corner of a church certain colours had to be used which are startling in what would be their inappropriateness in a better light. For instance, in order that the hair of the Saviour, one of the figures in the composition, should appear brown, pure vermilion had to be largely used; ordinary light brown appeared black.

But it is unnecessary to multiply instances, and I will venture therefore only to suggest that as in most cases the position of the painting directs the colour to be used, it is desirable that it should be as far as possible painted *in situ*.

It is to be hoped that the convenience of this modern method of painting on canvas will not deter painters from working directly on the plastered wall in tempera, oil, or encaustic. If the beautiful qualities of fresco are denied in this country, there are yet the qualities inseparable from plaster ground, which a canvas surface can never present in the same way.

Design I need not touch upon. There is no excuse for bad work, surrounded as we all are by the highest example. A fine translation of modern life appears to be growing in mural painting of the great type and is heartily to be welcomed. In this connection I would draw attention to Mr. Furse's work at Liverpool and some of the work at Glasgow while in allegory we have the great work of Mr. Sargent at Boston. In setting ourselves a standard we may remember perhaps the words of Puvis de Chavannes:—"Tout décoracion ne peut être belle que dans la mesure où elle reflète la nature et en traduit la passion."

## TESSERÆ.

### Antique Vases.

THE precise time at which the use of painted vases as ornaments for tombs ceased cannot be determined, but the cessation of the custom must have been followed by the discontinuance of the manufacture. The cessation of the custom has been accounted for and been connected with various occurrences in the history of Italy. Some have thought that the Social War, which destroyed so much of Greek civilisation in Italy, also put an end to the manufacture of these painted vases; others suppose that the suppression of the Bacchic mysteries by the Senatus Consultum de Bacchanalibus was the cause of painted vases being no longer deposited in the graves. The groundlessness of this opinion has been satisfactorily proved by Kramer ("Ueber den Styl und die Herkunft der bemalten Griech. Thongefässe," p. 137, &c.), who is inclined to believe that the custom gradually ceased at the time when the Roman sovereignty was established in Italy and Sicily. As the Romans themselves had never adopted the custom, it is not improbable that their influence, without an definite enactment for the purpose, put an end to the custom in Italy and Sicily. Kramer thinks that there are no painted vases of a later date than the second Punic war. The question as to the place or places where such painted vases were manufactured was never raised, and was not indeed of great importance, until immense numbers of them were found in Etruria. The question then became of no small importance, as it is intimately connected with the whole history of ancient civilisation for in the place or places where these vases were produced the taste for real artistic merit must have been much more widely spread than in any place of modern times. That all the painted vases are of Greek origin is now no longer a matter of doubt, and is sufficiently attested by the subjects represented on them, as well as by the Greek inscriptions, although the precise meaning of some of the paintings and inscriptions will perhaps remain undiscovered. All the opinions which have been set forth in regard to the origin of the painted vases found in Etruria may be divided into two great classes: the one is that they were manufactured in the country where they are found; and the other, that they were imported from a foreign country or countries. Those who maintained the former opinion believed either that there was in Etruria a considerable Greek



lation (Tyrrhenians), among whom vase-manufactories established, and that afterwards this Greek population absorbed and overwhelmed by the Etruscans; or that existed at Volci in Etruria one or more corporations of vases who were in close connection with Attica. Those who held that the vases were imported from foreign parts again as to the place or places where they were manufactured, from which they were exported. Some have regarded others Athens or the Chalcidian colonies in Campania, especially Cumæ and Nola, as the places where they were manufactured; but most of these opinions are opposed to well-known historical facts, and supported by very weak arguments; others are mere hypotheses, formed only because their authors felt the necessity of fixing upon some place or other as one from which these vases came into Etruria.

### Ecclesiastical Architecture.

Architecture is, in many of its capabilities, the most religious of the fine arts, the most suited to the expression of the ideal, the impalpable, the mysteriously sublime; for whilst painting and sculpture the images of things familiar are created, and the actual world, if idealised, is still the subject of the artist, architecture receives its interpretation from no analogies to the reality of our daily life, but from a perception the most deeply seated within the soul of spiritual and eternal objects, inaccessible to faith but inconceivable to sense. Whether the question of Christian architecture has been reached in Rome or not to be actually decided till a canon has been recognised as positively defining that perfection. The majority, at least of northern birth, will answer to it in the negative, and maintain that disappointment, even in regard to the most splendid Christian edifices of that city, very generally attends the visitor if not the abiding impression made on this class of visitors. Modern visitors have a predilection for Gothic architecture, the most genuine and appropriate offspring of Christianity surpassing, in many peculiarities, all other forms of architecture, in the expression of the mysteries of faith. But there is often unreasonableness in an advocacy which demands the universal adoption of the same system without distinction of clime or nationality. It is surely not more to be justified when the question is of architecture than if it were of popular music, or the habits and conditions of social life. The spirit that can only recognise the ideal or beautiful in a given form approaches the bounds that separate enthusiasm from bigotry—enthusiasm (in the true sense of the word, the divine within us) responds to all high ideals, and arrives at the profound meanings of all that art has created, through whatever medium. Bigotry, for its part, in the direction of taste this may appear, refuses admiration or sympathy to all that does not conform with one standard, harmonise with one idea. As the governments, institutions and literature of different countries are and must be distinct; as the influences of climate, the qualities of soil, together with the events of primeval history and traditions of a country concur in marking with its peculiar stamp each member of the family of nations, so the acceptance even of identical religious principles will be various, as far as it affects feeling declares itself in outward signs, among various nations. Christian religion does not destroy individuality in nations more than in men, but by raising the human to the divine, every faculty of mind to its acme of excellence, every latent tendency of talents or genius to the ultimate of power; great Author and Source of all gifts may be served alike acceptably through operations of intellect and forms of art only distinct from each other.

### The Story of Psyche in Art.

Illustrations of the story of Psyche have been found on Egyptian monuments prior to the age of Apuleius, whose book of the "Golden Ass" is the only ancient authority for it existing in writing; but we must suppose that author to have at least developed and improved upon it, otherwise it is incredible that people like the Greeks could have so little regarded this fascinating fable as to leave it uncelebrated in their poetry or religious practices. Christianity was beginning to extend its triumphs when Apuleius wrote; and this story may be regarded as one of many efforts to spiritualise Pagan belief, to give it a deeper meaning which might satisfy the requirements of the soul wakening to the perception of lofty truths, at this momentous era of moral transition. It contains the idea, never dimly shadowed forth, of the leading features in the development (as one might call it) of Christianity. The fall of the soul from bliss through weakness to temptation; its subjection to the ordeal of self-entailed suffering; its restoration through the interposition of divine love, and final entrance into the inheritance of immortality. As Apuleius has narrated it, supplies inexhaustible matter for the artist and the poet, and the varied incident and rich descriptive colouring of the fable, the mystic beauty of religious allegory, and the dramatic imagery and effective grouping of the artistic novel.

### Ancient Art.

The remains of ancient art which have come down to us show clearly, notwithstanding here and there an example to the contrary, that the intent and purport of the artists was to raise the populace intellectually, to excite them to deeds of patriotism and valour, and to love of the noble and heroic. The contention of Neptune and Minerva which should most benefit mankind, the labours of Hercules, the maternal affection of Niobe, are subjects the contemplation of which must elevate the character of a people, and are alone sufficient to prove that the value of the arts, as a means of advancement, was both understood and appreciated; the lesson, too, which art conveys by portraying heroic virtue was increased in force by showing the opposite side of the page; vice was exhibited, as in the instance of their Silenus and Satyrs, in its most natural as well as most expressive and abhorrent forms. Men were taught, while looking at them, that by the practice of vicious habits they lowered themselves to an equality with the beasts of the field, connected themselves with them both in form and character, assumed essentially, if not positively, the likeness of inferior creation. We might go further in our argument for the well-working of art in ancient Greece; we might descend from the beautiful fables under which her moral code of laws was veiled, and ask the reader to remember that the statues of her warriors and heroes, her poets, orators, and philosophers, erected in such numbers in her public places, their forms idealised, while their names were deified, to meet the belief that the beautiful in person was indicative of the noble in mind, served to raise in the beholders a spirit of emulation, a desire to obtain the like honours by the like means. The same feeling pervaded Roman art; courage in war was instilled into the people by the figures of their generals; bodily energy and activity by the statues of the victors in the games; Roman stoicism by the suppressed agony of the dying gladiator.

### The British Museum in 1784.

William Hutton, of Birmingham, has been called the English Franklin, and his shrewdness in small affairs recalled the American. But he was never engaged in political enterprises like the revolution which ended in the independence of the United States. Among his numerous writings is an account of a journey to London in 1784. One passage in it will suggest the difficulty of visiting the collections in the British Museum. Hutton said:—"The British Museum justly stands in the first class of rarities. I was unwilling to quit London without seeing what I had many years wished to see. I was given to understand that the door, contrary to other doors, would not open with a silver key, that interest must be made some time before, and admission granted by a ticket on a future day. This mode seemed totally to exclude me. By good fortune I stumbled upon a person possessed of a ticket for the next day, which he valued less than two shillings. We struck a bargain and were both pleased. We assembled on the spot about ten in number, all strangers to me, perhaps to each other. In about thirty minutes we finished our silent journey through this princely mansion, which would well have taken thirty days. It grieved me to think how much I lost for want of a little information. I went out much about as wise as I went in, but with this severe reflection, that for fear of losing my chance, I had that morning torn myself from three gentlemen with whom I was engaged in an interesting conversation, had lost my breakfast, got wet to the skin, spent half a crown in coach-hire, paid two shillings for a ticket, been hackneyed through the rooms with violence, had lost the little share of good humour I brought in, and came away quite disappointed. Hope is the most active of all the human passions; it is the most delusive. I had laid more stress on the British Museum than on anything I should see in London. It was the only sight that disgusted me." In 1759 the Museum was opened for public use, and in 1784 it could not be considered to be too new for the admission of provincial visitors. Montagu House was not overcrowded, for it was not until 1807 that extensions became necessary. Hutton's experience therefore confirms the belief that at the close of the eighteenth century knowledge was considered to be a privilege of the few, and the contents of the British Museum were on that account jealously guarded.

### Beauty in Art.

By beauty in art is meant not merely beauty in its limited sense, as applied to woman, but in its wider and more comprehensive one, as expressing abstract perfection of form, and that complete fitness to purpose ever found in the works of nature generally, though not always carried out by her to its utmost extent in individual examples. Though we all feel and estimate beauty, it is difficult to give any very accurate definition of it; the expression, "fitness to purpose," is not novel, and though well understood, by no means comprehends an entire or complete explanation of the term; for though in nature adaptation to purpose and beauty are so combined that



the carrying out of the one to perfection often involves the complete presence of the other, yet the lower orders of creation have forms thoroughly suited to their capacities, the perfection of which by no means conveys a pleasurable sensation to the eye. As beauty, however, is at the best but a question of comparison, dependent much on the power of receiving impressions, it may be urged that these are not exactly exceptions to the rule, but are to be measured by a scale too low to be appreciated by the human eye, yet not so low but that they may afford gratification to more confined faculties. Beauty, as applied to the lower orders of beings, is of a more limited kind than when applied to man: the purposes for which they are created, the destinies which they are called on to fulfil, the sphere they have to move in being more restricted; certain qualifications or faculties suitable to the tasks they have to perform and adapted to their wants are therefore found in them in such force or perfection as to predominate over all others, and to become in the animal itself the essence of its existence. Strength, fleetness, keenness of sight or scent, courage or caution, capability of bearing fatigue or of suffering deprivation, the power of moving with facility in particular elements, the adaptation of outward form and surface, as well as inward construction, to life and enjoyment in certain climates and under peculiar influences. The beauty of man, partaking, as he does, in a degree of all the physical qualifications which each portion of the lower orders possesses singly, and as having superadded to them the superior one, reason, is of a higher and more complicated kind. In him is found that concentrated essence of form, in which the highest powers of body and mind are comprised within the least possible dimensions. To the representation of man, therefore, the sculptor naturally turns as affording him the widest sphere for his art, and as enabling him to carry out its intentions in the highest degree, and it follows that the perfect representation of perfect human form is the most difficult task he has to execute, containing, as it does, beauty in its purest and most elevated character. By the study of the human structure, and by comparison of it with those animals which possess in a high degree the single qualifications so happily concentrated therein, the sculptor is enabled to decipher its laws and principles and so select from imperfect individual instances those phases which, when united and separated from extraneous matter, constitute perfect beauty or thorough fitness of purpose.

#### George Maddox.

George Maddox, an architect of much original talent, died on October 5, 1843, at the age of eighty-six. He was the instructor of Professor Cockerell, R.A., Decimus Burton, Professor Hosking, and many other eminent men. For thirty years of the latter part of his life he devoted himself to teaching, and he thereby exerted, though indirectly, a considerable influence on architectural taste, more especially as his was not a mere routine system of instruction. He could hardly have been said to have belonged to the old school, since he held it rather in contempt, as he likewise did all the superficial jargon of its criticism. His opinions must have at one time been deemed not a little heretical, but he lived long enough to find them gaining ground, and that architecture was studied in a better and more intelligent spirit than in his earlier days. He was a member of the Society of British Artists from its commencement, and a constant contributor to the exhibitions, frequently displaying many happy as well as original ideas. Some years before his death he undertook a series of etchings, consisting of capitals, entablatures, and a variety of architectural ornaments picturesquely grouped together; therefore of a very different character from the usual "books of ornaments," but increasing infirmities and severe indisposition prevented him from completing his work.

#### GENERAL.

**Mr. R. C. Bosanquet**, the director of the British School of Archaeology, has left Greece for Crete with the object of carrying out excavations at Palaëocastro, a promising site at the eastern extremity of the island. The excavations will be carried out at the expense of the British School, public subscriptions for Cretan research having proved inadequate.

**The German War Office** has ordered that the fortress walls round Mainz are to be pulled down. The ground they occupy, some 465 acres, is to be given to the town.

**At the Last Meeting** of the Council of the Royal Society of Painter-Etchers and Engravers, Robert Spence and E. King Martyn were elected fellows of the Society.

**The Exhibition** of the Royal Society of Painters in Water-Colours will be opened on Monday, April 21.

**A Church Extension Society** has been formed at Great Grimsby. It is proposed to build five new churches—one for All Saints, one for St. Luke's, others for St. John's (New Clee) and St. Aidan's (Cleethorpes), and a mission church on Welholme Road. The sites have already been given.

**Mr. William Hayward**, of the firm of Messrs. Hayward Brothers & Eckstein, has left property valued at 32,287l. 4s.

**The Report** of the technical instruction committee of Eastbourne, recommending that the proposed technical institute should be erected at an estimated cost of 20,000l., came before the Town Council on Monday last. It was decided that the subject should be again discussed at a special meeting of the Council. The lowest tender received amounted to 34,000l. Mr. P. A. Robson has stated that he is prepared to obtain a builder's tender for 25,000l., to include all fees and buildings (the institute and the fire station), or for 20,000l., with a 10 per cent. margin for the institute.

**Messrs. Farrow & Jackson, Ltd.**, have been honoured with a warrant of appointment to His Royal Highness the Prince of Wales for the supply of cellar fittings, being the latest of a succession of similar appointments to His Majesty the King and to Her late Majesty Queen Victoria.

**The Grafton Galleries** will open early in May with an exhibition of works by M. Benjamin-Constant, and, in addition, the entire collection of portraits by the Marchioness of Grailly.

**Mr. F. W. Bond** has presented Truro Cathedral with a large relief by Mr. Tinworth, *The Way of the Cross*, which is modelled for Messrs. Doulton & Co.

**Mr. William J. Clutton**, of York, for many years agent for the late Lord Leconfield, who died on February 17 last, has bequeathed 1,000l. to the fund for the repair of York Minster.

**The Metropolitan Asylums Board** have approved and adopted plans for the erection of a home for female attendants at Darenth Asylum at an estimated cost of 9,500l., and also plans for the erection of cottages for married attendants at the Leavesden Asylum at an estimated cost of 5,210l.

**The Iron and Steel Institute** of Great Britain will hold their annual meeting in the hall of the Institution of Civil Engineers, Westminster, on May 7 and 8, under the presidency of Mr. William Whitwell. The special business of the meeting will include the presentation of the Bessemer gold medal for 1902 to Herr F. A. Krupp, of Essen, in recognition of the important services rendered by him in advancing the science and practice of the metallurgy of iron and steel.

**M. Jean Paul Laurens** will be represented in this year's Salon by his *Apotheosis of Colbert*, which is to be reproduced in the Gobelins manufactory for the Mairie of the thirteenth arrondissement. His second painting will represent Lamarie at the Hôtel de Ville on February 24, 1848.

**The Select Committee** that is about to be appointed to consider what measures can be adopted for improving the sanitation and ventilation of the Palace of Westminster will be constituted as follows:—Mr. Akers-Douglas, Mr. Dillon, Mr. Farquharson, Sir Walter Foster, Mr. Goddard, Mr. Penn and Sir John Tuke.

**The Westminster City Council** have let the contract for an Italian firm for the general scheme of decoration and illumination of the route of the Coronation procession for 5,990l.

**Abbé Girard**, professor at a college in the Gironde, read a paper, at the congress of learned societies last week in Paris, on the "Roman Wall in England." He contended that Adrian erected earthworks, while Severus erected the wall of masonry.

**The Remaining Works** of the late Sidney Cooper, R.S.A., will be sold at Christie's on Saturday, Monday and Tuesday next.

**The Dean and Chapter of Bristol Cathedral** have given the order for the restoration of the sedilia, sufficient funds having been received to justify their restoring them in part. A further sum of 300l. is still needed to complete the cost of the restoration.

**The Scientific and technical societies** in Manchester met a meeting under the presidency of Mr. Alfred Darbyshe have formed a committee to consider the question of obtaining a central meeting-place and to prepare a scheme or scheme.

**A Branch** of the French School of Archaeology in Athens has been opened. It is intended for the reception of students of other nations which have no separate institution.

**Mr. S. W. Kershaw, M.A.**, will read a paper at a meeting of the Society of Architects on the 24th inst. on "Ancient Hampshire Palaces." On the following day there will be a visit to the new cathedral, Westminster, and in the evening the annual dinner will be held.

**Mr. W. A. Richardson**, the water engineer at Birkenhead, died on the 3rd inst. in his seventy-ninth year. He formerly served under Mr. Newlands and Sir Robert Rawlinson.

**The "Surrey Magazine"** has commenced its fourth volume. It would be difficult to find a county publication which is equally localised, or one which gives so much interesting reading about past and present times, as well as illustrations, for twopence.



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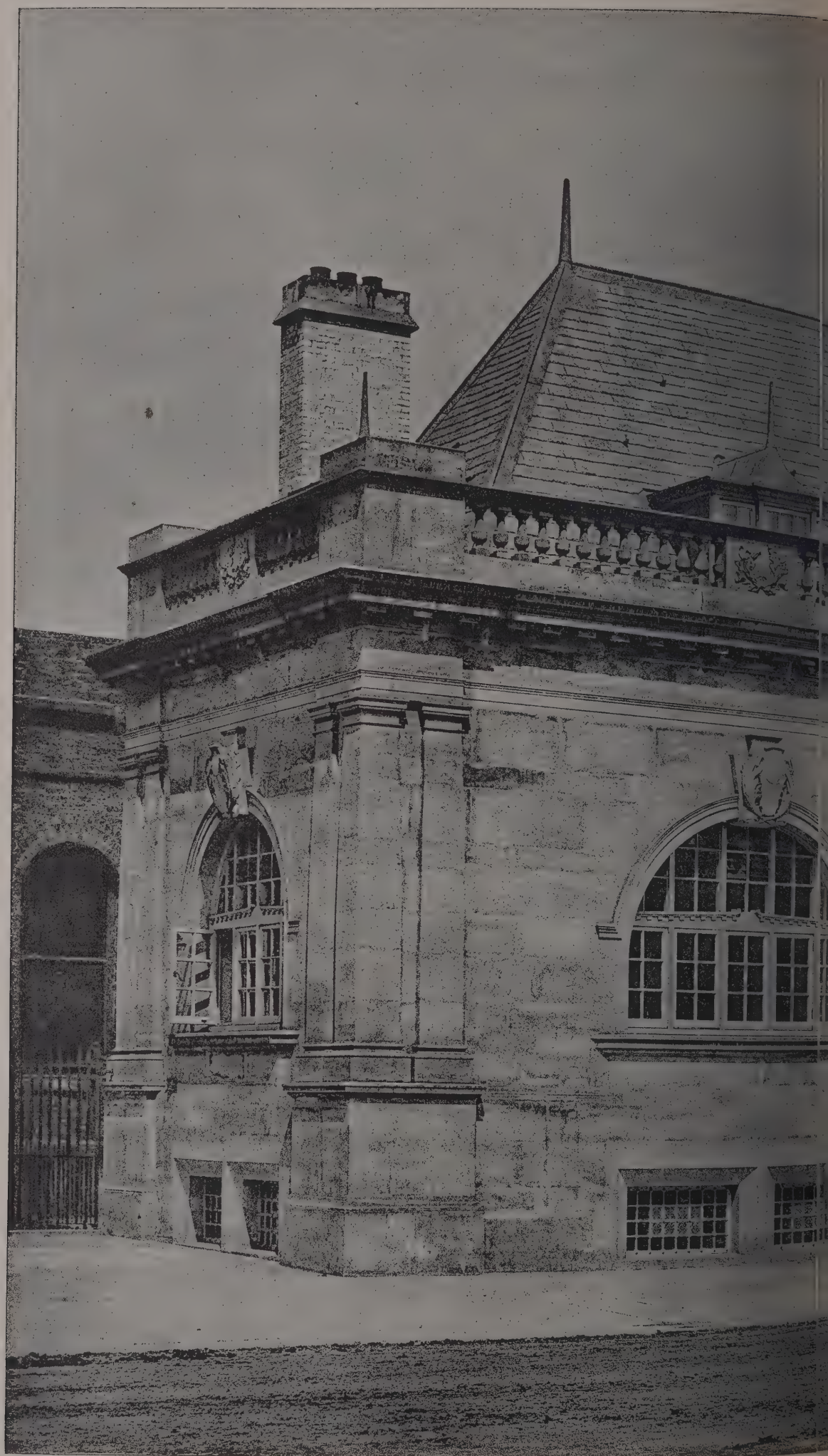
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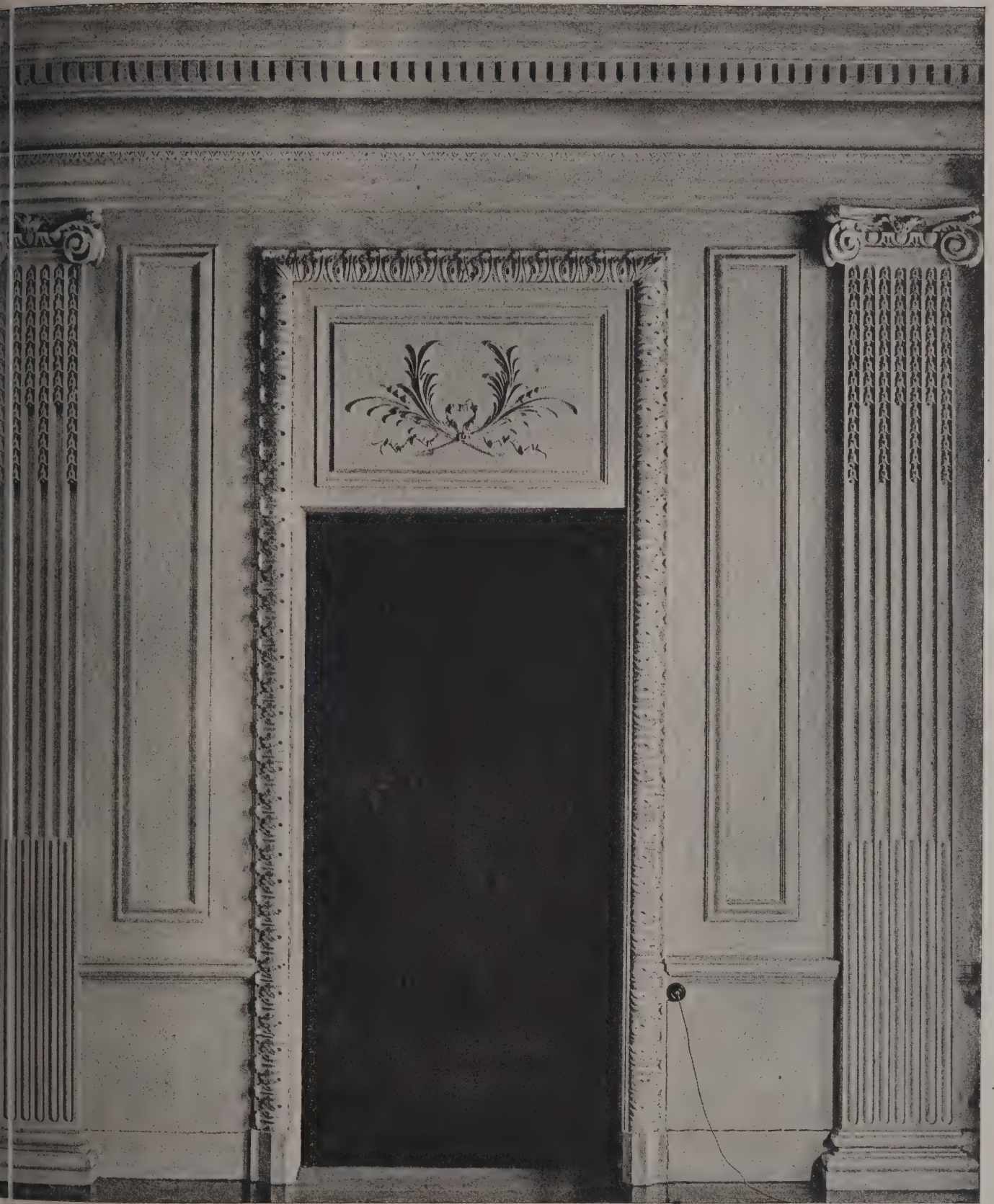
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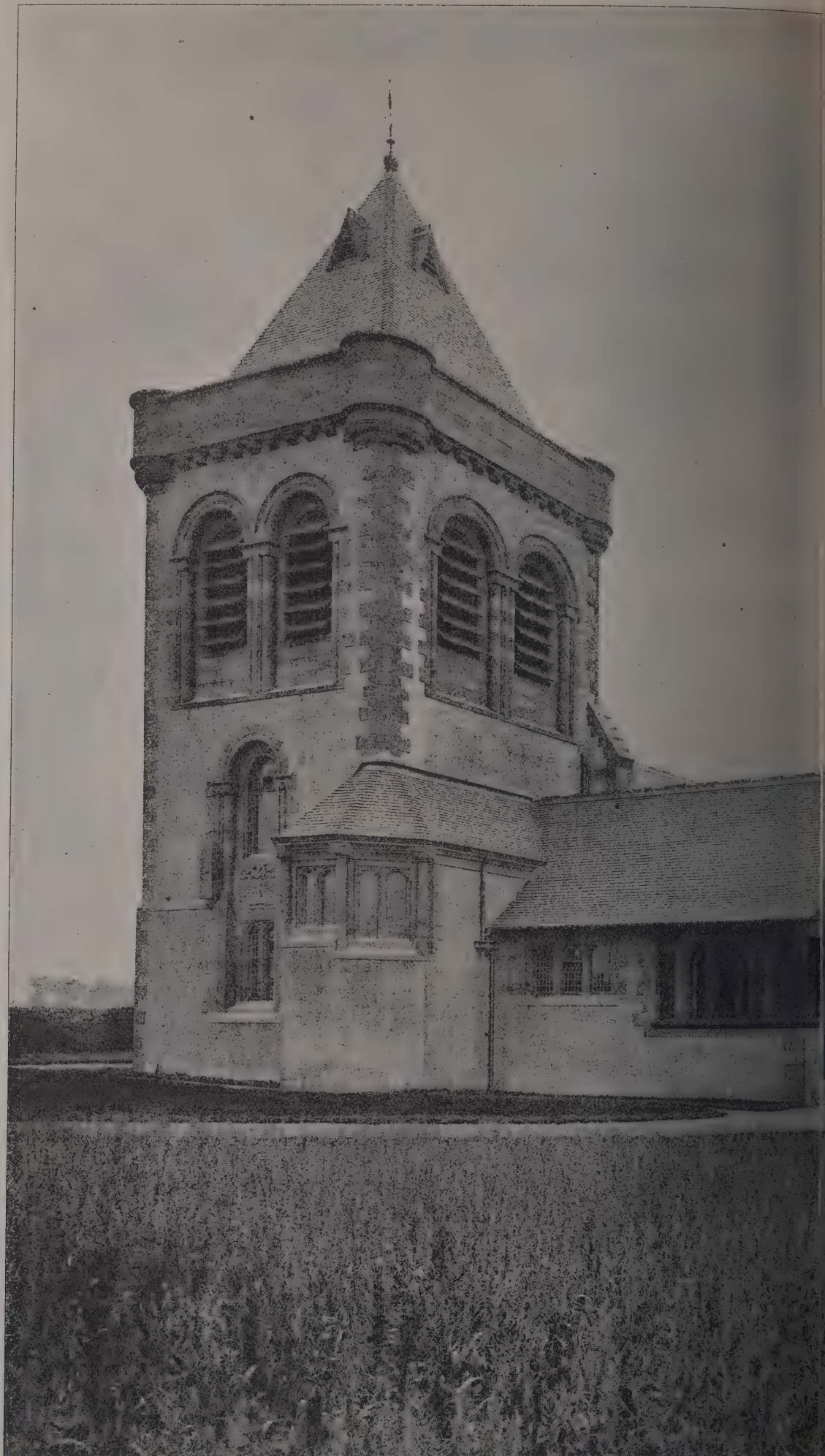






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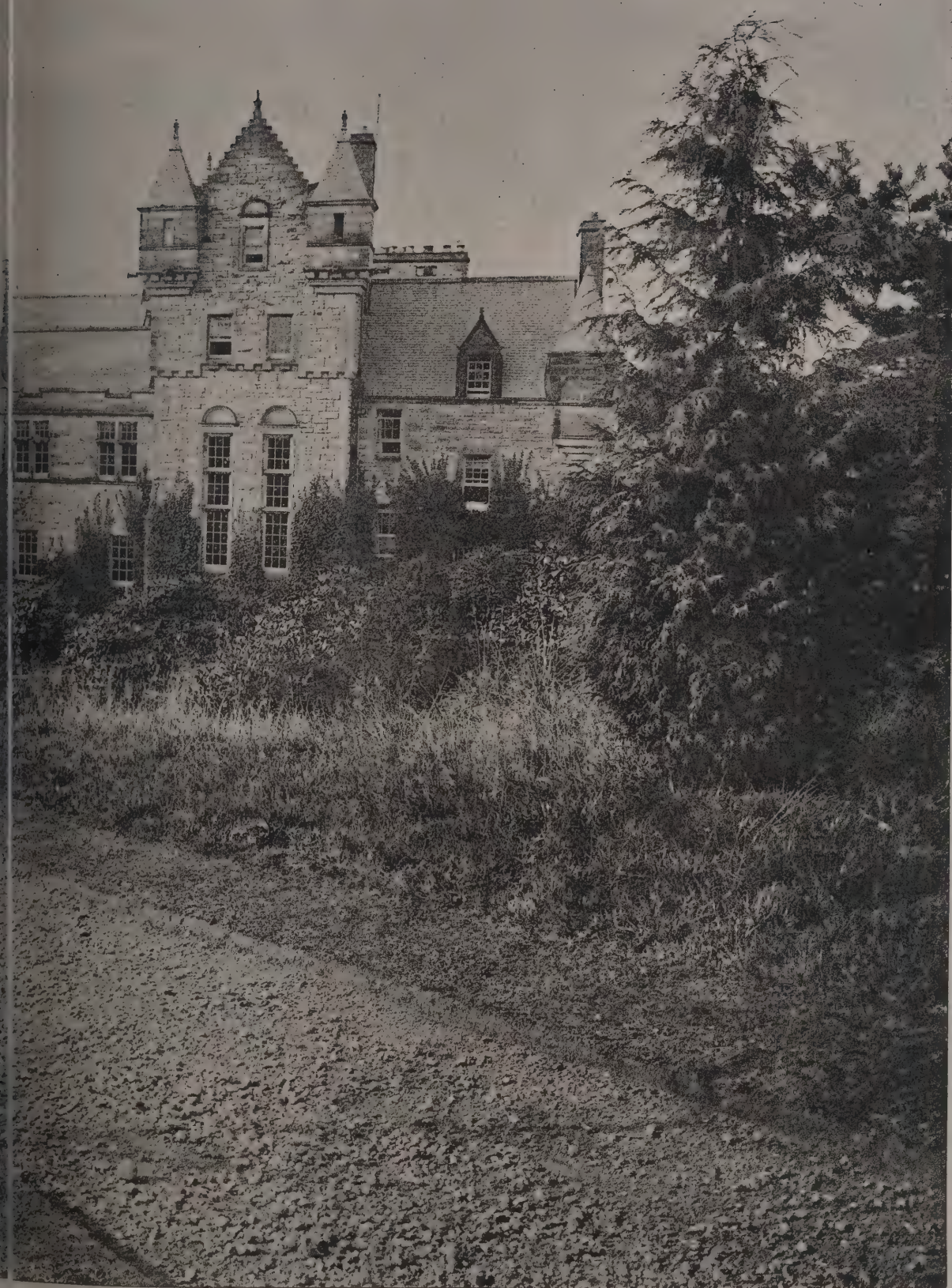
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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS. OPEN.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West-  
minster.

**HARROGATE.**—May 14.—Designs required for a new town hall. Premiums, 150*l.*, 100*l.* and 75*l.* Mr. F. Bagshaw, Borough engineer, Harrogate.

**IRELAND.**—April 21.—Designs are invited for twenty-five workmen's houses for the Coleraine Urban District Council. Premiums of 20*l.* and 10*l.* Mr. W. Henry, clerk to the Council.

**IRELAND.**—April 21.—Prizes of 20*l.* and 10*l.* respectively will be awarded for the first and second schemes in order of merit for utilising to the best advantage a plot of ground required by the Council for the erection of about twenty-five workmen's houses in Coleraine. Mr. William Henry, clerk, Town Hall, Coleraine.

**KNARESBOROUGH.**—June 1.—The Harrogate and Knaresborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital at Thistle Hill, Knaresborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**MEXBOROUGH.**—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25*l.* and 10*l.* are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

**SCOTLAND.**—April 30.—Designs are invited for a branch library for the Anderston district, Glasgow. Sir J. D. Marwick, town clerk, Glasgow.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**YORK.**—May 1.—Designs are invited for a Memorial to the late Queen Victoria to be placed in the Guildhall, York. The design must include a representation of Her Majesty, and be accompanied by an estimate of the cost of the work complete, such cost not to exceed 1,000*l.* A prize of 50*l.* (to merge in the commission) will be given for the accepted design. Mr. W. H. Andrews, town clerk, Guildhall, York.

## CONTRACTS OPEN.

**ALDERSHOT.**—April 15.—For erection of eight cottages, stabling with harness-room, coachhouse, &c., eight prisoners' cells and sundry alterations and additions at Aldershot police-station. Mr. W. J. Taylor, county surveyor, The Castle, Winchester.

**ASHFORD.**—April 18.—For supply of a four horse-power self-contained vertical engine at the schools at Ashford, Middlesex. Mr. F. G. Beeching, clerk to the managers, Ashford, Middlesex.

**BARNES.**—April 15.—For extension of the Castelnau school, Fanny Road, Barnes, near Hammersmith Bridge. Mr. C. Innes, architect, 50 Cannon Street, E.C.

**BARNLEY.**—April 16.—For erection of five houses and stabling, Langdale Road, Barnsley. Messrs. R. & W. Dixon, architects, 5 Eastgate, Barnsley.

**BARROW-IN-FURNESS.**—April 15.—For alterations to the Hindpool Road Wesleyan chapel. Messrs. Sames & Henshaw, architects, Abbey Road, Barrow.

**BARTON-ON-HUMBER.**—April 15.—For erection of a mission church at Barton-on-Humber. Mr. C. Hodgson Fowler, architect, Durham.

**BATH.**—April 14.—For sundry works at the Bath Statutory Hospital, Claverton Down. Mr. F. W. Gardiner, architect, Barton Street, Bath.

**BATLEY.**—April 16.—For alterations to Stockwell Mount, Batley. Mr. H. B. Buckley, architect, 55 Commercial Street, Batley.

**BEXLEY HEATH.**—April 28.—For the supply of tramway rails and accessories, and the supply and erection of engines, alternators, dynamos, &c. Mr. T. G. Baynes, clerk, Public Hall, Bexley Heath.

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**BLACKBURN.**—April 22.—For erection of premises in Darwen Street, Blackburn, for the Lancashire and Yorkshire Bank, Ltd. Messrs. Stones & Stones, architects, 10 Richmond Terrace, Blackburn.

**BOSTON.**—April 25.—For foundation works in concrete and brick for the erection of municipal buildings. Mr. Jas. Rowell, architect, Borough Offices, Market Place, Boston, Lincs.

**BRADFORD.**—April 15.—For erection of bakery at Great Horton. Messrs. Morley & Co., King Cross, Halifax.

**BRAMPTON.**—April 16.—For demolishing and rebuilding business premises situate in High Cross Street and Market Place, Brampton, Cumberland, for street improvements. Mr. T. Taylor Scott, architect, 43 Lowther Street, Carlisle.

**BRIGHTON.**—April 15.—For enlargement of the Ditchling Road school. Messrs. Thomas Simpson & Son, surveyors, 16 and 17 Ship Street, Brighton.

**COBHAM.**—April 16.—For erection of an engineer's cottage at the Cobham sewerage-works, Cobham, Surrey. Mr. W. T. Wooldridge, surveyor, Waterloo Road, Epsom.

**CONGLETON.**—April 24.—For erection of a building for the steam road-roller at Arclid, Cheshire. Mr. Alfred Price, architect, Elworth.

**DALTON-IN-FURNESS.**—April 18.—For completion of new church and school. Mr. J. W. Dickson, 2 Fair View, Dalton-in-Furness.

**DAVENTRY.**—For erection of show-yard at Daventry for the Northamptonshire Agricultural Society. Mr. A. E. Lovell, secretary, Harpole, Northampton.

**DEWSBURY.**—April 18.—For erection of a branch store, &c., at Thornhill Lees. Messrs. Holtom & Fox, architects, Corporation Street, Dewsbury.

**EAST HAM.**—April 22.—For erection of additional buildings at the electric tramcar station, Nelson Street, East Ham. Mr. A. H. Campbell, surveyor, Public Offices, Wakefield Street, East Ham.

**ESHOLT.**—For erection of a residence at Esholt, Yorks. Mr. William Jones, architect, 2 Hamilton Place, Leeds.

**FAIRFIELD.**—For erection of three shops with dwellings attached at Fairfield, Manchester. Messrs. Burton & Percival, architects, 150A Stamford Street, Ashton-under-Lyne.

**FALMOUTH.**—April 18.—For erection of coastguard buildings at St. Anthony's Point, near Falmouth. Particulars will

be supplied by the Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.

**GATESHEAD.**—April 19.—For erection of a Congregational hall at the corner of Dunsmuir Grove and Fern Dene Road, Gateshead. Mr. A. L. Armour, 16 West Street, Gateshead.

**GREAT YARMOUTH.**—April 19.—For erection of a chapel at Runham. Mr. Arthur S. Hewitt, architect, Bank Chambers, Regent Street, Great Yarmouth.

**HARRINGTON.**—April 14.—For alterations and additions to a dwelling-house at Harrington, Cumberland. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

**HOLMGATE.**—For erection of twelve villas at Holmgate, Clay Cross. Mr. Ernest Oxley, architect, Clay Cross.

**HORNSEY.**—April 21.—For erection of firemen's quarters at Globe Road and a fire-escape shed, &c., at Lothair Road depôt, Harringay. Mr. E. J. Lovegrove, engineer to the Urban District Council, Southwood Lane, Highgate, N.

**HUDDERSFIELD.**—April 29.—For erection of seven blocks of hospital buildings and boundary walls at Spring Hill, Meltham. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

**HULL.**—April 18.—For erection of a car-shed, 280 feet by 47 feet, in Holderness Road. Mr. A. E. White, city engineer, Town Hall, Hull.

**HULL.**—April 22.—For erection of a junior department in connection with the Paisley Street Board school, Kingston-upon-Hull. Bills of quantities, &c., on application at the School Board Office, Albion Street, Hull.

**ILFORD.**—April 14.—For erection of a junior mixed school for 500 children, with latrines, playsheds, caretaker's house, &c., on the Loxford Hall estate, Ilford. Mr. C. J. Dawson, architect, 7 Bank Buildings, Ilford, Essex.

**ILFORD.**—April 21.—For erection of a lodge in the South Park, Green Lane, Ilford, similar to that in the Central Park, Cranbrook Road, Ilford; and for erection of a three-stall slate convenience, and supplying and fixing a gymnasium in the same park. Mr. H. Shaw, surveyor, Town Hall, Ilford.

**ILKLEY.**—April 18.—For erection of the Hebers Ghyll bridge over the beck in Hebers Ghyll, Ilkley. Bill of quantities, form of tender, &c., and any other information obtained on application to the Surveyor to the Urban District Council.

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IPSWICH.—April 16.—For alterations and additions to the Ipswich Institute and Lecture Hall, Tower Street, Ipswich. Messrs. Eade & Johns, architects, Cornhill Chambers, Ipswich.

IRELAND.—April 14.—For erection of a parish church at Kilcoe, diocese of Ross. Mr. M. A. Hennessy, architect, 74 South Mall, Cork.

IRELAND.—April 14.—For erection of new warehouses in Hill Street, Belfast. Messrs. Blackwood & Jury, architects, 41 Donegall Place, Belfast.

IRELAND.—April 15.—For alterations and improvements to workhouse chapel, Dromore West, and supply of articles of furniture and requisites for same. Mr. H. Naughton, clerk to Guardians, Board-room.

IRELAND.—April 17.—For erection of a parochial hall at Drumcree, Portadown. Mr. J. W. Walby, architect, Portadown.

IRELAND.—April 19.—For erection of proposed convent schools, Edgeworthstown, co. Longford. Mr. T. F. McNamara, (Hague & McNamara), architect, 50 Dawson Street, Dublin.

IRELAND.—April 19.—For erection of a house in Dacre Terrace, Londonderry. Mr. J. M. McIntyre, architect, Letterkenny.

IRELAND.—April 21.—For additions and alterations to the parish church, Killeel, co. Down. Mr. Samuel P. Close, architect, Donegall Square Buildings, Belfast.

IRELAND.—April 21.—For erection of houses as follows, for the Great Northern Railway Company (Ireland):—Stationmaster's house (two storey) at Ballybay, 26 miles from Dundalk; stationmaster's house (one storey) at Aldergrove, near Antrim; stationmaster's house (one storey) at Glenavy, near Antrim; four gatekeepers' cottages on Hill of Howth, near Dublin; porter's cottage at Duleek, five miles from Drogheda; two signalmen's cottages at Donabate, 11½ miles from Dublin; two signalmen's cottages at Fintona Junction, near Omagh; and a terrace of ten workmen's houses at Dundalk. Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

IRELAND.—April 23.—For repairs to the county courthouse, Kilkenny. Mr. George J. Morris, secretary to County Council, Kilkenny.

IRELAND.—April 23.—For alterations and improvements in workhouse buildings, Glennamaddy. Mr. Robert J. Kirwin, architect, Glennamaddy.

IRELAND.—April 24.—For supply and erection of (Section A) engine-house plant—one 300 kw. high-speed dynamo and accessories, with pipes; (B) extension of switchboard—panels and instruments for dealing with above; (C) electricity supply mains, at Rathmines. Mr. F. P. Fawcett, town clerk, Town Hall, Rathmines.

IRELAND.—April 24.—For erection of business premises, Pottinger's entry, High Street, Belfast. Mr. Samuel P. Close, architect, Donegall Square Buildings, Belfast.

KENDAL.—April 14.—For erection of new science and art rooms at the Grammar school. Mr. G. L. Hogarth, architect, Kendal.

KENDAL.—April 19.—For erection of two shops, billiard-room, &c., at the Railway hotel, Kendal. Mr. Joseph Bintley, architect, 7 Lowther Street, Kendal.

KIRKBY LONSDALE.—April 21.—For erection of houses, Bective Road, Kirkby Lonsdale. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

LAMBETH.—April 15.—For erection of offices, nurses' home, relief station and lodge adjoining the infirmary in Brook Street, Kennington Road, S.E. Mr. S. R. J. Smith, architect, 14 York Buildings, Adelphi, W.C.

LANCASTER.—April 19.—For taking-down and altering a cottage and farm buildings at Golgotha. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LANCASTER.—April 21.—For remodelling Kelsall's vaults, Penny Street, and new front to the Horse and Farrier, Brock Street. Mr. John Greene, architect, Meetinghouse Lane, Lancaster.

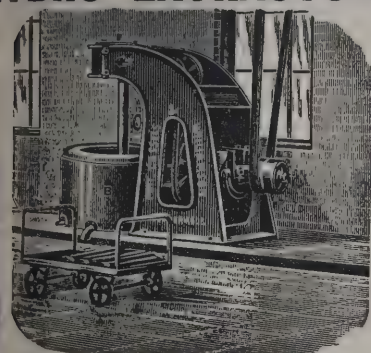
LANCASTER.—April 22.—For erection of a water-meter house near Cross Hill. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEATHERHEAD.—April 22.—For erection of a brick wall at St John's Foundation school, Leatherhead. Rev. Sutton Patterson, 1 The Sanctuary, Westminster Abbey, S.W.

LONDON.—April 17.—For works to be carried out at 180 and 182 Peckham Rye, S.E. for the Guardians of St. Olave's Union. Messrs. Newman & Newman, architects, 31 Tooley Street, S.E.

LONDON.—April 22.—For supply of (1) locomotive passenger tank engines, and (2) locomotive goods engines and tenders, for the Bombay, Baroda and Central India Railway Co. The Offices, Gloucester House, Bishopsgate Street Without, London, E.C.

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**MANCHESTER.**—April 19.—For supply of two sets of additional steam pumping engines, to deliver against a pressure of 1,120 lbs. per square inch, for the waterworks committee. The Secretary, Waterworks Offices, Town Hall, Manchester.

**NEWCASTLE-ON-TYNE.**—For addition of a 'chancel to Washington Church. Messrs. Hicks & Charlewood, architects, 67 Westgate Road, Newcastle-on-Tyne.

**OLD BRENTFORD.**—April 14.—For erection of schools for 550 children in Ealing Road, Old Brentford. Messrs. Nowell Parr & Kates, architects, 5 Brent Road, Brentford, W.

**PORTSMOUTH.**—April 16.—For erection of a Wesleyan church in Twyford Avenue, North End. Mr. G. E. Smith, architect, 145 Victoria Road North, Southsea.

**SANDWICH.**—April 21.—For carrying out alterations to the sewage-disposal works for the parish of Ash, near Sandwich, Kent. Mr. F. S. Cloke, clerk to the Easry Rural District Council, Sandwich.

**SCOTLAND.**—April 14.—For erection of a cottar house at Blackhill, Aberdeen. Mr. Nicol, Ordhead, Cluny.

**SCOTLAND.**—April 15.—For erection of a new byre, &c., Monkshill, Foveran, and additions to offices, Cairnhill, Dudwick, Ellon. Messrs. Wilson & Duffus, advocates, Aberdeen.

**SCOTLAND.**—April 15.—For erection of a public slaughterhouse on the farm of Thirdbailing, West Kilbride, Ayrshire. Mr. Andrew M'Quaker, architect, Glenbank, Dalry.

**SCOTLAND.**—April 19.—For erection of farm offices at Beltnore, farm offices at Belnaglack, dwelling-house at Smithy, and a dwelling-house at Peatfold. Messrs. Jenkins & Marr, architects, 16 Bridge Street, Aberdeen.

**SCOTLAND.**—April 21.—For erection of tenements and saloons on east side of High Street and north side of Duke Street, Glasgow. Messrs. Frank Burnet Boston & Carruthers, architects, 180 Hope Street.

**SCOTLAND.**—April 21.—For erection of a dwelling-house at Bridgefoot, Wardhouse. Mr. John Craigen, solicitor, 193 Union Street, Aberdeen.

**SCOTLAND.**—April 28.—For erection of a Gothenburg public-house, shops and dwelling-houses at Lumpinnans. Mr. William Birrell, architect, 205 High Street, Kirkcaldy.

**SEASCALE.**—April 14.—For erection and completion of three houses at Seascale, Cumberland. Mr. J. S. Stout, architect, 36 Lowther Street, Whitehaven.

**SHEPHERD'S BUSH.**—April 21.—For erection of boundary walls to enclose the site of the proposed new Board-room and clerk's offices, receiving home for children, and out-relief department at Goldhawk Road. Mr. J. Lamb, clerk to Guardians, 75 Fulham Palace Road, Hammersmith, W.

**SHIPLEY.**—April 14.—For erection of a villa residence at Nab Wood, Shipley, Yorks. Mr. Abm. Sharp, architect, Pearl Assurance Buildings, Market Street, Bradford.

**SILSDEN.**—April 17.—For erection of six houses at Silsden, Yorks. Mr. R. Holdsworth, secretary, Co-operative Society, Limited.

**SOUTHEND-ON-SEA.**—April 16.—For construction of a bandstand on the cliffs opposite Prittlewell Square. Mr. A. Fidler, borough surveyor, Southend.

**SURBITON.**—April 19.—For erection of boundary walls at the lay-by, Balaclava Road. Mr. James Bell, clerk to Urban District Council.

**SUTTON SCOTNEY.**—April 17.—For erection of a pair of cottages on Lower Cranbourne Farm, near Sutton Scotney, Hants. Messrs. W. & G. A. Bell, architects, Andover.

**TENDRING.**—April 22.—For alterations and additions to the workhouse, Tendring, near Colchester. Mr. F. Whitmore, architect, 17 Duke Street, Chelmsford.

**TYNEMOUTH.**—April 15.—For erection of a timber retainer on the sea banks at Tynemouth. Mr. John F. Smillie, borough surveyor, North Shields.

**UCKFIELD.**—April 25.—For erection of police buildings, consisting of residences for a superintendent, sergeant and two constables, charge-room, four cells and stabling, at Uckfield, East Sussex. Mr. F. Merrifield, clerk of the County Council, County Hall, Lewes.

**ULVERSTON.**—For additions to farm buildings at Water Yeat Farm, Blawith. Mr. Jonathan Bell, architect, Coniston.

**VENNTONLEAGUE.**—May 3.—For proposed enlargement and renovation of the United Methodist Free church and erection of Sunday school at Venntonleague, near Hayle, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

**WALES.**—For erection of a mission-room at Blaina, Mon. Messrs. Seddon & Carter, architects, Bank Buildings, St. Mary Street, Cardiff.

**WALES.**—For erection of the church of All Saints, Windsor Road, Cardiff. Messrs. Seddon & Carter, architects, Bank Buildings, St. Mary Street, Cardiff.

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**WALES.**—April 14.—For erection of new chapel, for the committee of Salem Welsh Baptist church, Cwmpark. Mr. J. Rees, architect, Pentre.

**WALES.**—April 14.—For erection of schools and classrooms, &c., Rhosllanerchrugog. Rev. R. Roberts, Laurel House, Rhosllanerchrugog.

**WALES.**—April 14.—For erection of a laundry building, &c., at Freehold, Pontnewynydd. Mr. D. J. Lougher, Bank Chambers, Pontypool.

**WALES.**—April 15.—For erection of a cottage near Crumlin (High Level) station, Mon, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, W.

**WALES.**—April 16.—For erection of an operating theatre at the Llanelly hospital. Mr. Wm. Griffiths, architect, Falcon Bridge, Llanelly.

**WALES.**—April 16.—For erection of 37 cottages in Phillips Street, Pontypridd. Sealed and endorsed tenders are to be sent to Mr. Thos. R. Phillips, architect, Old Bank Chambers, Pontypridd.

**WALES.**—April 19.—For repairs and improvements at the Fochriw and Gelligaer Village Board schools. Messrs. James & Morgan, architects, Charles Street Chambers, Cardiff.

**WALES.**—April 19.—For erection of a water-closet, &c., at the workhouse, Haverfordwest. Mr. D. Edward Thomas, architect, Victoria Place, Haverfordwest.

**WALES.**—April 19.—For erection of a church to seat 600 persons at Landore, near Swansea. Mr. E. M. Bruce-Vaughan, architect, Cardiff.

**WALES.**—April 21.—For erection of twenty cottages at Llanharan. Plans and specifications may be seen at the Court House, Pencoed.

**WALES.**—April 21.—For erection of eight cottages near Gellyrheina. Plans and specifications can be seen at Manse House, Chapel Lane, Cardiffaith, Mon.

**WALES.**—April 28.—For erection of a mixed and infants' school to accommodate about 368 children, with caretaker's house and other works, at Fleur-de-Lis, in the county of Monmouth. Mr. R. L. Roberts, The Firs, Abercarn, Mon.

**WALTHAMSTOW.**—April 14.—For alterations and erection of new classrooms and cloakrooms in the boys and girls' departments at the Higham Hill and Forest Road schools. Mr. T. W. Liddiard, clerk to School Board, High Street, Walthamstow.

**WATFORD.**—April 14.—For erection of a new hair-picking and disinfecting buildings and boot-room at Leavesden Asylum, near Watford, Herts, for the Metropolitan Asylums Board. Mr. T. Duncombe Mann, clerk to the Board, Embankment, E.C.

**WEST HAM.**—April 22.—For erection of steam road-roller shed and offices at the Abbey Road depôt, Stratford. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

**WHICKHAM.**—April 22.—For additions to Dunston school, Whickham, Durham. Mr. J. Wm. Rounthwaite, architect, 13 Mosley Street, Newcastle-on-Tyne.

**WHITEHAVEN.**—April 16.—For alterations and extension of the Primitive Methodist church, Richmond Terrace, Whitehaven, and erection of five classrooms to the Sunday school. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

**WIMBLEDON.**—April 22.—For extending the free library in Hill Road, Wimbledon. Mr. R. J. Thomson, architect, 47 Hill Road, Wimbledon.

**WINDERMERE.**—April 16.—For extensive additions to Netherfield Works. Mr. Robert Walker, architect, Windermere.

**WORMWOOD SCRUBS.**—April 21.—For erection of boundary walls and railing to enclose the site of the proposed new workhouse and infirmary, Wormwood Scrubs. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Strand, W.C.

**YORK.**—April 19.—For restoration of Holy Trinity Church, Micklegate, York. Mr. C. Hodgson Fowler, architect, Durham.

THE Scottish Association of Municipal Engineers and Surveyors held its inaugural meeting on Saturday, the 5th inst., in the Athenæum, Glasgow, and was attended by representatives from thirty-four burgh and other authorities in Scotland. The constitution, which had been prepared by a provisional committee, was submitted for approval and adopted without dissent. The meeting proceeded next to appoint the officials of the new association, and the city engineer of Glasgow, Mr. A. B. McDonald, was unanimously appointed the first president. The vice-presidents are Mr. A. J. Turnbull, Greenock, and Mr. Thos. Nisbet, master of works, Glasgow.

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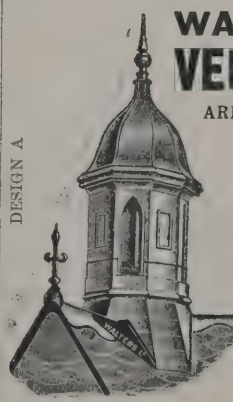
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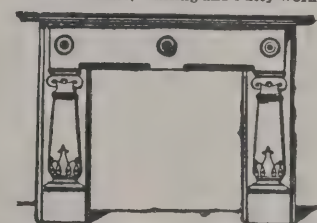
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For erection of retort-house, coal store, exhauster, boiler, purifying and station meter-houses and tar and liquor well.  
BARNES, CHAPLIN & CO., St. Peter Street,  
Cardiff (*accepted*) . . . . . £4,969 3 2

**ALNWICK.**

For sanitary improvements in the workhouse.  
WILKIN & DICKMAN, Alnwick (*accepted*) . . . . . £35 3 0

**ANDOVER.**

For construction of about 420 yards of 9-inch stoneware sewer in the Old Winton Road, with manholes, &c. Mr. R. W. KNAPP, borough surveyor.  
F. Beale & Sons . . . . . £319 0 0  
F. Osman . . . . . 284 14 0  
Playfair & Toole . . . . . 283 0 0  
J. Avins, Southsea (*accepted*) . . . . . 218 0 0

**BIRKBY.**

For erection of a shop and dwelling-house at Birkby, Huddersfield. Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

*Accepted tenders.*

Law, Stead & Sons, Hillhouse, mason.  
L. Kettlewell, Lockwood, joiner.  
G. Slater & Son, Huddersfield, plumber.  
T. B. Tunnacliffe, Huddersfield, plasterer and slater.  
B. Wrigley, Birkby, painter.  
J. Cooke, Littleroyd, concreter.

**BLACKWELL.**

For street works in Selwyn Street, Jane Street and Well Street, Hillstown, Blackwell, Notts. Mr. H. SILCOCK, surveyor.  
F. Hongton . . . . . £940 0 0  
J. Bennett . . . . . 923 0 0  
J. Hartley . . . . . 891 0 0  
Lane Bros. . . . . 877 0 0  
H. Oakey . . . . . 873 0 0  
H. Revill . . . . . 825 0 0  
LOCK & ANDREW, 70 Therwin Street, Lenton,  
Nottingham (*accepted*) . . . . . 805 0 0

**BRADFORD.**

For additions to Rook's Mount, Wyke, near Bradford. Messrs FAIRBANK & WALL, architects, Bradford.

*Accepted tenders.*

J. Brooke, Wyke, mason . . . . . £770 0 0  
H. Gough, Lightcliffe, joiner . . . . . 393 10 0  
C. Candlatt, Brighouse, plumber . . . . . 254 0 0  
W. Jagger, Wyke, plasterer . . . . . 105 0 0  
J. Smithies, Brighouse, slater . . . . . 75 0 0  
W. Jagger, painter . . . . . 37 10 0

**BROMLEY.**

For proposed addition, billiard-room, &c., to the Conservative club, Bromley, Kent. Messrs WADMORE & MALLETT, architects, 8 Bream's Buildings, Chancery Lane, E.C.

*Buildings.*

W. E. Tapley, Bromley . . . . . £985 12 0  
Fry & Willson, Bromley . . . . . 871 0 0  
D. Payne, Bromley . . . . . 858 0 0  
F. P. Duthoil, Bromley . . . . . 855 0 0  
Crossley & Son, Bromley . . . . . 839 0 0  
T. D. Graty, Bromley . . . . . 833 0 0

*Fittings, &c.*

Fry & Willson . . . . . 45 0 0  
Crossley & Son . . . . . 45 0 0  
W. E. Tapley . . . . . 43 0 0  
F. P. Duthoil . . . . . 43 0 0  
T. D. Graty . . . . . 41 0 0  
D. Payne . . . . . 39 0 0

**BRIGHTON.**

For painting (1) ironwork, &c., connected with the seats, fences, &c., on the King's Road, Grand Junction Road and Old Steine enclosure; and (2) ironwork, &c., connected with the seats, fences, &c., on the Marine Parade and the Madeira Road.

*Contract No. 1.*

J. Olliver . . . . . £463 0 0  
T. F. Holland . . . . . 275 0 0  
GATES & SONS, 1 North Road (*accepted*) . . . . . 265 0 0

*Contract No. 2.*

J. Olliver . . . . . 328 0 0  
Gates & Sons . . . . . 215 0 0  
T. F. HOLLAND (*accepted*) . . . . . 210 0 0

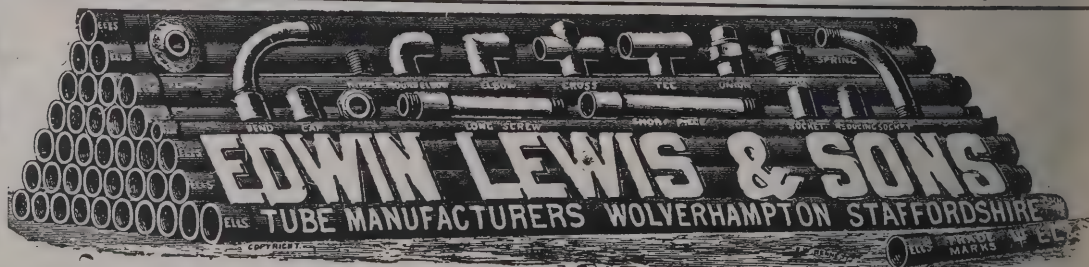
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- E. Cockey & Sons, Ltd, Frome.
- Ilkeston Gas Corporation, Ilkeston.
- Kirkham, Hulett & Chandler, Ltd., London.
- R. & J. Dempster, Manchester.
- Clapham Bros., Ltd., Keighley.
- H. Balfour & Co., Leven, Fife.
- S. White & Sons, London.
- W. C. Holmes & Co., Huddersfield.
- J. F. Blakeley & Co., Dewsbury.

Note.—Matter adjourned for final decision.

CANTERBURY.

For erection of a detached residence in the Whitstable Road.

M. C. H. SMELLIE, Eclington, Herne Bay (accepted). . . . . £874 0 0

CROMER.

For supply, carting and laying of cast-iron pumping and gravitation water-mains.

J. E. KAYE, Huddersfield (accepted).

EAST GRINSTEAD.

For drainage works at Three Bridges.

G. PICKARD, Turner's Hall (accepted) . . . £490 0 0

EAST MOLESEY.

For street works in Beauchamp Road East, East Molesey.

- Mr. JOHN STEVENSON, surveyor.
- V. Adamson . . . . . £1,395 1 9
- F. Free & Sons . . . . . 1,280 0 0
- V. H. Wheeler. . . . . 1,193 0 0
- LAWRENCE & THACKER, 41 Lavender Gardens, Clapham Common, S.W. (accepted) . . . 1,140 9 8
- For erection of a fire station. Mr. JOHN STEVENSON, surveyor.
- F. Chamberlain . . . . . £726 0 0
- Higby & Rabson . . . . . 665 18 0
- C. POTTERTON, East Molesey (accepted) . . . 597 0 0

EASINGWOLD.

For erection of a dwelling-house at Husthwaite, near Easingwold. Mr. THOMAS STOKES, architect, Thirsk.

Accepted tenders.

- J. C. Cornforth, bricklayer, mason and plasterer.
- W. Leadley, carpenter and joiner.
- T. Cariss, plumber and glazier.
- J. Rutherford, painting.

EDMONTON.

For building married couples' quarters at the workhouse, Silver Street, Edmonton, for the Guardians of the Strand Union. Mr. A. A. KEKWICK, architect, 18 Outer Temple, Strand, W.C. Quantities supplied.

- Chessum & Sons . . . . . £4,872 0 0
- Willmott & Sons . . . . . 4,770 0 0
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- B. E. Nightingale . . . . . 4,512 0 0
- Shillitoe & Son . . . . . 4,500 0 0
- Jarvis & Sons . . . . . 4,446 0 0
- Foster Bros . . . . . 4,387 0 0
- T. G. Sharpington . . . . . 4,349 0 0
- A. MONK, Lower Edmonton \* . . . . 4,330 0 0
- J. O. Richardson . . . . . 4,058 0 0

\* Recommended for acceptance.

HASTINGS.

For supply of 3,000 half-inch and 500 three-quarter inch stop-cocks Mr. P. H. PALMER, borough engineer.

WILLARD, East Ascent, St. Leonards (accepted) £297 7 11

For completion of the lower station at the East Hill lift at Rock-a-Nore. Mr. P. H. PALMER, borough engineer.

J. PARKER, Ashburnham Road (accepted). . £265 0 0

HOUGHTON-LE-SPRING.

For surface-water drainage works at Houghton-le-Spring, Durham, and erection of concrete retaining-wall, public urinal and other work. Mr. VINCENT SMITH, surveyor, 14 Newbottle Street, Houghton-le-Spring.

- M. P. Balmer & Sons . . . . . £1,380 0 0
- J. P. Bertram & Son . . . . . 1,179 13 0
- J. Robinson . . . . . 1,150 0 0
- J. Carrick . . . . . 1,128 10 0
- R. D. HARRISON, 1 William Street, Houghton-le-Spring (accepted) . . . . . 1,093 0 0

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For supply of an ambulance brougham.

GLOVER BROS., LTD., London, W. (accepted) . £87 15 0

For distempering the ceilings at St. John's Home.

J. Boyce . . . . . £49 0 0

A. Avis . . . . . 28 0 0

A. J. Humphreys . . . . . 27 10 0

F. Bennett . . . . . 22 19 0

A. SPORLE (accepted) . . . . . 12 0 0

## IRELAND.

For construction of a concrete reservoir, a pumping-station, and laying and jointing about seven miles of iron pipes; supplying street fountains, valves, fittings, and supplying and erecting one breast waterwheel and pumps, for the Roscommon Rural District Council.

Accepted tenders.

Work on site.

C. H. Wallace, 35 Dame Street, Dublin . . £2,873 17 0

Pumping machinery and street water fittings.

Glenfield &amp; Kennedy, Kilmarnock . . . £575 0 0

Note.—Tender for cast-iron pipes postponed.

For erection of three houses at Ashburton, Cork. Messrs. W. H. HILL & SON, architects, 28 South Mall, Cork.

J. A. O'Connell . . . . . £810 0 0

J. Hearn . . . . . 764 0 0

D. DUGGAN, Phoenix Street, Cork (accepted) . 720 0 0

## ISLEWORTH.

For additions to the Percy House schools, Isleworth.

R. Palmer . . . . . £5,555 15 0

H. Willcock &amp; Co. . . . . 1,285 0 0

C. Brightman . . . . . 1,238 0 0

G. Jackson . . . . . 1,170 0 0

T. J. Messam &amp; Sons . . . . . 1,142 0 0

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Viney &amp; Stone . . . . . 1,123 0 0

DOREY &amp; CO., LTD., Brentford (accepted) . 1,080 0 0

W. H. Gaze &amp; Sons . . . . . 1,078 0 0

W. Wisdom . . . . . 1,050 0 0

## KEYMER.

For street works in Woodland Road, Hassocks, Keymer Sussex.

Stolman &amp; Co. . . . . £1,128 14

A. C. Soan . . . . . 990 0

E. King . . . . . 978 9

H. Christmas . . . . . 880 0

Lawrence &amp; Thacker . . . . . 856 0

G. KETTERINGHAM, Waltham Cross (accepted) . 689 17

## LEYTON.

For supply of steam, exhaust and water pipes for engine and boiler-rooms, for the electric-lighting committee.

A. Miller, jun. . . . . £1,584 0

Priddle &amp; Heppell . . . . . 1,480 0

Jones Ironfoundry Co. . . . . 1,326 0

Sir H. Maxim, Ltd. . . . . 1,240 0

Babcock &amp; Wilcox . . . . . 1,146 10

Aiton &amp; Co. . . . . 1,130 0

SUFFIELD &amp; BROWN, Dolphin Works, Poplar (accepted) . . . . . 972 0

## LONDON.

For construction of about 2,500 yards of sewers in certain streets at Bounds Green, New Southgate. Mr. C. C. LAWSON, surveyor.

E. Parry &amp; Co. . . . . £3,400 14

T. W. Pedrette . . . . . 3,328 16

Lowes Engineering and Pipe Co. . . . . 3,164 0

T. Adams . . . . . 3,050 3

R. Ballard . . . . . 2,988 0

G. G. Rayner . . . . . 2,961 5

C. FORD (accepted) . . . . . 2,873 0

For equipping engineering and electric-lighting works, for the Fulham Board of Guardians.

Accepted tenders.

R. Dawson &amp; Co., Ltd., wiring . . . £2,250 0

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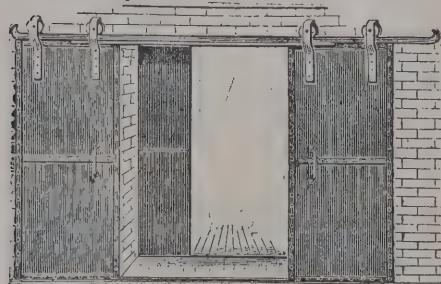
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J. Webb . . . . .	620	0 0
Meston & Hale . . . . .	528	0 0
H. C. Horswill: . . . . .	515	0 0
J. Stewart . . . . .	494	0 0
M. Dinnie . . . . .	457	3 2
Rowley Brs. . . . .	440	0 0
J. Chessum & Sons . . . . .	416	10 0
Lee . . . . .	400	0 0
Pollard & Brand . . . . .	400	0 0
J. Groves . . . . .	398	10 0
ONE & SMITH, 2 Grove Lane, Stamford Hill (accepted) . . . . .	388	10 0
supply and erection of about 171 yards oak fencing at the Tooting Home, Church Lane, Tooting.		
G. Boxall . . . . .	£171	0 0
A. Turner & Son . . . . .	161	12 0
R. Bachelor . . . . .	161	0 0
Godson & Dobson . . . . .	158	2 6
E. C. White . . . . .	153	8 1
Mulford . . . . .	153	0 0
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B. Horton & Son . . . . .	141	0 0
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Astell Bros. . . . .	135	10 0
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painting, varnishing and colouring the Baptist church, Loughton, Bucks.		
Martin . . . . .	£31	0 0
Eastwood . . . . .	26	19 0
Varren . . . . .	25	7 6
Bird . . . . .	21	0 0
LOWE, Northampton (accepted) . . . . .	18	10 0

LOWER BEBINGTON.

For plumbing, painting and general repairs in connection with the conservatory, greenhouses, &c., in the gardens of the Council Offices in Lower Bebington, Cheshire. Mr. H. W. CORRIE, surveyor. .  
G. Ellidge . . . . . £103 0 0  
T. MUNNENLEY, Lower Bebington (accepted) . 102 10 0

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For supply of about 2,800 tons of granite and 3,000 tons of slag to be delivered in such quantities and at such times and places in their district as the Council or their district surveyor shall require.

Accepted tenders.

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Grobby Granite Co., near Leicester.  
Cliff Hill Granite Co., near Leicester.

Slag.

Holwell Iron Co., Asfordby, Melton Mowbray.  
Norfolk, Nottingham.

NEWBIGGIN-BY-SEA.

For taking-up and remaking a portion of the roads. Mr. D. ROSSER, surveyor.  
O. Spurr . . . . . £884 8 4  
J. McLaren . . . . . 622 1 6  
W. HOGG, De Walden House, Pegswood, Morpeth (accepted) . . . . . 599 11 1

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For supply of 4,500 to 5,000 tons (more or less) of 1½ inch and 1¾ inch gauge best broken Leicestershire granite metalling, at per ton, delivered at various railway stations.

Accepted tenders.

Enderby & Stoney Stanton Granite Co., Narborough, near Leicester, 3,500 tons.  
Whitwick Granite Co., Whitwick, near Leicester, 1,000 tons.

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For construction of a swimming-bath, the erection of a boiler-house, chimney shaft, laundry and other buildings in connection therewith at the gymnasium in Victoria Street. Mr. G. WILLIAM LACY, borough surveyor.

J. Higgins . . . . . £1,547 0 0  
H. Price . . . . . 1,520 0 0  
W. H. Thomas . . . . . 1,487 11 3  
JONES & EVANS, Oswestry (accepted) . . . . . 1,470 7 0

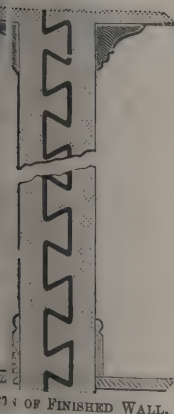
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For widening North Lodge Road, Upper Parkstone, Poole.  
Mr. JOHN ELFORD, borough surveyor.  
H. C. BRIXEY, Newtown, Parkstone, Poole (*accepted*) . . . . . £39 10 0

**PORTSLADE-BY-SEA.**

For construction of surface-water sewers, Portslade-by-Sea, Sussex.

G. Burstow & Sons . . . . .	£1,370	0	0
C. W. Killingback & Co. . . . .	1,305	16	0
W. Shoosmith . . . . .	1,239	12	0
W. H. Holman & Co. . . . .	1,182	3	0
J. H. East . . . . .	1,146	5	0
W. A. McKellar . . . . .	1,133	0	0
A. E. Soan . . . . .	1,094	13	7
H. A. Chambers . . . . .	1,003	16	10
W. Hillman . . . . .	947	7	7
B. Cooke & Co. . . . .	945	19	8
E. H. King . . . . .	919	0	0
J. Parsons & Sons . . . . .	893	0	0
G. G. Rayner . . . . .	890	4	10
Case Sea Defence Syndicate . . . . .	841	2	10
J. & T. BINNS, Croydon ( <i>accepted</i> ) . . . . .	866	1	6

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C. W. Killingback & Co. . . . .	£5,383	3	0
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J. & T. BINNS, Croydon ( <i>accepted</i> ) . . . . .	4,292	16	9

**ROCHDALE.**

For street works in Princess Street and Samuel Street (total length about 310 yards), in Castleton Moor, Rochdale.  
Mr. S. S. PLATT, borough engineer.  
T. TURNER, Siddall Moor, Heywood (*accepted*).

**RAMSGATE.**

For street works in Herbert Road, Grosvenor Road, Dane Road and St. Andrew's Road.

*St. Andrew's Road.*

J. K. Bugden . . . . .	£525	10	0
G. Griggs . . . . .	489	0	0
E. J. Newby . . . . .	479	11	0
W. WILSON, Ramsgate ( <i>accepted</i> ) . . . . .	464	0	0

*Dane Road.*

J. K. Bugden . . . . .	418	10	0
G. Griggs . . . . .	380	0	0
E. J. Newby . . . . .	371	4	0
W. WILSON ( <i>accepted</i> ) . . . . .	340	0	0

*Grosvenor Road.*

J. K. Bugden . . . . .	279	10	0
G. Griggs . . . . .	274	16	0
W. Wilson . . . . .	238	0	0
E. J. NEWBY ( <i>accepted</i> ) . . . . .	229	0	0

*Herbert Road.*

J. K. Bugden . . . . .	334	18	0
E. J. Newby . . . . .	304	17	0
G. Griggs . . . . .	301	0	0
W. WILSON ( <i>accepted</i> ) . . . . .	284	0	0

**SCOTLAND.**

For erection of the Western District hospital at Oak Bank, Fossil Road, Glasgow.

J. & G. Findlay . . . . .	£13,054	4	0
M. Henderson . . . . .	13,020	4	0
T. & R. Duncanson . . . . .	12,881	6	0
D. Buchanan . . . . .	12,724	2	0
A. MEIKLEJOHN, 10 Kerr Street, Maryhill ( <i>accepted</i> ) . . . . .	12,722	12	0

For erection of the Victoria Road U.F. church, Kirkcaldy.  
Mr. WILLIAM DOW, architect, 259 High Street, Kirkcaldy.  
*Accepted tenders.*

G. Smith & Sons, mason . . . . .	£3,497	0	0
J. Smith, joiner . . . . .	1,479	0	0
W. Grant, plasterer . . . . .	200	0	0
J. Wood & Sons, plumber . . . . .	193	14	0
J. Haxton & Co., glazier . . . . .	145	2	0
J. Lawson, slater . . . . .	115	17	0

The ROMAN CATHOLIC CATHEDRAL,  
WESTMINSTER, London, S.W.

The NEW BARRACKS and MILITARY  
HOSPITAL at MILLBANK, London, S.W.

The BRITANNIA NAVAL COLLEGE,  
DARTMOUTH, Devonshire.

The TOOTING BEC ASYLUM, TOOTING,  
London, S.W.

The noted **T.L.B.** Facings and Rubber  
Bricks were used for the above important public works.

THOMAS LAWRENCE & SONS, BRACKNELL, BERKS.



SHIPLEY.

installation of electric light at the Central school, Shipley, Yorks.  
A. JACKSON & Co., 7 Standish Street, Burnley (accepted).

SUTTON FORD.

erection of a bridge at Sutton Ford, near Rochford, Essex.  
Mr. PERCY J. SHELDON, surveyor.  
arris & Rowe . . . . . £2,500 0 0  
Rayner . . . . . 2,427 0 0  
E. Moss . . . . . 2,409 16 0  
Smith & Son . . . . . 2,195 0 0  
Dinnie . . . . . 2,167 4 7  
Dupont & Co. . . . . 2,150 0 0  
PARMENTER, Braintree (accepted) . . . . . 2,148 0 0

SWINDON.

erecting a bowling alley at the New Century club, Bright Street, Gorse Hill. Messrs. WILLIAM DREW & SONS, architects, Regent Circus, Swindon.  
Blackwell . . . . . £318 0 0  
Jewelling & Hucksion . . . . . 289 0 0  
Williams . . . . . 251 0 0  
LAY, Swindon (accepted) . . . . . 240 18 6  
additions and alterations to the Moravian church, Dixon Street. Mr. R. J. BESWICK, architect, Swindon.  
YDEMAN BROS. (accepted) . . . . . £565 0 0  
addition to premises, Regent Street. Mr. R. J. BESWICK, architect, 35 Regent Street, Swindon.  
arker & Sons . . . . . £716 8 0  
ydeman Bros. . . . . 670 0 0  
G Norman . . . . . 623 10 0  
Colborne . . . . . 610 0 0  
ackman Bros. . . . . 545 0 0  
J. Colborne . . . . . 527 10 0  
Williams . . . . . 499 0 0  
J Leighfield . . . . . 488 0 0  
CHAMBERS, Swindon (accepted) . . . . . 475 0 0

WALES.

For erection of a farmhouse and farm buildings at South Neeston, in the parish of Herbranston, Pembroke. Mr. D. EDWARD THOMAS, surveyor, Victoria Place, Haverford-west.  
T. Davies & Son and R. Williams . . . . . £690 0 0  
F. Couzens . . . . . 660 0 0  
COLE & SONS, Milford Haven (accepted) . . . . . 597 0 0  
For construction of reservoirs, filter-beds and other works in connection therewith, and laying of about 4½ miles of 6-inch cast-iron pipes, together with valves, hydrants and other fittings, at Prestatyn. Messrs. BELOE & PRIEST, engineers, 13 Harrington Street, Liverpool.  
Rowell & Son . . . . . £7,961 18 7  
G. M. Callender & Co. . . . . 6,062 0 0  
J. S. Dawson . . . . . 5,978 5 1  
Hughes & Rowland . . . . . 5,580 0 0  
W. Coker . . . . . 5,397 15 0  
J. Taylor . . . . . 5,250 0 0  
C. E. CARDEN, Penkridge (accepted) . . . . . 4,647 13 7

WEST BROMWICH.

For supply of wrought-iron gas and steam tubes and fittings.  
VICTORIA TUBE Co, LTD, Great Bridge, Tipton (accepted).

WINDSOR.

For erection of stabling, stores and workshops at the Corporation storeyard, Alma Road. Mr. E. A. STICKLAND, borough surveyor.  
A. H. Reavell . . . . . £3,592 0 0  
Butcher & Hendry . . . . . 3,256 0 0  
HOLLIS & SONS, Windsor (accepted) . . . . . 3,197 0 0

WORTHING.

For taking-down and setting-back an existing wall in Tarring Road, and erecting a new boundary wall between Howard Street and Shakespeare Road, abutting on St. Matthew's Church.  
F. Sandell & Sons . . . . . £130 0 0  
J. A. East . . . . . 127 14 0  
A. Crouch . . . . . 112 0 0  
W. W. Sandell . . . . . 108 11 0  
J. Blaker & Son . . . . . 108 10 0  
A. CRANE (accepted) . . . . . 94 7 3

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"OOLITE, PORTLAND."  
"OOLITE, LIVERPOOL."



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SECTION, ALL KINDS OF SECURITIES, BONDS, DEEDS, PLATE, JEWELS, MANUSCRIPTS, and  
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Special arrangements made for Storing Property during  
owner's temporary absence.  
DEPOSIT BANK.—Money received on deposit for short  
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obtained from E. Vincent Evans, Manager and Secretary, 63-64 Chancery Lane, London, W.C.



**SAFES, STRONG-ROOMS, PARTY-WALLS, DOORS.**

MANY attempts have been made to express the functions of government by comparison with a single object. It is no exaggeration to say that nothing is so well adapted for that purpose as an efficient safe. For what is the purpose of the most elaborate government? Is it more or less than the providing of security in many forms for all who come under its control? Armies and navies, courts of law, endless varieties of administration, what are they all but means of protection analogous to the steel enclosure which the prudent man obtains for his gold, securities and other wealth? Theorists may claim much for a "cheap defence of nations," but the world does not care for such safeguards, for even a philosopher like Diogenes would wish to have his tub, or rather his wine jar, preserved for his special use. One of the consequences of the relation to which we have alluded is that foreign manufacturers, who give more importance to expression than we do, endeavour to suggest that their safes resemble fortresses. There is a great array of bars, locks and protuberances, as if a siege were necessary before access could be gained to the interior. Love it used to be said laughed at locksmiths, and the modern scientific thief has a contempt for the structures which he knows are not obstacles to his skill, although they may give confidence to their owners.

In an age of shams there is nothing more illusory and more dangerous than the sham safe. Ignorant people cannot help confounding a thing that is called "safe" with security. They are attracted by external appearances, and they buy receptacles without inquiring who made them or where they came from. We are not exaggerating when we say there is an abundance of those metal cupboards which are little better if considered as protections than ordinary biscuit boxes of tin. They may long remain in houses, shops, or offices in which nothing occurs to test their powers of resistance, and it is, therefore, taken for granted that they are safeguards of property in which the fullest trust can be placed. If people would only reflect that in many cases safes from their weakness become a temptation to thieves, they would soon realise that one of the worst forms of extravagance is to invest money in buying safes for which there is no guarantee in the reputation of the makers. It is generally known that dealers in watches are able out of one genuine example by a known maker to produce two or three which are accepted by simpletons as valuable, and it cannot be concealed that name plates on imitations in thin metal are

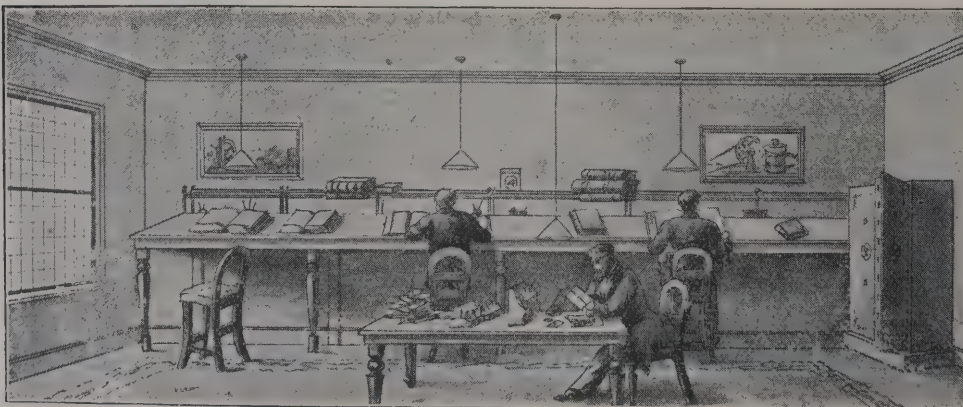
employed for the purpose of beguiling unwary purchasers of safes and strong boxes. The cheap safe may, indeed, be described in Shakespeare's words as "the seeming truth which cunning times puts on to entrap the wisest."

Messrs. Hobbs, Hart & Co., Ltd., have issued a new catalogue which will be found especially useful to those who living at a distance are unable to visit the showrooms at Cheapside or the works at Islington. In the pages of the catalogue the principles of the business as well as its results are explained. There are, for example, five "qualities" or varieties of safes which have definite characteristics. The demand for them has been so extensive, Messrs. Hobbs, Hart & Co. are able to arrange classes corresponding to requirements and to keep to the order from day to day. As is universally known, each safe has its own body plates, and in consequence there are no joints which can be operated on. Backs, sides and door-jambes are bent out to a single plate varying in thickness according to the class. The doors have also their peculiarities, and the locks may either be "Protectors" or "Violence," or both combined, in the same safe. The "Protector" locks are recognised as a special feature which is unpickable, for an offer of 300 guineas with unlimited time to make the experiment has failed to secure an opening. The bolt mechanism is invulnerable against forcing wedge. The curved clutch bolts are also a specialty. All the features have been repeatedly tested in fires and by burglars and have come out unscathed from all attacks. In the case of a safe in a London church a charge of gunpowder was exploded in a hole drilled through the safe, but although it was injured an entrance was not accomplished.

The unconquerable efficiency of the safes is suggested when we find that Her late Majesty employed them for the custody of the gold and silver plate and jewels, and His Majesty the King also confides in them. They are used for the Bank of England, the London and Westminster Bank, the London and County Bank, the Birkbeck Bank, Messrs. Coutts & Co., Messrs. Cox & Co., Messrs. Child & Co., Messrs. Cunliffe Brooks & Co., Messrs. Drummonds, Messrs. N. M. Rothschild & Sons, and in fact most of the principal banks in London, in Scottish banks and Irish banks, and in several foreign and Colonial banks. It has been necessary to execute a special variety of sectional safes for use in places where, owing to the difficulties of transport, the parts have to be so packed as to enable them to be carried by mules or camels. There are also safes with vertical sliding doors to be introduced in banks and offices where there is not sufficient floor space to allow the

**WILSON'S PATENT "MULTILUX" WINDOWS**

The above illustrates an office where the light coming from the sky falls on to the floor and is absorbed, thus leaving the back part of the room dark. The illustration below shows the same room with WILSON'S PATENT MULTILUX WINDOW fixed. This refracts the rays of light and throws them horizontally, thus preventing them falling on to the floor, and lighting up the whole room.

**PRICE**

5/- per foot super.

Wilson's Patent  
"SAFETY" Pavement  
Lights prevent slipping

Wilson's "DIOPTRI"  
Pavement Lights are  
an improvement on  
the semi-prism at the  
same price.

COLUMNS, STANCHIONS,  
GIRDERS, AND ALL ARCHITECTURAL CASTINGS.

**WILSON & CO.**

24 HARRISON STREET  
GRAY'S INN ROAD,  
LONDON, E.C.



## ILLUSTRATIONS.

DUNTREATH CASTLE, STRATHBLANE, N.B.

THE DINING-ROOM, HARTPURY, GLOUCESTERSHIRE.

ESSON HOUSE, FAR HEADINGLEY, LEEDS: DOOR IN SALOON.

MACLAREN MEMORIAL CHURCH, LARBERT, N.B.

LECTRICAL LIGHTING STATION, VICTORIA EMBANKMENT.

nary doors to open. "Safe deposits" are suggestive of dense buildings. They are furnished on the largest scale Messrs. Hobbs & Co., but there is also a patent "safe deposit" of smaller dimensions which contains thirty or more safes, and which can be let by bankers to their clients. This is an admirable arrangement, which must be of immense advantage to many of the public. The precaution is to have two distinct lockings, and a third can also be added. The safe deposit "integers" are fitted with a tinment box, so that the contents can be taken as a whole to the writing-room or elsewhere. The strong-room doors are manufactured of several kinds. The company also produce gates and frames which allow of ventilation. Another liability to safety is a steel vestibule lining so that the door frame cannot be removed by violence. It is hard to see what force possessed by individuals could overcome the bankers' strong-room doors which are prepared for extreme risks. Attention should also be made of emergency or manhole doors, which are intended to provide a ready means of access to the strong-room in the event of its keys by any mishap being lost or damaged. One illustration shows a special strong-room which would afford adequate security against the attack of burglars. It is fitted with a steel lining throughout, with the strong-room door, takes the form of a self-contained safe of the size and shape of the brick rooms. As it is usually placed in the basement, over the top are steel joists of cement concrete, the sides are of blue Staffordshire bricks, and beneath is a bed of cement concrete with a steel grille. Ventilation has not been neglected, for a patent double-coned ventilator can be fixed inside the strong-room. There are also elevated lintels and tubular adjustable shelving. The company also make party-wall doors or shields to meet the requirements of the Building Acts in town and country. The sliding

doors are so fitted with clutches as to prevent the doors being pushed back by falling girders or columns; at the same time there is no danger of cutting off the escape of persons who might be engaged in another portion of the building.

The works of the company are at the side of the canal in Arlington Street, Islington. In them organisation prevails, and the heaviest safe or an ornamental jewel casket for a lady can be accomplished with readiness. In the works not only the requirements of banks, jewel merchants, solicitors and other people throughout the world are realised, but architects' specifications can be carried out to any extent. With such a business plant and machinery on a large scale and of the most expensive varieties must be available, and the company therefore may be regarded as steel workers who have to be occupied in preparing forms which must attain their end as much by their perfection as by their strength. The delicacy which has to be found in locks made up of a multiplicity of parts is also demanded in the fitting of the hinges, bolts, clutches and other parts of the mechanism of safes and strong doors, for they must be mathematically accurate in all their parts. The spectacles presented in the different parts of the works are therefore diverse. We have burly vulcans whose exertions recall the poet's lines:—

The roof-ribs swarth, the candent hearth, the ruddy lurid row  
Of smiths that stand, an ardent band, like men before the foe.  
"Hurrah!" the jetted lightnings are hissing high and low,  
A hailing fount of fire is struck at every squashing blow,  
The leathern mail rebounds the hail, the rattling cinders strow  
The ground around: at every bound the sweltering fountains flow,  
And thick and loud the swinking crowd at every stroke pant, "Ho!"

Men no less vigorous have to operate on the massive plates in their cold state, and the process is followed until it is completed by fitters, under whose hands the mighty doors revolve easily on their hinges. The works not only typify that security which has made England what it is, and through which people in all lands entrust their dearest possessions to the guardianship of this country, and which enables philanthropists like the late Cecil Rhodes to confide their millions to English hands, knowing that their wishes will be carried out to the letter centuries after the donors have passed away, but the works likewise aid in affording that security, for in them are constructed the strong-rooms which thieves cannot break through, and to which documents of the highest importance are entrusted without any misgiving of their safety.

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Architects' Plans, &c.

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Council Chamber at Hemel Hempstead, fitted and furnished by HEWETSONS.



## A RHODESIAN BRICK AND TILE MAKING FACTORY.

As in all new countries the production of bricks is almost as much an elemental necessity as the procuring of foodstuffs. The cost of importing such weighty articles into the up-country districts being practically prohibitive if buildings are to be constructed of something stronger than wood, bricks must be made, or the buildings constructed of stone. To construct them of bricks is unquestionably the more economical, hence the growth of the brickmaking industry in all the inland districts of South Africa. Messrs Taylor, Jarvis & Short, of Salisbury, Rhodesia, have now launched into the enterprise of brick and tile making, and recently took delivery of some 55 tons of brick and tile making machinery, supplied some three years ago by Messrs Robey & Co, Ltd, and Messrs. J. Whitehead & Co, Ltd, and lying for the past two and a half years at Beira. As testimony to the expert packing which English firms of repute adopt, despite its long sojourn on the coast, the plant when unpacked was found to be in as good condition as when it left the makers' workshops.

The very complete plant comprises a 20 horse-power compound Robey engine; a loco-pattern boiler, with extended fire-box for wood fuel; a Whitehead "Eureka" brickmaking machine, turning out 20,000 bricks per day. It is equipped with the Bennet & Sayer patent iron dies, and performs the three processes of grinding, pugging and moulding. There are also a tile and pipe machine, making pipes from 3 inches to 12 inches diameter, and tiles up to 14 inches square, of any pattern; a power mortar pan, with steel-faced rollers; a saw-bench, a narrow-gauge tramway with twelve trucks, worked by an endless steel cable, &c. Dick's 7-ply patent belting is used for the gearing. As previously pointed out in cases elsewhere, there is undoubtedly money in such a venture, and this is particularly the case at Buluwayo and in adjacent districts, where the initial demands for civil and industrial purposes is especially extensive, according to the *British & South African Export Gazette*.

A 20 horse-power compound engine from the works of Messrs. Robey & Co., Ltd., has been installed at the new brick and tile making works of Messrs. Taylor, Jarvis & Short, Salisbury, Rhodesia.

The new engine equipment of the Buluwayo Electric Lighting Works was supplied by Messrs Robey & Co., Ltd

## NEW CATALOGUES.

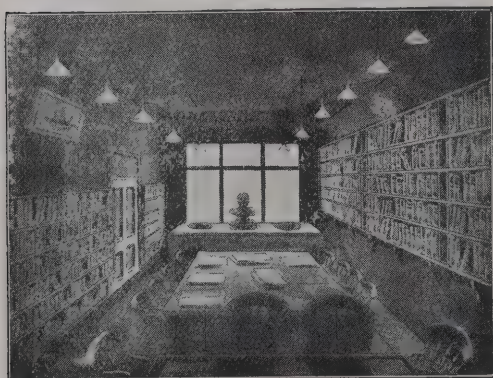
A USEFUL pamphlet just being sent out by Messrs. Mather & Platt, of Salford Ironworks, Manchester, is devoted to a detailed description of their new patent high-power centrifugal pump, which is an improved patented type of circulating pump, in which the water enters the revolving wheel axially, and, in the case of single pumps, symmetrically on each side of the wheel, so that axial thrust is eliminated; the water then traverses the curved internal passages between the vanes, and is discharged tangentially at the periphery into a stationary guide ring of special construction, this conveying it to the annular chamber in the body of the pump, where the velocity head imparted to the water by the wheel is converted into pressure head. From this chamber the water is finally discharged into the pipe lines, or, if the pump be a multiple one, into the second and subsequent chambers. A special feature of this pump is the provision of the stationary guide ring mentioned above; this is fixed concentric with the revolving vanes, and it is claimed that, owing to its design, it enables the conversion of velocity into pressure head to be carried out in a much more perfect manner than is possible in the case of any other centrifugal pump; thus not only is the possible height of lift very greatly increased, but also the efficiency of the pump is materially improved. Another point of interest is that in no part of these pumps is the water forced to undergo a sudden change of direction, or to meet with a sudden difference of cross section in the passages. The whole internal design is carried out in suitable curves and channels of gradually increasing area, so that the liquid dealt with is never restricted or opposed in its course through the pump. It may at once be conceded that there is a wide field for these pumps in all classes of hydraulic work. Their chief features compared with the reciprocating pump are silent running and absence of wear and tear.

AN eminently practical and businesslike catalogue of sixty-four 4to illustrated pages, descriptive of their carefully and artistically designed and highly-finished brasswork for public and private buildings emanates from the old-established firm of Tonks, Ltd, Birmingham. These comprise, as it is hardly necessary to state, every possible description of plain and ornamental door and window furniture, casement stays and fasteners, and espagnolette bolts, numerous kinds of hooks for cloakrooms, restaurants, &c, polished brass counter railings, church furniture, self-fitting stair treads and nosings, lightning conductors, &c. The illustrations throughout give ample

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ESTABLISHED 1837.



Interior Lighted by ordinary Plate Glas .

Makers of Ground, Smoothed, Polished, Silvered, Bevelled, Brilliant Cut, and Bent Plate Glass; Rough Rolled and Rough Cast Plate Glass; also of Rough and Polished Prismatic Glass, &c., &c.

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Extracts from Testimonials received:

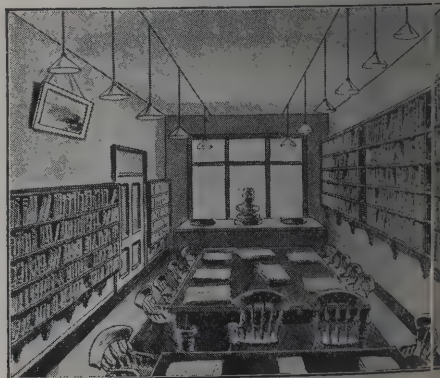
"The 'Refrax' Glass is a GREAT IMPROVEMENT."

"Gives EVERY SATISFACTION."

"The Glass I am perfectly satisfied with; GREAT SUCCESS."

"Compared with Polished Plate Glass 'Refrax' gives TWICE AS MUCH LIGHT for EQUAL COST."

Sold by all Dealers.



Same Interior lighted by "Refrax" Glass.

# BEDFORD LEMERE & CO.

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DON'T USE IN FROSTY WEATHER. ESTABLISHED 1811.



f, were such evidence necessary, that the firm have at their  
mand a staff of designers whose abilities are equal to any  
ble demands which could be made on them, each article  
ing the true artistic feeling as well as the high finish on  
h Messrs. Tonks have based and still maintain their high  
eration.

ESSRS. JAMES ALLAN, SEN., & SON, of Elmbank  
dry, Glasgow, in issuing their new catalogue have  
ted a practical method in bringing it out in sections, each  
hich is of handy size, is neatly bound and fully illustrated.  
f these books is devoted to each of the following sec-  
:-Baths, lavatories and bath-room fittings and acces-  
s, Stable, cowhouse and piggery fittings, Stairs, balus-  
s, &c., Verandahs, bandstands and shelters, Rain-water  
oil goods and Railings, gates, terminals, &c.

HE Leicester Laundry Engineering Company, Great  
al Street, Leicester, have prepared their new catalogue  
ndry machinery, in which are illustrated all their various  
ines for washing, drying, starching, ironing, &c., as well  
e engines used in operating them.

TRADE NOTES.

IRS. ARCHIBALD SMITH & STEVENS ask us to state  
the fire which recently occurred at their premises, Janus  
cs, Queen's Road, Battersea, was really only a very slight  
e, indeed, and never affected any portion of the building.  
ally occurred on some waste ground at the back, and of  
e in no wise affects the firm's ability to execute all orders  
sted to them with their customary despatch.

HE second temporary hospital for the Corporation of South-  
or is being warmed and ventilated by means of Shorlands'  
at double-fronted Manchester stoves by Messrs. E. H.  
and & Brother, of Manchester.

HE ventilation of the new Memorial Cottage Hospital,  
ndrews, now in course of erection, is being carried out by  
es of Mackay's patent direct-acting ventilators, supplied by  
es. Cousland & Mackay, ventilating engineers, Glasgow  
d Manchester, the sole makers.

NEW memorial tower erected at Saltburn-by-the-Sea  
church, Yorks, to the Rev. B. Irvin, M.A., vicar of  
arn, and a new clock and chimes to the memory of the

late Queen Victoria, were dedicated on Saturday last by the  
Archbishop of York, the architects being Messrs. Clark &  
Moscrop, of Darlington, the makers of the clock and chimes  
being Messrs. Wm. Potts & Sons, clock manufacturers,  
Guildford Street, Leeds, and the builder of the tower being  
Mr. R. Harland, Whitby.

APROPOS of the restoration of the spire of St. Bride's  
Church, to which we have more than once referred, Mr.  
Fishburn, of High Wycombe, Bucks, whose patent winch is  
employed on the job, has received the following gratifying  
letter from Messrs. John Thompson & Co., the contractors :-  
Sir,—We have pleasure in stating that we have used one of  
your new patent crabs for hoisting scaffolding, &c., to the spire  
of St. Bride's Church, Fleet Street, and have found it a most  
useful tool, effecting a continual saving of time and labour as  
compared with the old-fashioned crab.—Yours faithfully,  
(Signed) JOHN THOMPSON & Co.

Mr. Joseph Fishburn.  
While a winch supplied for the works in connection with the  
Co-operative Stores at York has elicited the subjoined not less  
satisfactory testimonial:—

April 4, 1902.  
Sir,—I beg to acknowledge the receipt of your letter  
acknowledging payment for the two winches you have fixed to  
the Stores at York for the Co-operative Society, and I am very  
pleased to bear testimony to the excellency of the materials  
and the splendid work done by the winch, the work accom-  
plished by it being eminently satisfactory and proving a  
great saving in labour; and I feel sure that there is a great  
future before it.—Yours faithfully,  
(Signed) H. BECK (Athron & Beck).  
Mr. J. Fishburn, High Wycombe, Bucks.

It appears from a report submitted by the works committee  
of the Shoreditch Borough Council that an official in the  
surveyor's department has for some years past engaged in  
drawing plans for private persons in connection with sewerage  
and drainage works undertaken by the Council. This was  
thought by the committee to be a doubtful proceeding on the  
part of the borough surveyor's department, and the Council  
have endorsed the view of the committee and resolved that the  
practice be discontinued.



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## VARIETIES.

THE Queen has forwarded 10% towards the restoration of Wymondham parish church, in Norfolk.

A NEW Congregational church, Gothic in design, which has been erected at a cost of 3,000%, was opened at Waring Green, Brighouse, on Saturday last.

MR. J. J. HENDERSON, J.P., architect, died at his residence in Tayport on Monday morning. Mr. Henderson was well known in architectural circles in Dundee, acting as hon. secretary of the Dundee Institute of Architecture.

THE New Moston Board school, built by the Manchester School Board at a cost of some 10,000%, was opened on Monday last. It is built for 400 children on an enclosure of a couple of acres.

THE foundation-stone of the new building of the Institute of Journalists in Tudor Street and Bridewell Place will be laid by Sir Edward Lawson, one of the early past-presidents of the Institute, to-morrow, April 12.

TWO memorial windows have been placed in the west end of the Royal Chapel, Windsor Great Park, by the residents in the royal demesne, to the memory of Major Prince Christian Victor, who died in South Africa during the present war. The windows represent the figures of St. Michael and St. George.

THE Twickenham District Council have adopted, by eleven votes to nine, a resolution proposed by Dr. Martindale Ward, of the Richmond Hill View Protection executive committee, that Twickenham's contribution to the purchase of Marble Hill should be increased from 3,000% to 6,000%.

A MOVEMENT is on foot for extending the town hall of Sheffield, which was opened a few years ago by Queen Victoria. The development of the tramways undertaking and the general growth of the work of the Corporation have rendered this course so necessary that the finance committee have requested the improvement committee to take the matter in hand.

A NEW Baptist chapel was opened at Walsgrave-on-Sowe on the 1st inst. It has been erected at a cost of 1,300%, is in the Italian style of architecture, and is entered by a flight of steps and through a vestibule. The size of the building is 43 feet by 28. There is a gallery at one end, a minister's vestry, a classroom and all necessary conveniences. Seats are provided for 200 persons.

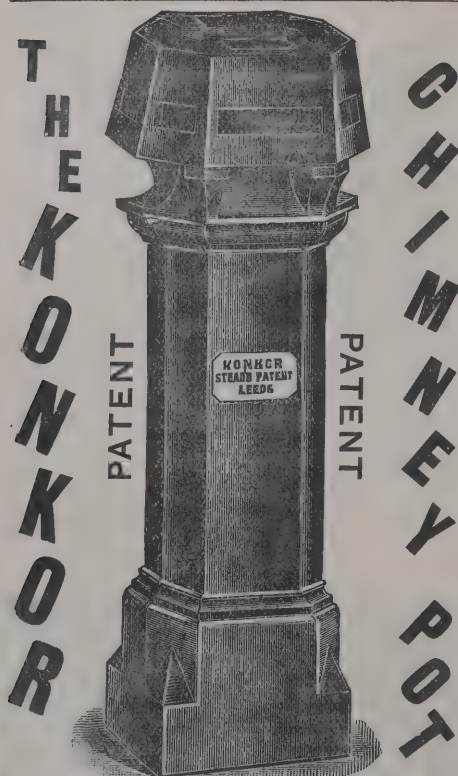
MEMORIAL-STONES of a new Wesleyan Methodist school, which is being built in the village of Astley, Lancs, have been laid. The total cost of the scheme of extension which has been decided upon, and which includes the erection of a new chapel, will be about 4,000%. The work is being carried out by Mr. James Cocker, of Walkden.

WHILE pulling-down the old vestry and other building behind the Wesleyan chapel at Barton-on-Humber to make room for extensions the workmen have made a curious discovery. Built into the wall close to the ground they came across a rat which fifty years ago, when the premises were erected, must have strayed there. It was completely petrified, doubtless owing to the action of the lime from the mortar, and is almost as hard as a stone.

THE Ecclesiastical Commissioners are the owners of Caff Street, Mitre Street and Ufford Street, between the New Canal and Webber Street, and the leases of the houses have fallen in. The Commissioners have decided to erect two and three storey buildings instead of the so-called "model" blocks of dwelling and the rents of the cottages and flats will, it is said, average from half a crown to three shillings. The cost of clearing the old area, erecting the new buildings and making the new streets is estimated at between 75,000% and 80,000%, and the scheme will take a couple of years to carry out.

THE Great Eastern Railway Company's new station at Newmarket, which is situated on the Cambridge side of the old station, and about a quarter of a mile nearer the racecourse, was opened on the 7th inst. Long platforms have been constructed, the up and down platforms being connected by means of a subway. Excellent waiting accommodation has been provided, and spacious refreshment-rooms will be found both the up and down platforms, especially designed to provide for the requirements of the race traffic. The whole of the station buildings, platforms and roadways are lighted by electricity. The approaches to the station on both sides are of very spacious character. Colonel McCalmont, M.P., has constructed new roads, which afford good facilities for reaching the new station both to and from the town and racecourse, as well as from the direction of Cheveley.

A NEW infants' school was opened at Firbright, Surrey, on the 2nd inst. Accommodation for 120 children is provided in the building, which can be divided into two rooms—one 30 feet by 20 feet, and the other 20 feet square—by a patent folding glazed partition. A schoolroom for eighty children and class



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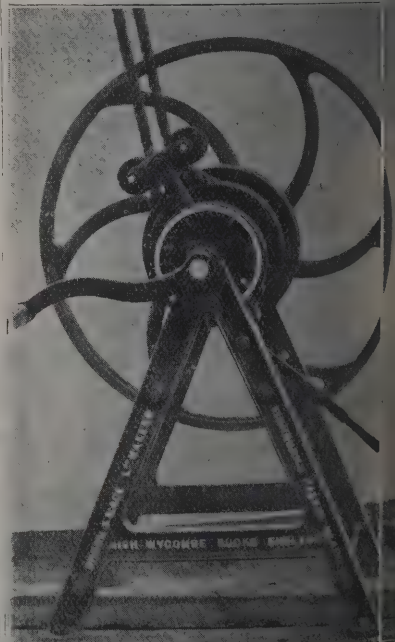
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for forty are thus formed, and the partition, whilst preventing the noise of the junior class from interfering with the other children, permits of the head teacher exercising complete supervision over the whole school. The building is well lighted and ventilated, and is warmed by open fires, which also supply a continuous current of warm air to the rooms. The floor is of wood blocks laid on concrete. The walls have a boarded dado, stained and varnished, 4 feet and above this are of best red brickwork, neatly pointed. The fireplace in the larger room is a carved stone tablet, on which is an inscription recording the fact that the land was presented to the school by the names of the members of the school board. Attached to the school are lavatories, cloak-rooms and caretaker's cupboard, and playground are the usual offices and a playshed. The site has been levelled and gravelled, and the site is enclosed by a stout fence. The designs were by Messrs. Welman & Co., architects, of Guildford.

The fourth annual general meeting of the Edinburgh Association of Ordained Surveyors was held on the 4th inst. at the rooms, 117 George Street, Edinburgh, Mr. A. Lawrie, in the chair. The Council, in submitting its third annual report, congratulated the members on the flourishing condition of the society. No alteration had taken place in the membership during the past session. At a general meeting of the society a committee was appointed to take steps towards the formation of a Students' Society. The society now shared the Edinburgh Architectural Association the rooms at George Street by an arrangement with the latter body. The funds of the society at the close of the financial year ended on 24th inst. 7d. The general examining board, in its report for the session, stated that in the forthcoming preliminary examination this month four candidates had come forward for examination and one for re-examination. Five candidates had come forward for the forthcoming final examination. The reports, on the motion of the Chairman, were adopted. It was agreed, after a vote, that the annual report of the society remain as at present, namely, 2s. 6d. The previous question was moved by Mr. Lightbody, secretary, who pointed out that the society would in the future have to face a heavier expenditure than hitherto. It was agreed that a contribution of 9s. 6d. be made to the examining board to remunerate the examiners in the final examinations held in April and October of last year. Mr. Smith was elected president for the ensuing year, and

thereupon took the chair, Mr. Fairbairn being elected vice-president, Mr. Lightbody secretary, and Mr. Johnston treasurer.

IN the United States about 620,000,000 cross ties are now laid on American railroads and 90,000,000 new ties are required annually for renewals. The amount of timber used every year for ties alone is equivalent to 3,000,000,000 feet of lumber. There are now standing nearly 7,500,000 telegraph poles. The average life of a telegraph pole is about ten years, so that nearly 750,000 new poles are required every year for renewals. These figures do not include telephone poles and the poles required on new railway lines. The total annual consumption of timber for ties and poles is equivalent to the amount of timber grown on 100,000 acres of good virgin forest. For making shoe pegs the amount of wood used in a single year is equal to the product of fully 3,500 acres of good second growth hardwood land. Four million feet of pine timber is used every year for matches, or the equivalent of the product of 400 acres of good virgin forest. Lasts and boot trees require at least 500,000 cords more. Most newspaper and packing paper is made from wood. Although this industry has been developed only within the last forty years, yet the amount of wood consumed for paper during that time has been enormous. The total annual consumption of wood for paper pulp is equivalent to over 800,000,000 board feet of timber, for which it would be necessary, were the trees all growing together, to cut some 80,000 acres of prime woods. And so it would be possible to go through the list and give figures which in every case are astonishing. About 40,000,000,000 feet of lumber a year are now being used in the States for the lumber and paper trades, and this is equivalent to the product of about 4,000,000 acres of good virgin forest, an area equal to Rhode Island and Connecticut combined; and yet this does not include the wood used for fuel, which is four and one-half times more.

## BUILDING AND BUILDERS.

THE eastern district committee of the Dunbar County Council have accepted the plans of Messrs. Sydney Mitchell & Wilson for the erection of a new hospital for the district at a cost of 5,600l.

THE town clerk of Walsall (Mr. J. R. Cooper) has received an intimation from the private secretary of Prince Christian

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fixing May 29 as the date of His Royal Highness's visit to the town to lay the foundation-stone of the new municipal buildings. The arrangements for the reception and subsequent ceremony will be carried out by a sub-committee appointed by the Town Council and presided over by the mayor (Councillor W. J. Pearman-Smith).

THE Conseil Général of the Seine has voted an important credit for the purpose of forming an avenue in prolongation of the Avenue de la Grande Armée, which will extend in a direct line of nearly thirteen miles from the Place de la Concorde, past the Monument de la Défense, as far as the centre of the Forest of St. Germain. The town of Nanterre has offered to abandon to the State the ground necessary for the formation of the principal portion of this fine avenue. The avenue will be 130 feet wide, planted with rows of trees, and will comprise a line of electric tramways, a carriage road and a cycling track.

### ELECTRIC NOTES.

ELECTRICITY is to be used in lighting the additional cells about to be built in the naval goal at Lewes.

AN English syndicate is seeking a concession for the construction of an electric railway between Brussels and Antwerp.

BRIDLINGTON Town Council have decided to engage a consulting electrical engineer to advise the Council as to the carrying out of the electric-lighting order of 1900.

AT a special meeting of the Middlesbrough Corporation electric-lighting committee held on the 2nd inst., Mr. H. M. Taylor, of the British Westinghouse Company, London, was elected electrical engineer to the Corporation at a commencing salary of 250*l.* per annum.

THE present asylum for Dorset having become inconveniently crowded, it is proposed to transfer the private patients at present accommodated there to a new building to be erected at Herrison at an estimated cost of 45,000*l.*, application to borrow which sum was made to Mr. E. A. S. Fawcett, Local Government inspector, no objection being raised.

A MEETING of the Manchester section of the Institution of Electrical Engineers was held on the 8th inst. in the New Physical Laboratory at Owens College, Manchester. Mr. A. R. Bellamy delivered an address on "Large Gas Engines for Driving Electric Generators." So many grave charges, he said, had been brought against the gas-engine that, if there

were no extenuating circumstances, the verdict would undoubtedly be banishment for life. The merits of the gas-engine were becoming better known and acknowledged every day. It might be said that English manufacturers were behind those in other countries in this respect. The manufacture of gas-engines was, comparatively speaking, a new industry, and electrical engineers would appreciate the fact that it took time to make developments. There were now, however, several makers of gas-engines producing units of 500 horse-power, and it might be said that even the 500 horse-power unit was faultless when compared with steam-engines. That might be true, but it should not be forgotten that when the gas-engine first claimed their attention about twenty years ago, it was little better than a toy, and the progress that had been made in the meantime augured well for the future. On the credit side of the gas-engine account, undoubtedly the first and most important advantage was economy in working. Gas-engines working with town gas could produce electric current at a cheaper rate than it was usually supplied even for motive-power purposes.

A SPECIAL meeting of Hamilton (N.B.) Town Council was held on the 2nd inst., to consider the reported action of the electric-lighting committee in selecting a site for the generating station, and asking that the resolution conferring on them full powers in the matter be rescinded. Provost Pitt presided. From the report of the committee it appeared that they had had before them three sites at Burnbank, belonging to Messrs. Frame, ironfounders, Beckford Street, belonging to the Hamilton Building Society, and Orchardhill, the property of Treasurer Kemp; that the committee had decided on the site in the Orchardhill district, although the engineers of the company who are to work the electric system and the burgh's consulting engineer favoured the Beckford Street site. It appeared also that a portion of the committee had after the meeting gone to the town clerk's office and had an agreement drawn up accepting Treasurer Kemp's offer in regard to Orchardhill. After the report had been read Mr. Meehan, convener of the committee, complained that this arrangement had been come to behind his back. In a long discussion, which at times was heated, the connection of Treasurer Kemp as proprietor of the Orchardhill site, and the provost as a shareholder in the building society who own the Beckford Street site, was animadverted upon. Ultimately a motion by Mr. MacHale rescinding the resolution conferring powers on the committee and leaving the whole question of the site open was carried by 8 to 5.

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# HOUSING PROBLEM IN LIVERPOOL.

United States Consul in Liverpool having sought information to housing of the poorer classes in that city has the following reply from the chairman of the housing committee of the Liverpool Corporation :—

Liverpool : April 3, 1902.

Mr. Boyle,—Referring to my letter of March 24, I have the pleasure in answering, as far as possible, the various questions put by you in your letter, dated March 10, on the subject of the housing question as it affects Liverpool. In the reply, I take the opportunity of enclosing the last annual report to dwellings, and will forward you a copy of the same which has been brought up to date. I also send you certain reports which will, I think, be useful to you. Your questions will answer in the order in which they are submitted.

It is true that Liverpool and Birmingham are the two worst cities in England, as is stated by some authorities? To this, I can only say that in my judgment Liverpool is the worst slum city in England. I understand from reports that have visited Liverpool, officially and otherwise, in connection with insanitary property, that there exist elsewhere as bad as any we have in this city.

As to the area of the slum insanitary district in Liverpool? It is difficult accurately to define the area of the insanitary district in Liverpool. There is, however, at the end of the city a district comprising about 383 acres, in which houses structurally insanitary are found in large numbers.

Many of these have, however, been already demolished, and others are in process of demolition. At the other end of the city there is a similar area of about 100 acres, in which the same remarks apply. These two areas contain the bulk of structurally insanitary houses. There are, however, other districts in the city where houses not structurally insanitary have been made insanitary by reason of overcrowding and the habits of the people.

As to how many insanitary houses there are in Liverpool, and the number of such houses demolished since the commencement of the operations? The original number of structurally insanitary houses at the time when the Corporation commenced operations is estimated to have been 22,000. Since that time, the Corporation have demolished say 8,000, and the causes, such as the necessities of trade, private enterprise, &c., have accounted for the demolition of 4,000

houses. This leaves a balance approximately of 10,000 still to be dealt with by the Corporation or by other agencies.

4. The number of people residing in structurally insanitary houses? The average is over five persons per house. Slum houses in Liverpool are generally of three rooms, although as a rule the third or upper room is very seldom used. 5. See No. 3.

6. Do the owners receive compensation? In reply to this question I may say that the Corporation of Liverpool have largely exercised the powers conferred upon them by the Liverpool Sanitary Amendment Act, 1864. Under this Act compensation is paid to owners of insanitary property which is demolished, such property being condemned on a "presentment" of the grand jury at quarter sessions upon a report of the medical officer of health that such property is insanitary and unfit for human habitation. The Corporation are also using the powers conferred upon them by Part I of the Housing of the Working Classes Act, 1890, which deals with unhealthy areas as a whole, and under this part of the Act owners of insanitary property receive compensation. Under Part 2, however, of the same Act there can be issued a closing order against any house which is in a state so dangerous or injurious to health as to be unfit for human habitation. If on receipt of the closing order the owner makes the house fit for human habitation nothing more is done, but should there be default on his part an order for demolition may issue without any claim to compensation, in case the premises are a danger to the health of the neighbourhood.

7. Does the committee recognise any legal obligation to pay compensation? I have stated above the legal powers under which the Corporation can operate, and under both the Acts to which reference has been made some compensation is in certain cases contemplated. At the same time, in assessing the amount of such compensation due regard is had to the condition of the property. I may also mention that under the local Act an owner of insanitary property has the option of retaining the site, and in this case the Corporation itself may either demolish the property (the price obtained for the old materials being a set-off) or arrange with the owner to do so himself, the Corporation paying a certain compensation in either case.

8. When the city pulls down insanitary property does the municipality become the owner? Under the local Act of 1864, in cases where the owner does not elect to retain the site the Corporation must of necessity acquire both land and buildings,



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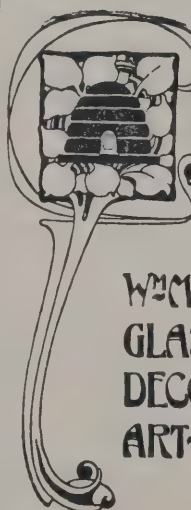
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and the same holds good under Part I of the Housing of the Working Classes Act, 1890.

9. What is done with the spaces left when the insanitary property is demolished? In some cases the land is sold by the Corporation to private individuals, subject to certain restrictions as to the kind of building to be erected, the object of which is to secure improved sanitary conditions. At least 700 houses have been erected on land so sold. In other cases the Corporation themselves have built and are building blocks of dwellings on vacant sites; 895 tenements have been erected and 1,301 tenements are in course of building or contemplated. Where, under the powers of the local Act, the owner retains the site, no buildings can subsequently be erected except with the approval of the Corporation.

As regards questions 10, 11 and 12, both the Local Government Board and the Corporation of Liverpool recognise the necessity of building houses to meet the wants of dispossessed tenants. The Local Government Board insist upon certain provision in this respect before they sanction demolition operations. In this connection it is of interest to mention that in October 1899, after a lengthy correspondence with the Local Government Board, the Corporation by resolution undertook to provide for the needs of 3,056 dispossessed persons, this number being inclusive of those persons dispossessed from houses included in the sixteenth presentment, which was made on December 19, 1899. It could not be said until recently that the Corporation had houses ready in advance to supply the wants of the dispossessed tenants, but in former years there have been large numbers of vacant (private) houses available for this purpose. The present policy is undoubtedly to have blocks of dwellings ready within convenient distance into which dispossessed tenants can go.

Alone among the municipalities of England and Scotland, Liverpool has successfully attempted to supply a type of dwelling at such a rent as those dispossessed from insanitary houses, who are the poorest of the poor, can afford to pay. The success of the Corporation in this direction is undoubted, and has recently excited the admiration of representatives of other corporations and other officials, who have candidly admitted that Liverpool in this respect stands on an altogether different footing to any other municipal authority.

13. How many municipal houses have been constructed since the municipality started on this undertaking? The total number of dwellings erected and in contemplation will be seen from the print enclosed herewith, in which the rents of the

available dwellings are also given. None of the tenants is in a position to become owners of a municipal tenement.

14. What has been up to date the total cost to the municipality of private houses, and what amount has been paid to the owners of condemned insanitary property? As to the cost of erecting the buildings has been 146,575 amount paid in respect of the demolition of insanitary property amounts to over 385,000, in addition to which the Nas scheme, which resulted in the erection of Victoria Square Juvenal Dwellings, &c., cost for land alone 67,165, the buildings being included above.

The total burden thrown on the rates as the result of combined operations amounts to only 13d. in the pound, an extremely reasonable charge in view of the great work accomplished.—I am, my dear sir, yours faithfully,

AUSTIN TAYLOR  
The Hon. James Boyle, United States Consul.

## THE GLASGOW STAND CATASTROPHE.

THE collapse of the stand at Ibrox Park, Glasgow, Saturday, was a calamity almost without precedent. *Glasgow Herald* says:—

Greater Ibrox, as the new ground is termed, was according to plans prepared by Mr. Archibald Leitch, consulting engineer, of Glasgow, who is engaged on the grounds for the Sheffield United Cricket and Football Club, Ltd., and the Derby County Football Club, Ltd. A sum of about 20,000l. has been expended in equipping the enclosure which is regarded as one of the most complete of its kind. The playing pitch is encircled by a quarter-mile cinder track for pedestrianism and cycling, the pitch and the track being surrounded by a strong barrier of wood surmounted by iron railings. Accommodation is provided for about 84,000 persons, all of whom, according to the arrangement followed here, claimed, an uninterrupted view of the field of play. The grand stand and pavilion are on the south faced on the north by covered terracing, while to the east and west are open circular terracing or stands, the latter rising to about 10 ft. and the former to about half that number. The whole of the terracing is erected on the same principle, namely, columns resting on a base of concrete, and steel beams

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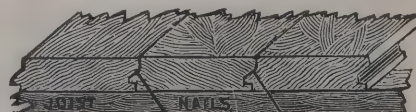
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inally. The steel beams carry wood raking beams or the top of which the treads forming the terraces are these are about 14 inches broad, with a rise of 4½ inches. ing beams are of red pine, 12 feet long, 8 inches deep ches broad. Behind the topmost tier is a fence com- corrugated iron sheets. Admission to the terracing is by stairways of varying width. In the case of the portion there are nine of these gangways, which are from all the public entrances.

west-end terracing in Ibrox Park, as seen in the quiet- Sunday afternoon, bore eloquent testimony to the scene of the previous day. That portion which l measures about 80 feet along the terracing close to r edge, and has a breadth inward of 13 feet. The extends across six of the spaces between the large iron pillars, along the tops of which steel or iron re strung all round the field. These are about 13 feet d they are arranged in rows 13 feet separate from the o the inside of the terracing. Although metal girders g them round the field, each row is connected with the the ordinary wooden beams, which support the ti or "treads" on which the spectators stand. These oring beams—some of which collapsed on Saturday and ie disaster—stretch across the sloping space from one al girder to another, a distance of 13 feet, themselves ted except by a stay from the corrugated iron railing a point 2 or 3 feet down the terracing. The beams 8 inches by 3 inches, and the planking on which the s stand 6 inches by two. When the 80 feet by 13 feet lapsed it is evident, looking at the wreckage, that the eams must all have broken about the middle. The illing on the stays attached to the corrugated iron ove pulled the railing inward to an angle of about and the woodwork, along with all those on it, must pped down among the diagonal stays erected under- the purpose of stiffening the structure. Only the nds of the supporting beams now remain in their e middles lying around in matchwood below. Many ces are covered with blood, and along with shoes are e hats and bits of gory paper and bandages, showing w awful must have been the scene immediately after lent. Right in the centre of the ground below the hich collapsed there is a corrugated iron railing run- right angles to the field, and across this some of the must have fallen. In the smashed woodwork above,

where several beams crossed, there can be seen a boot jammed between two splinters, and hanging mouth downward. The wearer had obviously been caught and held by the foot until his foot slipped out of the boot and he fell to the ground.

From the inside the scene is equally eloquent. All the stout iron rods which were erected here and there over the terracing in order to prevent the crowds from swaying to and fro are levelled, the supporting standards being broken at the planking or torn up. These are about 22 inches in diameter, of cast-iron, and were heavily bolted to the woodwork. The fact that they were totally insufficient to control the surging of the excited crowd shows the terrible pressure that must have been on them. The people nearest, in fact, must have been pretty nearly killed by being jammed hard against these railings. The slighter railing, again, which divides the terracing from the cinder track is bent flat for a distance about equal to the length of the collapsed woodwork far behind, showing how the crush must have acted all the way downward, carrying before it all the dividing railings, flattening the final lighter railing, and surging out on to the playing pitch.

### SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, April 7, Mr. Percy Griffith, president, in the chair, a paper was read on "Australian Timber Bridges and the Woods used in their Construction," by Mr. Herbert E. Bellamy, city engineer, Rockhampton, Queensland.

The author, at the outset, pointed out that bridges built entirely of timber were now seldom erected in England, but that in the colonies timber bridges were very extensively constructed. He then proceeded to discuss the life of such bridges, which, he said, was very varied, but might be put at from thirty-five to fifty-five years, according to location and other circumstances. He then proceeded to describe a timber bridge which he had recently designed and erected in Queensland. This bridge is 320 feet long and 18 feet 6 inches wide. It spans a creek 10 feet deep at high water, and which also has 20 feet of black mud below the bed. In flood times the waters rise 25 feet above the level of ordinary high-water mark. The piles, which are of ironbark timber, well creosoted, were dealt with in detail, the sizes, lengths, methods of scarfing, driving,

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tests and covering with Muntz's metal being given. The cost of driving the piles complete, including materials, labour, plant, &c., was given as 4s 6d per lineal foot. The decking and its members are of spotted gum, and the cost was stated to be 99s. per square, including all material and labour. The total weight of all the timber in the bridge as fixed is about 200 tons, whilst the weight of the ironwork fixed is 4½ tons. The total cost of the structure, including a small portion of the approach roadway, was 1,900l.

The author then described the different varieties of Australian timbers—seventeen in number—mostly used in bridge building and for other constructive purposes, specimens of all of which were exhibited. The author referred to the distribution in the colonies and the qualities, &c., of the principal trees. The strengths and sizes of the leading timbers were also given. Of different kinds of timber suitable for bridges, ironbark, spotted gum, blue gum, bloodwood, blackbutt, box, mahogany, karri and swamp mahogany were stated to be amongst the most durable. Ironbark, mahogany, blue gum, bloodwood, swamp mahogany, turpentine or peppermint, tea, she pine and cyprus pine are very durable when constantly immersed in water or in wet ground, and are therefore well adapted for piles, &c., for the foundations. Karri, which is a member of the eucalyptus family, is largely used for street paving. The author expressed the opinion that the good qualities of Australian timbers were not fully realised, otherwise they would be more extensively used both in Europe and America.

The author next described in detail the appearance of good timber, the chief qualification being slowness of growth as shown by the narrowness of the annual rings. He then elaborated the various methods of seasoning, which consist either in evaporating the sap by air-drying, or in dissolving it in water and afterwards sun-drying the timber. Artificial drying is rarely resorted to with timber for engineering purposes. The author then passed on to a consideration of the general causes of decay and the destruction of timber by worms and insects. The destructive methods adopted by the white ant and the *teredo navalis* for invading timber were explained, and the means employed for its protection against these pests were pointed out. It was stated that copper-sheathing was not permanently effectual in resisting the attacks of the *teredo*, but that creosoting, properly carried out, was the most successful of any process yet known. The preservation of timber was then considered, and the author dealt with painting, charring,

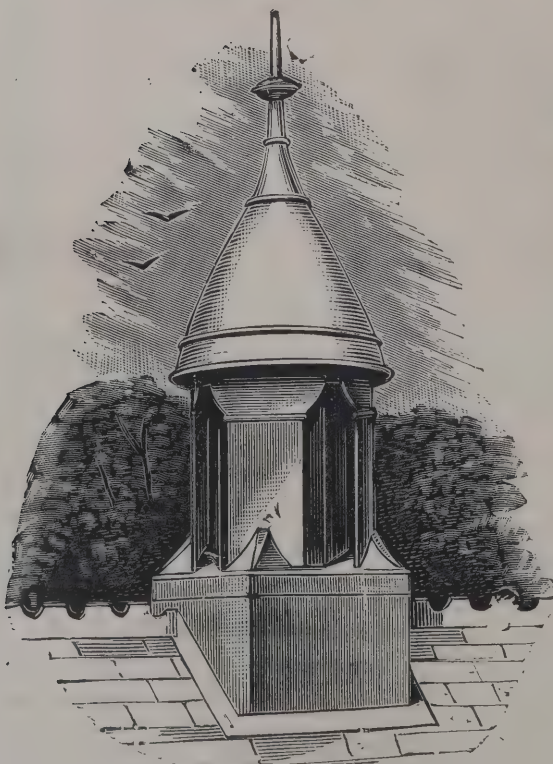
creosoting and impregnation with metallic salts. The method, however, has not in all cases given satisfactory results.

The paper was listened to by an appreciative audience, and at its close a cordial vote of thanks was given to the author.

### EXPENSES OF PAVING.

ON Monday at the North London police-court Mr. Fordham had before him the case of the Hackney Borough Council v. Mr. Eldridge, which was set down for hearing by direction of the Court. The claim of the Council was for 39l. odd in respect of the cost of paving in Riseholme Street, Hackney. Mr. Eldridge appeared for the Council; Mr. Eldridge was for the defence. The matter came before Mr. Chapman at the Court over a year ago, when he decided against the Council. The matter was stated for the opinion of the Superior Court, but was thrown out on technical grounds. The Council then rescinded its apportionment, and went through the proceedings under the Metropolitan Management Acts *de novo*. In due time the matter again came before this court on a new summons, and on October 26 Mr. Fordham was asked to hear the case, but declined to do so, holding that the matter was *res judicata*. He granted the defendant 14 guineas costs. The Council then applied to the High Court for a *mandamus* compelling the Council to hear the case, which was granted. Mr. Eldridge then applied for a *mandamus* compelling the Council to pave Riseholme Street, which was a portion of an ancient thoroughfare known as Wick Lane, which was a thoroughfare connecting Hackney with Old Ford. After the opening of Victoria Road in 1848 the Commissioners of Woods and Forests came to an arrangement by which certain Crown lands were built upon, and the character of the neighbourhood was altered. Wick Road and Cadogan Terrace were at either end of Wick Lane, were paved at the public expense, but Wick Lane itself, which afterwards became Riseholme Street, was not touched. At that time there was a market garden on one side and day buildings on the other. After 1863 houses were built on the market garden, and the thoroughfare became a street, intended, within the meaning of both the Acts of 1855 and 1863. Mr. Eldridge argued that the thoroughfare was a street in 1850, and then repaired by the old Highway Board, but Mr. Fordham said that he could not hold that a council

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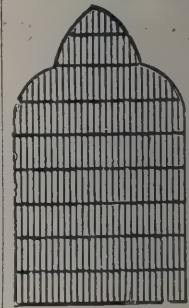
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in buildings on one side and a market garden on the other. When the houses were built on the market street, it became a street, and a new street within the of the Metropolis Management Acts. He should make an order for the amount claimed, with 5% costs. Mr. Beven then asked that the 14% costs given on occasion should be refunded, but Mr. Fordham said that the case came there through the *laches* of the complainant, and would make no order. Mr. Beven said that he was then to argue the case as he had done now, and an order would be done if the defendant were allowed to keep the defendant had had two sets of costs. Mr. Fordham refused to alter his decision.

## CORK EXHIBITION.

arrangements for the Cork Exhibition, which is to open on a fine day, says the *Irish Times*, and already the vicinity is quite unrecognisable as its old self, with its many of halls, pavilions, bandstands and artistically planned pleasure grounds. The clang of ironwork and the hammer on woodwork are to be heard along the river day and night. Weekly—almost daily—new wonders are being added. Cupolas, minarets and ornamental designs shoot up from the Corkonian rejoice that he belongs to a city which has the enterprise to originate, the zeal and grit to push through all deterrents, and the skilled hands to bring to such an imposing manifestation as this. He has, of his own—and this, too, is no less a source of pride—that he was helped incalculably by the possession of the site. Happy, indeed, was that choice, and the wonder at the charms of the Mardyke and the Sunday's Well river have not ere this been exploited in some such scheme. The Exhibition grounds and buildings lie in the quarters of a mile of some of the loveliest river banks to be commanded anywhere. With the incomparable view on the one side and the unsurpassable Lee on the other, the Exhibition is, indeed, laid in a bed of loveliness. Under, then, if Cork enthusiasts have been known to visitors from other cities with the radiant query, "Is it not excitement with you about the Cork Exhibition?" the present state of the works, it may be said briefly the degree of preparedness is sufficient to show that the Exhibition will be the most spacious and imposing that has

ever been held in Ireland. The Industrial and Machinery Halls, the Concert Hall, the Agricultural Buildings, the Refreshment House, the Art Gallery and the various pavilions all constitute an impressive and bewildering group, looming up, as they do, in the midst of tall trees and riverside foliage. The length of the riverside is 1,133 yards, and the average breadth of the grounds is 500 feet. The most imposing building in the group is the Concert Hall, which towers above all others and is conspicuous also by its elegance of design. The style of architecture is Spanish Renaissance, and each of the four corners has a handsome square-shaped tower. It will give accommodation to an audience of some 2,200 people, and the big platform has seating accommodation for about 300 performers.

A general idea of the lie of the Exhibition works may be briefly conveyed. Presumably, few visitors to Cork have failed to familiarise themselves with the historic Mardyke. This was laid out as a private avenue more than a century ago by a Dutch settler in Cork who had attained considerable wealth, and at its head, furthest from the city, is the mansion which for many years served as the residence of the judges when on assize. During the last century one side of the Mardyke was largely built upon, but the other side—between the Mardyke and the river—has until the present moment escaped the inroads of the builder, save for the few residences set in spacious gardens which have been there as long as the present generation of Corkonians can remember. Otherwise the land has lain in meadow and pleasure gardens, and one portion has served for the uses of a cricket club and a lawn tennis club. It is on this exquisite site that the Exhibition buildings have been erected and its grounds and landscape gardens laid out. The main group of buildings—the Concert Hall, the Machinery Hall and the Industrial Hall—lies along the Mardyke, in the order named, as you go from the city, beginning slightly above the cricket ground and reaching as far as the "Ferry Walk." The Ferry Walk splits the grounds into two sections, and beyond it are the considerable pile reserved for the Department of Agriculture and Technical Instruction. The department have also a considerable section adjoining the Industrial Hall. The larger buildings of the Exhibition run along the Mardyke, and the riverside portion of the grounds is more reserved for scenic purposes, with an artistically-fashioned pavilion, bungalow or kiosk judiciously bestowed here and there for the accommodation of other features, thus also yielding extra elements of charm to the riverside picture. Beyond the Ferry

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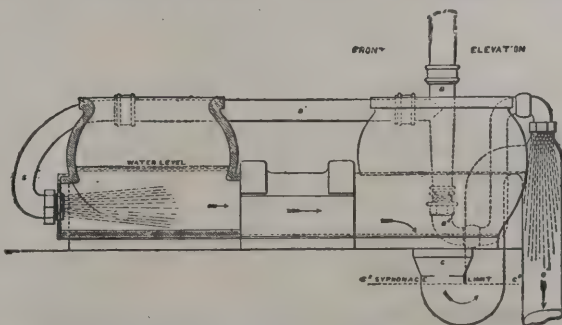
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Walk and on the riverside of the department's buildings is a most elaborate switchback railway, and near it, on the city side of the Ferry Walk, a vast "water-chute" with a dizzy and exhilarating descent into the fair Lee itself. Just about here the river winds gracefully by skirting foliage, and the terraced charms of Sunday's Well at the other side look down smilingly on the fair scene. Rhododendrons grow liberally just about here, and in their season of bloom the flowers lap and kiss the water most delightfully. Needless to say, these natural features have been held sacred in laying out the grounds. There is preserved throughout the whole plan a thorough artistic balance of the useful and the decorative—no obtrusion of bulk where it should not be, and a very admirable economising of space throughout.

The Industrial Hall is of great extent, and already stalls are being erected and put in position. Representatives of various countries are to be seen hovering about—here a dusky baggy-trousered Turk with fez cap, here a fair-haired German, here an animated Frenchman and yonder a knot of active, athletic niggers, all imported as a kind of preliminary to the burst of splendour that is to dazzle on us on May 1. The exhibits will be representative of every branch of trade and manufacture in the British Isles—and France, Germany, the United States, Japan, Russia, Turkey, Egypt and Persia are also sending noteworthy specimens of their produce and manufacture. There are a large number of arcades in this Industrial Hall, and it is remarkable that the applications for space in this as in the other sections of the Exhibition largely exceeded the area available. The entrance to the Industrial Hall is surmounted by a handsome dome, and the portico is light and graceful. The total area of the building is 150,000 feet. The Machinery Hall is also a very formidable looking structure, lying adjacent to the Industrial Hall. Of the three larger buildings named the Concert Hall is in the most backward state at present, the front being as yet only scantily filled in. However, the workmen are now such experts in dealing with the ironwork and plaster that no apprehension is entertained as to its being ready for the opening ceremony. All round the place the hum and bustle of earnest work is to be heard, and the various sets of operatives are most capably directed.

A feature of the Exhibition will be its elaborate walks and pleasure gardens. This work has been entrusted to most efficient hands, and already the outlines of the charmingly artistic scheme strike the eye. In the grounds and on the river bank is located a very pretty and spacious restaurant.

This has now been completed, and, with its trim veranda and shining paint, it looks a charming object in the park. Then there is a temperance restaurant, very artistic and also, three tea-houses, and a "Cave of the Winds" and "Turvey House"—these latter affording a suggestion of lighter and merry-making features of the Exhibition. The three band stands are conveniently placed through the grounds. The Turkish Pavilion and the Canadian Pavilion already pose large on the scene.

The section of the Department of Agriculture and Technical Instruction is being pushed on vigorously. To-day the President of the Department, Mr. Horace Plunket, secretary, Mr. Gill, and Mr. Coyne and Mr. W. T. Macarone were on the site actively at work arranging matters in detail. The exhibits will include displays of work from various technical schools in the country, and in England, Scotland and elsewhere. A section will also be devoted to large maps and statistical diagrams. Fisheries, too, will have a special representation, and raw materials, minerals, stone &c. will be adequately provided for. Working machinery, steam looms, and the output of the smaller Irish cottage industries will, of course, be suitably represented, the educational value of the exhibits being well held in view. The Department has taken 50,000 square feet of the Industrial Hall, and it is in this section that the Industries Section of their work will be illustrated. The other and more spacious area reserved for the north of the Ferry Walk will be devoted to more scientific and agricultural exhibits.

The Fine Art Gallery should prove one of the very attractive features of the Exhibition. The committee entrusted the duty of securing pictures on loan to Mr. S. Lucas, son of Mr. Lucas, R.A., and the results of his efforts have been most satisfactory. He went busily to work in London and elsewhere collecting high-class works of art, and it is computed that the Exhibition is open pictures of the value of 150,000. It is on view. Some very noteworthy works will be included in these, and the educational value of such a fine collection cannot fail to be appreciated.

The committee have been fortunate enough to secure for use—on exhibition—of practically all the machinery necessary for lighting and motive purposes. Powerful engines have been supplied for this purpose by Messrs. Ruston & Procter, Messrs. Robey, of Lincoln; Messrs. Greenwood & Batley, of Leeds; Messrs. Mather & Platt, of Manchester; the Thames Iron Works, and Messrs. Tinker, Shenton & Co., Hyde, Manchester.

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# The Architect.

## THE WEEK.

IF the distribution of the late CECIL RHODES'S bountiful contribution towards education were left to his trustees untrammelled by stringent conditions, there is little doubt that University College, London, would from its merits have received a large proportion, if not all of the money. In modernity it is unsurpassed in this country, and the possessors of scholarships would be better prepared for future work, especially in new regions, if they were able to pass its examinations than if they had sacrificed three or four of the best years of their lives in dawdling through the Oxford half-time system, as the ex-Professor E. RAY-LANKESTER describes the existing educational process in his university. The University of London, which is now a teaching university, has not the wealth of Oxford or Cambridge, and appeals have therefore been made for the money that is needed to equip University College for higher teaching and research. According to Lord REAY, the estimated sums may be divided as follow:—(a) 250,000*l.* for completing the college buildings, thus providing adequate accommodation for teaching and research in such important departments as modern languages, chemistry in all its branches, geology, physiology, botany, engineering in all its branches, advanced medical studies, &c.; (b) an annual income of 6,000*l.* a year, or a capital sum of 200,000*l.*, for departmental expenses, including maintenance of laboratories, libraries, &c.; (c) a yearly sum of 20,000*l.*, or a capital sum of 700,000*l.*, for the endowment of existing endowed chairs, and for the foundation of additional professorships and lectureships. A comprehensive statement of the needs of University College in all departments has been published, and should receive attention from those who take an interest in higher education. The Department of the Fine Arts is described as already well equipped and fairly endowed, but it is overcrowded, and needs more space for the development of special departments such as sculpture and etching. Space for these can be found in the north wing, when the extensions proposed have been made. The gallery of casts required for the archæological school would be available also for the fine-art students. Endowments are needed for a teacher of sculpture and for a lectureship in the history of art. For each of these a sum of 150*l.* a year would suffice, so that the total additional endowment required by the department is 300*l.* a year, equivalent to a capital sum of 10,000*l.*

WE have repeatedly pointed out the risks which architects, engineers and contractors accept when they make arrangements with corporations and other local bodies without taking the precaution to have the agreements stamped with the common seal in each case. There is so much confidence in a public authority the individual security is neglected. Last week another instance of what we may call the fatality came before the Courts. Mr. LAWFORD, a civil engineer, who is known in connection with drainage work, sought to recover 169*l.* 14*s.*, remuneration for preparing a report and plans for a scheme of sewerage which the Billericay Rural District Council were about to undertake. The Local Government Board held an inquiry and approved of the plans and estimates. Tenders were sent in, but one was not accepted. It was not denied by the defendants that Mr. LAWFORD'S work was duly performed, or, in other words, there was no defence except the fact that as the common seal was not affixed to the agreement, it was therefore of no value. It is always a disagreeable duty for a judge to be compelled to give a decision when he knows that by it gross injustice must be done to a plaintiff. But so long as the judgment which was given by Lord DENMAN in *CHURCH v. Imperial Gas Company* is unreversed there is only one course open, and that is to say that an agreement is illegal which is without a common seal. Lord DENMAN'S words should be remembered as a warning by all who have business with corporations of all kinds, for he said:—The general rule of law is that a corporation contracts

under its common seal; as a general rule it is only in that way that a corporation can express its will or do any act. That general rule, however, has from the earliest traceable periods been subject to exceptions, the decisions as to which furnish the principle on which they have been established, and are instances illustrating its application, but are not to be taken as so prescribing in terms the exact limit that a merely circumstantial difference is to exclude from the exception. This principle appears to be convenience amounting almost to necessity. Wherever to hold the rule applicable would occasion very great inconvenience, or tend to defeat the very object for which the corporation was created, the exception has prevailed; hence the retainer by parole of an inferior servant, the doing of acts very frequently recurring or too insignificant to be worth the trouble of affixing the common seal, are established exceptions; on the same principle stands the power of accepting bills of exchange and issuing promissory notes by companies incorporated for the purposes of trade, with the rights and liabilities consequent thereon." In *HUNT v. Wimbledon Local Board* the architect's plans were utilised, but although the Board had benefited by them the claim for payment was rejected on the ground of informality. How such a defence can be set up by an English authority is beyond comprehension, but the fact remains that payment can be successfully evaded by the absence of a seal.

WHEN RAILTON'S column in Trafalgar Square was surmounted by the statue of NELSON, a sailor exclaimed that the Admiral was mastheaded, which in his eyes was a crime worse than any mutiny. The column was not the best kind of memorial to have adopted out of those available in the competition, but it has now become a landmark which no Londoner would care to see removed. The plans of the Charing Cross, Hammersmith and District Electric Railway and the London United Electric Railways propose the execution of works in the immediate vicinity of the memorial. The Navy League are willing to oppose the Bills in order that measures might be adopted for the safety of the column. But the League's *locus standi* is not recognised by any Parliamentary committee. The square probably belongs to the Office of Works, and on that account no hazardous tunnelling will be undertaken. At present, however, neither the Navy League nor the public have any security on the subject. The Navy League are, moreover, apprehensive that the water-level of the entire locality will also be inevitably disturbed. If the new works would put an end to the dispersion of dirty water few would regret the loss, for what is needed are fountains of much greater capacity.

THE outlay which is required to produce some trade catalogues is larger in amount than the public in general can imagine. For example, in 1899 Messrs. SHANKS & Co., LTD., of the Tubal Works, Barrhead, near Glasgow, expended 7,000*l.* on a catalogue of their latest varieties of sanitary appliances. They found that another firm in Barrhead, Messrs. SMITH & SAUNDERS, recently issued an illustrated catalogue of sanitary appliances, the drawings and designs in which, and the descriptive notes, dimensions and other letterpress were in many instances identical with or only colourably different from those in Messrs. SHANKS & Co.'s catalogue. An action was brought in the Scottish Courts to interdict the publishing and circulating of the imitation. In defence it was said that the original possessed no special information, an absurdity which denotes the lack of any valid excuse. The action was, however, settled on the following conditions, viz.:—(1) That Messrs. SMITH & SAUNDERS should take out of their catalogue a large proportion of the pages of which Messrs. SHANKS complained; (2) that they should call in all copies of the offending catalogue issued by them; and (3) that they should pay Messrs. SHANKS & Co.'s expenses as between agent and client. It is not often so much forbearance is exercised in a case of breach of copyright. But from their position as manufacturers of sanitary goods Messrs. SHANKS & Co. can afford to take the lion's part, and be generous towards adversaries.



## ENGLAND IN EGYPT.

**A**N English architect who reads Lord CROMER'S report on the finances, administration and condition of Egypt and the Soudan is likely to desire that building could be of more account in the transformation of that ancient country. The part played by engineering is the most important, and amidst so many examples which recall its ancient greatness, architecture has to be content to serve as a useful but humble auxiliary. The work which is in the course of accomplishment is a testimony to the organising power of Englishmen, and every one should desire to have the privilege of a share in what is the most remarkable example of progress in modern times. Japan has, no doubt, advanced further than Egypt, but it should be remembered there was a general desire to co-operate in the change from old ways, while in Egypt the mass of the people were indifferent, if not antagonistic, to reforms, and unhappily there were too many influential advisers whose interests were served by exciting prejudices against all English proposals.

There are, according to Lord CROMER, demands for the construction of public buildings springing up on all sides. If they are not met, it is not through want of money. The reason is the existing staff of the Public Works Department is at present insufficient, and therefore "some considerable time must elapse before all the public buildings which are required can be constructed." In an emergency of the kind recourse should be had to English architects. Why should not Englishmen gain at least as many commissions for private buildings in Egypt as are obtainable by French architects? The latter have no doubt a footing in the country, where they aid in the promotion of French interests, but their arrival was mainly owing to official needs. It may seem narrow-minded to introduce professional subjects in connection with the colossal task before Lord CROMER and his assistants, but we consider that much can be done to help them by facilitating relations, if only in business, between Englishmen and Egyptians. At the present time an Egyptian who requires modern work, no matter of what class, usually looks to France for it, for to his mind an Englishman appears only as an official or a tourist.

In 1901 the sum expended on new public buildings was £127,000, which is almost equivalent to a like amount in British money. The sum does not include the outlay on prisons, or for sanitary works, which are charged to other administrations. In Upper Egypt ten new buildings were completed, and in Lower Egypt twenty-six buildings were either completed or in progress, of which the estimated cost was 471,650*l*. The most important are:—The Egypt Museum at Cairo, the Arab Museum and Khedivial Library, the Geological Museum, the residence for the Director-General of the Antiquities Department, the Customs buildings at Alexandria, a central fire-station at Cairo, a Court of Appeal, post offices, a Government printing office, &c. Building is required in various forms. The Mecca pilgrimage has made it necessary that bakeries, storehouses, kitchens and other enclosures should be constructed at Tor. Two stone hospitals have also been erected, and the question of providing barracks for the pilgrims is also under consideration. About 25,000*l*. had to be expended on providing new prisons. A classification has been made of all the mosques in the country, showing their state of repair, and they will be gradually taken in hand as funds are available. In 1901 the sanitary condition of 1,170 village mosques was improved. Alterations and improvements in the lunatic asylum at Abbasieh have cost 21,000*l*. But, as in England, there is insufficient accommodation for the mentally afflicted, and another large asylum is much needed.

There are about 10,000 village schools in Egypt, which as a rule are kept by poor men who earn a living mainly as reciters of the Koran. The schools are often housed in ill-lighted and insanitary premises; the teachers are usually illiterate, and not infrequently blind. On such a basis it is difficult to found a system of popular education. The money that has been placed at the disposal of the Minister of Public Instruction will be applied to appointing inspectors and increasing the subventions to schools in which there is some efficiency. But Lord CROMER recognises that the provision of suitable buildings is an immediate requirement. A

sum of about 6,000*l*. has been subscribed for the construction of a technical school at Alexandria. Lord CROMER expresses his cordial satisfaction not only on account of the institution, which will arise, but as an indication that the Egyptians are beginning to take some real practical interest in the management of their own affairs. There is a technical school at Boulac which gives a sound workshop training to future mechanics, smiths, founders, joiners, decorative painters, engravers, &c. The SULTAN sent three Turks to complete their studies in the school. The Mansourah Technical School has become an industrial school for carpentry and joinery, and in that way Lord CROMER believes its sphere of usefulness will be widened. There is a School of Engineering, but the buildings are bad, and radical changes will have to be made. According to Lord CROMER, the demand for native engineers is far in excess of the supply, and under the circumstances "it is not satisfactory that the annual output of the only civil engineering school in Egypt should show so little promise of becoming equal to the pressing needs of the country."

Engineering is necessarily the power that is most called upon in Egypt. Irrigation works will alter the character of the country, and a large sum has been devoted to remodelling the systems of both Upper and Lower Egypt. The greater part was expended in connection with the scheme for the redistribution of water which will be for disposal when the Nile reservoir at Assouan is complete. The outlay is large, for a sum of about 490,000*l*. has been spent upon improvements, in addition to the sums required for the new weirs at the Barrage and the dam at Zifta. But the irrigation works are not to be confined to Egypt. It is contemplated to construct some within the Soudanese territory, and arrangements will be made in order to obviate the political objections that would arise from a reservoir anywhere inside the Abyssinian frontier. Lord CROMER testifies to the energy and ability of Mr. FITZMAURICE, the resident engineer at Assouan, who has accepted the appointment of engineer to the London County Council. The Assouan dam was also accomplished quickly. Lord CROMER does not forget the representatives of Sir JOHN AIRD, and says it is certain that without the untiring labour of Messrs BLUE and MCCLURE the works could not possibly have been so effectively carried on—they will be completed a year before the contract time. One remarkable fact in connection with these works is the diminution in the *corvée*, or men called out for 100 days to guard the banks of the Nile during the season of flood. In 1895 the number was 36,782, in 1901 the total had fallen to 8,763. Indeed, Sir WILLIAM GARSTIN says that last year no *corvée* at all was demanded to guard the banks in Lower Egypt north of Cairo, and this is unprecedented in the history of Egypt. It is expected that the *corvée* will be reduced to a very large extent, if it is not abolished.

Filter-beds are in course of construction for the improvement of the water-supply of Alexandria. The towns of Keneh and Assouan are to be supplied with pure water which will be obtained from underground sources. Pipes have been laid and designs are being prepared for the buildings and pumping machinery. A drainage system for getting rid of the rain-water in Cairo, which used to flood the streets after every storm, has been introduced. The water will be discharged into the Ismailia Canal, and in order that there may be no stoppage when the canal is full an engine and pump worked by electricity have been installed at the outlet.

The irrigation works could not be carried out without affecting the beautiful temples at Philæ. It will be seen from the remarks by Lord CROMER, which have been printed on another page, that the selection of the site was imperative. In all cases where past and present come into collision, and there can be no evasion, the past must succumb. To sentimental people this may appear vandalism, but nature is stern, and when men seek for bread it is not to be expected that their hunger should be appeased by looking on a stone. Lord CROMER has the courage to say that it would be unjustifiable to deprive the people of Egypt of the enormous and unquestionable advantages which will be derived from the dam at Assouan because there are artistic and archaeological objections to the works. Frenchmen and Germans have complained of the occa-



onal submersion to which the temples will be subjected. ut in such circumstances archæologists are only the tools politicians. There is no doubt the opposition in England is been attributed to the selfishness of the English aracter, which would, it is believed, have preferred to see natives suffer rather than any inconvenience arise to the urists and pleasure-seekers.

The subject of contracts has been treated in a memorandum by Major JOHNSTONE. Some ill-feeling has existed in this country owing to a supposition that foreigners were referred. It is satisfactory to find that the larger part of the contracts has been placed in Great Britain. There was over half a million sterling expended on materials, and 12,500*l.* is the British share. Out of 345,100*l.* disbursed by the Commissioners of the Debt and the Railway Board, 136,100*l.* fell to this country. It is remarked that where there is keen international competition, Germany and Belgium run us closely. Austria was able to succeed with locomotives and accessories for carriages and waggons, Belgium with ironwork; Germany with ironwork and locomotives. But the only large contracts obtained by Great Britain in international competition were for copper wire, rails and cast-iron chairs. It is not reassuring to learn that an excessive time was taken by a Scotch firm in supplying a floating crane, owing to troubles with workmen. The United States have disappointed the Egyptian authorities, and no further contracts were sent there during 1901. Belgian manufacturers do not serve their interests by invoking the aid of their diplomatic agent to protect them from the just consequences of their own bad work.

In the Soudan it is not to be expected that many buildings will be erected, but about 90,000*l.* was expended last year. Out of that amount a sum of 27,000*l.* was for barracks to house a British battalion at Khartoum. The Gordon College at Khartoum will be finished this year, but at present it can only be employed as a primary school. Under English officers the general condition of the people is changing. According to Colonel NASON, in Berber they are better clothed, and a great deal has been done in erecting new houses and improving old ones. Colonel McKERRELL says that in parts of Dongola the inhabitants are beginning to build for themselves better houses, and to reap the advantages derived from cleanly habits as regards their persons and homesteads. In Senaar Major SMITH states that a good system of wide roads, planted with trees, will be laid out directly; shops have begun to be built and villages settled. In most districts of the Soudan the Moudirs stify to the desire for education, and there is no doubt at avoiding all indications of a military government, though the chief officials are mostly English military officers, has had good results in a country that was fast sinking into primitive barbarism. Taken as a whole, Lord ROMER'S reports, and those of his officials, form conclusive evidence of the benefits which are arising from English administration in English Soudan. In future reports we hope building will be allowed to have a more prominent position.

#### MR. THOMAS HARDY AND WESSEX.\*

SUCH interest as SCOTT imparted to Scotland and Dickens to London, Wessex has gained by the genius of Mr. THOMAS HARDY, a writer of whom English architects should be proud. It would perhaps be nearer the truth to say Wessex has been the most successful of the three territories, and its debt is therefore the greater. Scotland and London possessed already historic renown. Without meaning disrespect to the inhabitants, it cannot be disputed that Dorset, Wiltshire and Hampshire, the region where Mr. HARDY'S tragedies and comedies were enacted, were not much known to the rest of the world.

A novelist is allowed to devise his own setting, just as a figure painter can invent a background. But the people of Wessex are apparently desirous everybody should be aware that Mr. HARDY was descriptive rather than creative. Already the "Wessex of THOMAS HARDY" has been made the subject of a book by Professor WINDLE,

and in the "Wessex of Romance," by Mr. WILKINSON SHERREN, every available fact which would tend to illuminate Mr. HARDY'S treatment of it has been incorporated, and "aiming at the completest exposition of the subject possible, the well-known novels have been approached through a character study of the people, thus providing a rough sketch of the author's material."

Since Mr. HARDY has elected to be true to nature in its local manifestations, not only of scenery, but of men and women belonging to a particular time, it is only right that those who possess local knowledge should testify to his fidelity. But we must protest against any attempt to assert that photography is to supersede painting in the work of a novelist. Who cares, for example, whether WATTEAU'S *Isle of Cythera*, or TURNER'S *Ancient Italy* and *Modern Italy* have been derived from any one spot in Europe? They may be as unreal, if compared with existing landscapes, as the noble architecture to be seen in the wall-paintings by RAPHAEL in the Vatican. If the novelist draws lifelike characters we are satisfied, although they may be to us no more than the inhabitants of the Kingdom of Nowhere or Weissnichtwo. It is allowable in fiction to transfer the Forest of Arden from Warwickshire to any part of the Continent, and in defiance of geography to construct seas and harbours in Bohemia.

It should also be remembered that accuracy in surroundings is no necessity imposed by the finer taste of our time. SCOTT was most laborious in his descriptions, and yet they were the pages which gave the least pleasure to the readers of his novels. No Dutch or pre-Raphaelite painter was more anxious to produce truthful representation than BALZAC. THÉOPHILE GAUTIER at times appears, as in his "Captain Fracasse," to be no less intent on giving relief to mere accessories than to his characters. FLAUBERT expatriated himself and spent long years in study in order that the scenery and properties of "Salammbô" might sustain the scrutiny of archæologists. Whether Mr. HARDY was right or wrong ("the safe phrase," he says, "of evasive controversialists") in his respect for realism is a question which would need the composition of a treatise on æsthetics and literary art as the answer. His own nature impelled him to that mode of treatment, and then his training must have induced him to look on external things after the manner of an architect united with that of a land surveyor. On this subject we have the testimony of Mr. SHERREN, who says:—

It is not surprising to find two architects, Owen Graye and Edward Springrove, in Mr. Hardy's first novel, "Desperate Remedies," though it is a cause for wonder when the same profession is introduced into "A Pair of Blue Eyes" and "The Laodicean," in the persons of Stephen Smith and George Somerset respectively. Certainly, from the point of view of a novelist, the openings provided by characters moving in the milieu of a peripatetic profession would, in themselves, be very fruitful of developments, especially if the writer himself had trodden the same path and thus proved the possibilities of it. Some readers of the Wessex novels may cavil at the insistence of the architect's point of view, and find fault with the detailed treatment of buildings, but it is only referred to here as a proof of the personal note in works of a distinctly impersonal type. "A Pair of Blue Eyes" illustrates the artistic use of material probably gathered for technical purposes, dealing as it does with "the craze for indiscriminate church restoration," and the lives of the people associated with the attempt to rehabilitate a sacred edifice. A better example is found in "The Laodicean," where George Somerset and Havill are deputed by Paula Power to renovate Castle Stancy. At the opening of the theme this historic mansion is broadly sketched from the outside: "The castle was not exceptionally large, but it had all the characteristics of its more important fellows. Irregular, dilapidated and muffled in creepers, as a great portion of it was, some part—a comparatively modern wing—was inhabited. . . . Over all rose the keep, a square, solid tower, apparently not much injured by wars or weather, and darkened with ivy on one side, wherein wings could be heard flapping uncertainly. . . . In spite of the habitable and more modern wing, neglect and decay had set their mark upon the outworks of the pile, unfitting them for a more positive light than that of the present hour." This is only a preliminary sketch in the presentation of the fine old building, whose interior is then minutely examined, described and criticised with a fine enthusiasm, the differences of opinion between Somerset and Havill suggesting actual experience of the conservatively inclined in this domain of work. All the capacity of an archi-

\* *The Wessex of Romance.* By Wilkinson Sherren. With illustrations. (London: Chapman & Hall.)



fect is utilised in the treatment of Castle Stancy, but it is lifted out of the dead region of technical comment by the power of the artist, which has animated the castle with a personality of its own. Further, the capacities brought into play by an architect's training are observable in the harmonious construction of the Wessex novels, the infinite detail being used with fine proportionate sense and subordinated to the main structural themes, without any undue emphasis of the subsidiary parts.

In dealing with architecture Mr. HARDY does not allow himself to over-emphasise the art. There is no parallel in any of the books to such treatment as we see in M. HUYSMANN'S "La Cathédrale." He is too much of an artist to permit the attention of the reader to be monopolised by any building, however important. But whenever Oxford, Wimborne, Sherborne, Dorchester or any other city, town or village has to be noticed, we always find that any indication of the character of a building is sufficient to recall it to the extent desired by the writer and no more. With Mr. HARDY affection for architecture never overcomes the sense of proportion. Although it is possible to have a clear vision of Casterbridge, its streets and lanes, the description does not diminish the sympathy of the reader for the troubles of the Mayor, that remarkable type of the successful man who cannot escape NEMESIS and must pay for the weakness of his youth. Every reader, we suppose, is moved when the two portraits of the D'URBERVILLES look down, like Fates, upon TESS, but it is only out of pity for the doomed victim, the last act of whose tragedy is to begin in the mouldering mansion once possessed by her family. To it she is indifferent, but of her father's cottage it is said:—"Part of her body and life it ever seemed to be; the slope of its dormers, the finish of its gables, the broken courses of brick which topped the chimney—all had something in common with her personal character." This may seem exaggeration to many, but to those who are acquainted with what is related by RIEHL and others about the influence of land and other fixed things on peasants of a stay-at-home class, the statement will be only an expression of cause and effect.

According to Mr. SHERREN, pilgrims from all parts of England and America have journeyed to Wessex "to find a basis for greater love in greater knowledge." The descriptions of scenery could hardly fail to be attractive. When reading the novels it is easy to believe that Wessex is a remnant of the old England which was ignorant of railways, Reform Acts and school boards. To a generation familiar with the greater part of the globe, it is a surprise to hear of a district where Paganism is not extinct, and naturalism accepts few restraints. The impression made by Mr. HARDY'S pages is that vegetation and the moving beings who live amidst it have a peculiar relationship. At one time landscape-painters used to have any figures which were required put in by other hands, but Mr. HARDY resembles the French painters of the Barbizon school, whose landscapes would be lifeless without the figures, and the figures incomplete without the trees, skies and mists. Admirers of Mr. HARDY'S books will allow they find it difficult to think of any of the characters apart from their surroundings. The backgrounds, as he says, have been always done from the real, and they impress us with objective force. On that account the "Synopsis of the Wessex Novels" has an additional use besides that contemplated by Mr. SHERREN, for it reveals the difference between what was formerly called the "argument," or, as the Germans say, the "Auszug" of each story, and the artistic combination of characters, landscapes, and dwellings produced by the author.

But the characters or figures, if they could be considered abstractedly, will be found to have remarkable importance. Old JOHN DURBEYFIELD is made to say:—"I'm thinking of sending round to all the old antiques in this part of England, asking them to subscribe to a fund to maintain me. I'm sure they'd see it as a romantical, artistical and proper thing to do. They spend lots o' money in keeping up old ruins and finding the bones of things, and such like; and living remains must be more interesting to 'em still if they only knowed o' me. Would that somebody would go round and tell 'em what there is living among 'em, and they thinking nothing of him." Not since SHAKESPEARE'S time have so many welcome representatives of "the constant

service of the antique world" appeared in literature as Mr. HARDY has introduced. After reading Mr. SHERREN'S book we dare not say they are literary creations, for similar grey-beards were common in the farms of Wessex. Wherever they come from, a reader is always glad when he has to give heed to their wise saws derived from a most restricted experience of life. The barn, the public-house, the cabin and the church mark the boundaries of their world, and yet it cannot be said they are degenerated members of the English race. It is otherwise with their children. Mr. SHERREN tells us how "the rustics have awakened to self-consciousness, and the recognition of their own peculiarities has deformed their nature and interfered with its natural growth. Habits and customs, the deposit of centuries, are cast aside for the whims of an hour, because the quaint and steadfast country ways have been fretted by the fever of modern unrest." It must not, therefore, be assumed that the Wessex of to-day corresponds in all details with the region which Mr. HARDY revealed.

There is another Wessex which has yet to be made known. Mr. HARDY once described to a local archaeological society some barrows near Dorchester, or his Casterbridge, which he believed belonged to a Romano-British period, and in his paper he said:—"It would be a worthy attempt to rehabilitate the living Durnovaria of fourteen or fifteen hundred years ago as it actually appeared to the eyes of the then Dorchester men and women, under the rays of the same morning and evening sun which rises and sets over it now. What kind of object did Dorchester then form in the summer landscape, where stood the large buildings, how did the roofs group themselves, what were the gardens like, if any, what social character had the streets? What were the customary noises, what sort of exterior was exhibited by these hybrid Romano-British people, apart from the soldiery? Were the passengers up and down the way few in number, or did they ever form a busy throng such as we now see on a market day?" Why does not Mr. HARDY endeavour to answer the questions which he has posed? In the eyes of architects ancient Rome is a kind of heritage, for the empire is to them what it is not to any other men. To a lover of antiquity, as Mr. HARDY'S old men and their old customs prove him to be, it would not be hard to revive all that is discoverable about the Romans in England. The people who dwelt around Casterbridge probably were not unlike those who are portrayed in his story. In the same spirit as THACKERAY, Mr. HARDY believes it is possible to have a novel without a hero, and it is not recorded that they abounded in the early times when "the Romangs, who was a terrible double-backed people an' strong as 'osses" ruled in Dorset. A Romano-British romance would be a change of occupation, and the result would add new importance to Wessex. Mr. SHERREN'S chapter on "The Paganry of the Past" shows that in other times Wessex, in spite of its seclusion, was the theatre of many momentous events. His book is valuable for its intrinsic interest, but it is also of much use as an auxiliary to the numerous admirers of Mr. HARDY'S gifts; for it reveals to them on what deep foundations the Wessex romances have been based.

#### SOCIETY OF ANTIQUARIES OF SCOTLAND.

THE monthly meeting of the Society was held in their library at the museum, Queen Street, on Monday last, Mr. Robert Munro, M.D., LL.D., in the chair.

The first paper was a notice of the heraldry in some of the old churchyards between Tain and Inverness, by Mr. W. Rae Macdonald, F.S.A.Scot. Beginning with the burial-slabs in the roofless ruin of the ancient church beside the old collegiate church of Tain, two of which show shields of arms of the family of Ross, he next noticed the tomb of Finlay M'Leod, abbot of Fearn, in the abbey church of Fearn, which has still the effigy of the abbot under an arched and decorated canopy, with a shield in the centre bearing his arms, and two smaller defaced shields at the sides. Near the centre of the north wall of the church is a shield with lion rampant, and at the east end a Balnagoun monument of the eighteenth century. At Nigg, besides the Celtic sculptured stone, there is a recumbent slab with a Gothic cross and sword, which has been used a second time for a shield of arms of Alexander Gair, 1659. At Invergordon Castle is the fine Celtic slab from Hilton of Cadboll, which was also utilised a second time for an inscription on one side commemorating Alexander Duff and his three wives,



76, with a shield of arms. In the churchyard of Ilchrist, near the Muir of Ord, is a stone with some unusual mortuary devices, and at Killearnan a mural tablet with arms of the Mackenzies of Muirtown. In Kilcoy castle is the finely-sculptured heraldic mantelpiece of the hall, the decoration of which consists of three shields of arms enclosed by circular bands on which the mottoes are inscribed, while at either end is a mermaid playing on a harp. The arms on the shields commemorate certain marriages in the family, and the date is 1679. Several shields of arms also occur among the external decorations of the castle, and in the drawing-room there is an interesting oak cabinet with heraldic decoration, which is said to have been carved by Master Alexander Mackenzie. Against the garden wall is a large heraldic panel, said to have been brought from the Bishop's Palace, Fortrose, bearing the full achievement of Scotland and the arms of Bishop James Hay, 1537. At Redcastle there are several heraldic sculptures, one of which is interesting as assembling the arms of Finlay M'Fead, abbot of Fearn. At Fortrose are three canopied tombs and several stones with interesting heraldic sculptures, which, as well as those at Rosmarkie, were fully described. The churchyards of Glenelg, Glen Convinth and Kirkhill having been noticed, the Greyfriars Churchyard in Inverness and the more interesting cemetery of Chapelyards yielded many interesting heraldic monuments. The paper was illustrated by a large number of drawings of the principal types of heraldic sculpturings used in the monumental art of this district of the Highlands, chiefly in the seventeenth and eighteenth centuries.

#### *Mull of Kintyre Stone Fort.*

In the second paper Mr. John Fleming gave a notice, illustrated by photographs, of a well-preserved stone-built fort near the Mull of Kintyre. It is a circular structure, massively built, and situated on a rocky knoll overlooking the sea, and only 300 feet above the shore, while it also overlooks a glen called Borgadaill, doubtless so named after the fort. The circular wall, which is about 12 feet thick, encloses an area of about 36 feet in diameter, and still stands to a height in some parts of its circumference of 7 or 8 feet, though the inside level is higher, and the wall nowhere shows more than about half the height of the outside. The doorway is on the north-west, and is about 3 feet 6 inches wide at the outside and about a foot wide at the inside face of the wall. There are no signs of chambers in the thickness of the wall, but there are apparent remains of buildings within the enclosed area. About a mile further west there is another fort of a different character, being a rock precipitous to the sea, and enclosed by three stone-built walls, and about midway between it and the Borgadaill fort there are the foundations of another circular structure, but of smaller size. Such forts are numerous in Kintyre.

#### *Curious Stones.*

In the third paper Mr. Thomas Ross, architect, F.S.A.Scot., gave a description of four stones found at various places in the neighbourhood of Auchterarder, which appear from their similarity of subject to belong to one group, their common characteristic being that they represent riders in chariots drawn by horses, leopards, or other animals. The best preserved example belongs to Mr. A. Drummond Forbes, Millearn House, and is inscribed "Luna," with the personified representation of the moon in her chariot. Another, well preserved, which is in the Perth Museum, appears to have had a similar personification of the sun, while a fragment in the same museum shows a mutilated head with the inscription "Mercurius," and at the ruins of Auchterarder Castle there is a stone, rather wasted from exposure, but still distinct enough to show that it belongs to the same class of representations. These stones form a remarkable group, the original history of which appears to be lost. The practice of representing the gods in chariots descended from classic times, and they are probably the outcome of the revival of classic feeling at the time of the Renaissance. Another stone brought under notice undoubtedly belongs to the period of the Roman occupation. This is the one found at Camelon, near Falkirk, in December last, and now in the National Museum. It represents a Roman soldier trampling triumphantly over a prostrate Caledonian, a favourite subject with the Roman sculptors, and especially with the monumental artists of the Second Legion stationed on the Wall of Antoninus in the second century.

#### *Perthshire Stone Circle.*

In the next paper, Dr. Christison, secretary, gave a notice of an unrecorded fort and a stone circle at Wester Torrie, near Clandier, Perthshire. The fort is situated in the parish of Madock, below the junction of the Keltie with the Teith, close to the south bank of that river. It is a conspicuous elevation, with a circular work of stone on the summit, overgrown with turf, and so confused that it cannot be measured, but the wall appears to be 6 or 8 feet thick, and the interior is 20 to 40 feet in diameter, surrounded by remains of outer fortifications and trenches, which extend the total dimensions

of the fort to about 150 by 250 feet. It has been designated on the Ordnance map as the site of a Roman camp, but there is no sufficient reason for assigning to it a Roman origin, as its character is evidently that of a native fort. The stone circle close to the fort has not been marked on the Ordnance map, and is otherwise unrecorded. It consists of five stones placed at equal distances, with an interspace on one side, which was probably filled by a sixth stone. The highest stone stands 3 feet 8 inches above the ground, the others being smaller, though their bulky forms give them some dignity. In the last paper, Mr. James Barbour, F.S.A.Scot., gave an account of the excavation of a quadrangular earthwork with rectilinear sides and rounded corners at Rispaun, in Wigtownshire, which is locally known as Rispaun Camp, and had the reputation of being a Roman camp. Before excavation, the plan exhibited a great ditch on three sides, with a rampart in front and traces of another in rear. On the fourth side the ground was levelled, but the line of the ditch was still visible. The excavations disclosed the form and depth of the ditch and the structure of the ramparts, and also an outer ditch, of which no trace appeared on the surface. The interior of the enclosure measures about 223 feet by 170 feet within the ditches. The main ditch is 25 feet wide and from 15 to 17 feet in depth. There is only one gateway on the centre of the north-east side, 20 feet wide, and with no special defences. All the fortifications are earthworks. No traces of its occupation were discovered, the only relics found being a human skull and part of another found in the ditch, and some pieces of deer-horns and bones of the domestic animals, so that the origin of the earthwork and the period of its occupation have not been disclosed. The description of the skulls supplied by Dr. T. H. Bryce, F.S.A.Scot., showed that they were probably those of a man and a woman, and that the type was approximately the same as the average of modern Scottish crania.

### THE SURVEYORS' INSTITUTION.

THE annual country meeting of the Surveyors' Institution is this year to be held at Cambridge, on Thursday and Friday, May 22 and 23. On the Thursday the Mayor will receive the members at the Guildhall at 10 A.M., and deliver an address of welcome on behalf of the town. The remainder of the morning will be devoted to the reading and discussion of professional papers. At 1.30 P.M. the provincial committee will entertain the members at luncheon at the University Arms hotel. In the afternoon visits will be made to the colleges, the University buildings and Ely Cathedral. In the evening the members will dine together, and many official guests have been invited. The second day will be devoted entirely to visits and excursions to places of interest, under the guidance of members of the Cambridge, Huntingdon, Norfolk and Suffolk provincial committee of the Surveyors' Institution. These will include (1) a visit to Sandringham, by permission of His Majesty the King, who has graciously intimated his intention of entertaining the members (limited to seventy in all) at luncheon; (2) a visit to Newmarket and Cheveley Hall, by invitation of Colonel McCalmont, C.B., M.P., who will entertain the members at luncheon. The excursions will be so timed as to enable members wishing to do so to catch the evening trains for London and the West of England.

### LIVERPOOL CATHEDRAL.

AT a meeting of the executive of the Liverpool Cathedral committee held at the Liverpool Church House on Monday, Sir W. B. Forwood presided, and there were also present the Bishop, Canons Stewart, Penrhyn, Spooner and Willink, Mr. W. Bartlett, Mr. John Branner, Mr. A. Crosthwaite, Mr. A. Earle, Mr. R. A. Hampson, Mr. H. D. Horsfall, Mr. H. S. Woodcock, Mr. George Bradbury, Mr. J. Alderson Smith and the Rev. C. Harris. It was decided that two eminent architects should be invited to act as the advisers of the committee in the selection of the architects who will be invited to submit designs for the cathedral, and in the ultimate selection of the design. The names of the two gentlemen will be mentioned when their consent has been received. One of them represents the Gothic and the other the Classic school of architecture. The organisation committee's report, which was approved, stated that steps had been taken in the rural deaneries of the diocese to organise and also with the view of holding in the autumn a series of public meetings to obtain subscriptions.

The Bethesda Quarries have suffered in consequence of the strike, and the local assessment has been reduced from 24,800*l.* to 10,500*l.* Prior to the contest the annual output of slate was 96,000 tons, and 2,800 hands were employed. Now, however, only 800 men are at work, and the output is only 32,600 tons.



## PUBLIC DECORATIONS FOR THE CORONATION.

THE following letter has been sent to the Press:—

Sir,—It is to be hoped that on this exceptional occasion the opportunity will not be lost of endeavouring to raise the style of our festal decorations to something higher and more artistic than has generally been seen on similar occasions in London, and that those who are concerned in the erection of triumphal arches and other decorative trophies will think it worth while to seek the assistance of eminent artists for their design, instead of being content, as we too generally are in England, with the mere commonplaces of trade furnishers.

It is recorded in Vasari's life of Jacopo Sansovino that on the occasion of a State entry of Leo X. into Florence in 1514 the streets and principal buildings, and notably the then blank façade of the Duomo, were decorated by Sansovino and his friend Andrea del Sarto, working in collaboration, with such success as to elicit general admiration, and even induce the Pope to express a wish that the temporary façade of the Duomo had been the permanent design.

At the entry of Charles II. into London at the Restoration it is evident that some exceptional efforts were made to give architectural character to the decorative erections, for there are in the Crace collection engravings of four designs for triumphal arches to be erected in Leadenhall Street, at the Royal Exchange, in Wood Street and at Whitefriars. The original drawings of these designs are in the "Burlington-Devonshire Collection" in the library of the Royal Institute of British Architects, and, though unsigned, are evidently the work of an able hand.

Surely such precedents are worth taking to heart on the present occasion. A trophy designed by an eminent painter and sculptor, or painter and architect, or by eminent men in the three arts working together, would be likely to have a very much greater interest and a higher artistic quality than can be hoped for from decorative erections carried out on a merely commercial basis.—We are, Sir, your obedient servants,

WILLIAM EMERSON, President } The Royal Institute  
ALEXANDER GRAHAM, Hon. Secretary } of British  
W. J. LOCKE, Secretary } Architects.

Royal Institute of British Architects, 9 Conduit Street, Hanover Square, London, W.: April 15.

## CAPE TOWN CATHEDRAL MEMORIAL.

A MEETING of the general committee of the Cape Town Cathedral Memorial Fund was held on Tuesday at the War Office. Field-Marshal Lord Roberts, the chairman, presided. The object of the fund, of which the King is patron, is to erect the eastern portion of the new Cathedral at Cape Town as a memorial to those who have fallen in the war, as well as a thankoffering for those whose lives have been spared. For the memorial portion of the Cathedral a sum of at least 30,000*l.* is required.

The report of the executive committee stated that since the last meeting of the general committee on June 21, 1901, the Prince and Princess of Wales had signified their consent to become patrons of the fund. Princess Henry of Battenberg had also consented, as Governor of the Isle of Wight, to organise the local committee for the fund in the island. Lord Kitchener had accepted the post of vice-patron of the fund. The committee had arranged, in consultation with the ladies' committee, that local committees should be formed throughout the country. Cities and towns with populations of 50,000 and upward would be undertaken by the executive committee, and those with less than 50,000 by the ladies' committee. Communications were opened up with a few of the principal cities, but the replies received proved that considerable difficulty would be experienced until the end of the war, and also until the local memorials which were being generally organised had been completed. The committee therefore considered it better to postpone further action for the present. Plans were being discussed between the executive committee in England and the building committee in Cape Town, by which definite portions of the Cathedral could be allocated to the various parts of the Empire, in each of which suitable inscriptions and memorials could be placed to sons of the colony or dependency which had contributed to its erection. If this scheme could be carried out, the whole of the memorial portion of the Cathedral must then, from the bond of a common sorrow and common mercies, form one link in the unity of the Empire, and would go down to future generations as a priceless inheritance. The mode in which the names of those who had fallen or died of disease in the war should be recorded within the Cathedral was under the joint consideration of the executive and the building committees. The donations received and promised amounted to 10,805*l.* 17*s.* 6*d.*; including 2,749*l.* 1*s.* 5*d.* collected in South Africa. There was also a sum of 335*l.* which had been subscribed for special memorials

to those who had fallen and was not included in the above amounts.

Sir John Furley reported that the answers to appeals at present generally were that so much had to be done for those who were living that it was almost impossible to press this claim at the present moment. Up to the present the ladies had collected 2,965*l.* 14*s.*

General Sir F. W. Forestier-Walker said the amount at present collected might seem small. But the executive committee saw no reason to suppose that when the war was over donations would not come in and that they would not be able to get the money they required.

Lord Roberts said he quite recognised the force of the remarks made by Sir John Furley and Sir F. Forestier-Walker. In consequence of the war being so protracted many appeals for help were being made all over the country. There was a responsibility upon them all to help the wives and children and other relatives of those who were employed in the war. Whether, as one speaker had suggested, local committees would feel inclined to allocate a certain portion of their funds to the memorial at Cape Town he could not say. He fancied, however, they would desire to complete their own memorials first.

Major-General Mackinnon deprecated any attempt to appeal for further subscriptions in the City at the present time. The City people whom he had consulted on the subject had all advised him that they would "spoil their market" if they attempted it now. If, however, they waited until the conclusion of the war their appeal would probably be very generously responded to in the City. At the present moment it was useless, even with the good offices, which they had, of the Lord Mayor.

The report was then adopted.

## A NORMAN CARVING.

DURING the erection of temporary buildings inside the ruins of Llantrithyd an interesting archaeological discovery was made. It became necessary to remove a portion of a mound of earth. The workpeople engaged found their spades coming into contact with a hard substance, which further excavation proved to be a carved stone. The soil was carefully removed on all sides, and a round block of stone which would appear at one time to have been the base of a pillar or cross, was revealed. It is about two feet in height and three feet in diameter. Its upper side has a square hole in it, such as is to be seen in the shaftless bases of many of the Glamorganshire churchyard crosses. But the interesting feature about it is that all round its sides it is finely carved. It is evident that the work is of Norman date. The carving represents arcading, the arches of which are Norman in style. Each arch is separated by a slender pillar, of which the base appears to be plain, while the capital of every alternate pillar is fluted. The style is different from anything to be found in any church in the Vale of Glamorgan, and the vicar of Llantrithyd inclines to the belief that it once formed the base for a pillar or statue in one of the rooms at Llantrithyd Place. Its appearance, on the other hand, is suggestive of ecclesiastical architecture, and it is hardly likely that the Normans who settled in South Wales ever had sufficient leisure from wars with the native Celts to spend much time upon the adornment of their homes. There are in Llantrithyd Church traces of Norman handiwork, and it is possible that at one time this carved base had place there.

## WESTMINSTER ABBEY AND THE OFFICE OF WORKS.

THE following letter from Canon Armitage Robinson has appeared in the *Times*:—It is due to your readers that some assurance should be given them that the fears expressed by your correspondent "E. H. W." as to the safety of the fabric and monuments of Westminster Abbey during the preparation for the coming Coronation are groundless.

It was my privilege to be present when His Majesty the King was shown by Lord Esher the details of the suggested arrangements, and I am accordingly able to testify to His Majesty's own anxious care that nothing should be touched which could possibly be left untouched, and that consideration of convenience and seating accommodation should not be allowed to weigh against the permanent interests of the fabric. It may be safely said that the interference with the church will be less on this occasion than it has been on any similar occasion in the last two centuries.

Moreover, on the day on which the Dean and Chapter formally admitted the representatives of His Majesty's Office of Works, Lord Esher was good enough to consult me on every point that either of us could suggest in regard to pre-



tions against possible injury, and we spent nearly two hours either in the church. I may add that for many months his ship has been in communication with our architect, Mr. Ckethwaite, whose name is, I believe, a sufficient guarantee all ecclesiastical antiquarians that the interests which they concerned to defend shall be jealously watched.

It may perhaps be a further satisfaction to your readers to know that the notion that the Dean and Chapter have handed over the Abbey church to another authority is a popular illusion. As a matter of fact they were commanded by an order of the Privy Council to admit the representatives of His Majesty's Office of Works on April 1, and to close the church to the public; and at a later date—namely, after the preparations shall have been completed—to hand the keys of the church to the Earl Marshal for the purposes of the actual ceremony. This is in exact accordance with precedent; and it obviously implies that the Dean and Chapter retain the power, with it the responsibility, of watching the whole of the alterations as the permanent guardians of the building and its contents. I am convinced that on the present occasion their action in this matter will be as nearly superfluous as ever it could be; but the public may rest assured that it will be duly criticised.

### NATIONAL PORTRAIT GALLERY.

THE trustees of the National Portrait Gallery have received from Mr. G. F. Watts, R.A., a fine portrait of the late Marquis of Dufferin and Ava, which has been accepted as part of Mr. Watts's original generous gift to the nation. The trustees have also accepted a small, interesting portrait of J. M. W. Turner, R.A., painted by himself in water-colours when about sixteen years of age, which has been presented by the committee of subscribers in memory of the late Mr. W. G. Monckhouse, to whom it had belonged. Another is a small drawing in red chalks of the late Arthur Goring Thomas, the much-regretted musical composer, drawn and presented by Mr. Francis Inigo Thomas. The trustees have acquired by purchase the following portraits:—Charles Turner, mezzotint-engraver, drawn in black chalks by himself; Charles, third Earl Spencer (Viscount Althorp), drawn in black chalks by Charles Turner; Samuel William Reynolds, mezzotint-engraver and landscape-painter, painted by J. Opie, R.A.; Charles Macklin, the famous actor, painted by J. Opie, R.A.

### ARCHITECTURAL ASSOCIATION OF IRELAND.

THE annual dinner under the auspices of the Architectural Association of Ireland was held on Saturday evening at the Grosvenor Hotel.

Mr. C. J. McCarthy, city architect, presided, and the company included the following members of the Association:—

G. M. Ross, P. J. Sullivan, A. Colman Scott, H. Alberty, Bradbury, F. Hayes, M. J. Cullen, W. H. Ward, T. Coleman, J. A. Rockett, H. C. Parkinson, F. H. Tallan, F. G. Hicks, T. E. Hardiman, C. H. Mitchell, F. Shaw, Anthony Pitt, R. M. Butler, L. Baker, J. H. Webb, G. P. Sheridan and H. Pentland.

The guests of the Association included:—

Messrs. S. Hayes, W. U. Patton, Richard Turner, G. S. Turner, H. Mitchell, W. S. Davis, D. L. Rogers, T. F. Byrne, D. Pratt (U. S. Vice-Consul), G. D. Burtchell, Captain Mitty, T. J. Duncan, P. J. O'Connor, J. Rawson Carroll (vice-president Royal Institute of Architects, Ireland); Jas. P. Pile, Master Builders' Association; Geo. Coffey, W. T. Roberts, Johnson and V. Pemberton.

After dinner the Chairman gave the toast of "The King," which was cordially received.

The Chairman, again rising, proposed the toast of "Our Ancestors," coupling with it the names of Mr. J. Rawson Carroll, Pile and Mr. George Coffey.

The toast was well received.

Mr. Carroll, in reply, said he felt it a great honour to be invited to that gathering as the representative of the Institute of Architects.

Mr. Pile, speaking on behalf of the Master Builders' Association, said that that body greatly appreciated the compliment that was paid to them when they were asked to send a representative to that dinner. He referred to certain importations in the shape of architects and builders that had recently visited Dublin, and mentioned that lately three large Dublin contracts had been given to architects resident in other cities. He believed that the work could have been done as satisfactorily by men belonging to their own city.

Mr. Geo. Coffey also responded.

Mr. J. Rawson Carroll proposed the toast of the "Architectural Association." He said the senior members of the profession had every reason to be proud of the Society. The position it had attained to in such a short time was, he thought, entirely unprecedented. There were many things on which the

Association could be congratulated. They had the thorough support of the Institute of Architects. In his opinion the public were realising and understanding the position of architects now better than they had done before. Architects might, he thought, look forward to better times, and such an Association as theirs was calculated to do a great deal to improve the position of the profession. He trusted that the Association would increase in strength, and would always continue to be a worthy representative of the younger branch of the architect's profession.

The Chairman expressed thanks on behalf of the Association for the manner in which the toast had been received. He added that though the Society had been only six years in existence, it had had a very fair measure of success, and had done much for the advancement of the profession.

### THE LATE EDMUND OLDFIELD.

THE death is announced of Mr. Edmund Oldfield, M.A., F.S.A., hon. Fellow of Worcester College, Oxford. Mr. Oldfield, who was in his eighty-sixth year, was in his day, says the *Times*, a considerable authority on architecture and classical archaeology. Scholar and subsequently Fellow of Worcester College, he took a third class in classics. For many years he retained the honorary office of librarian of the college, being thus enabled to hold the only lay fellowship then permissible by its statutes. He became assistant-keeper of antiquities at the British Museum, and was associated with Sir Charles Newton in organising and developing that department. He was the author of several papers on subjects of classical archaeology, including those on the mausoleum of Halicarnassus. He was placed upon the committee for the decoration of St. Paul's, and was a strong opponent of the designs of Mr. William Burges, which were illustrated by a model exhibited at the Royal Academy. Mr. Burges, in the early sixties, had carried out in the chapel of Worcester College an elaborate scheme of decoration and colour which met with Mr. Oldfield's strong disapproval, and was quoted in the *Times* as a warning against the employment of Mr. Burges upon St. Paul's. Mr. Oldfield was at one time an active member of the Athenæum Club, serving on the committee, and was recognised as an authority of taste and knowledge in the artistic world of London. In the last year of his life by a somewhat tardy recognition he was elected an honorary Fellow of his college. Mr. Oldfield married the Hon. Susan, daughter of the fourth Baron Rivers.

### SELBY ABBEY TOWER.

THE committee appointed to deal with the state of the Selby Abbey tower having asked that the architect would prepare a report on the present condition of the tower, the following has been received from Mr. J. Oldrid Scott:—

"Since the time when my last report on the tower of Selby Abbey was written, the various defects to which I drew attention have increased, in spite of certain work which has been done in the interval to strengthen the north wall. The upper stage is in a bad condition, the cornice being almost ruinous, while the walls are badly built and in a very disjointed state. The chief mischief, however, shows itself in the north-west pier, which during the last few years has developed a considerable number of cracks, passing through its facing stones. These surface failures show clearly that the pier is carrying a greater weight than it is equal to. It is this pier which has always been most affected by the soft subsoil on which the tower is built, though it is quite possible that the one to the south-east was still more seriously affected before it gave way in the seventeenth century. Certainly of the four piers we now see that to the north-west has sunk the most, and it also carries a greater weight than any of the others, owing to the south and east walls of the tower having been reduced in thickness when they were rebuilt. It has therefore become absolutely necessary to take some steps to arrest the mischief which is in progress, and which, if allowed to proceed, would undoubtedly increase and create a very serious danger. It is therefore a great satisfaction to me that the committee appointed to insure the stability of the tower have resolved to take the course decided on, and reduce the weight of the tower by removing the upper storey. It appears that this will relieve the piers of about one-fifth of the burden they have to carry, and it can afterwards be considered what further steps shall be adopted for remedying the defects in the north-west pier which I have described. My own strong hope is that within a reasonable time it may be decided to deal with the defective foundations of the pier, as well as to remedy the weakness which has shown itself above the ground level. Whether when doing this the terrible distortion of the arches abutting on the pier from the west should be made good, as those to the east of the tower have already been, will be a subject for further consideration."



## NOTES AND COMMENTS.

As a local magazine has referred to the circumstances, there can be no irregularity in mentioning the dispute between Mr. GOLDSMITH, architect, of Manchester, and the executive committee of the proposed church of St. George in Blackpool. It appears that Mr. GOLDSMITH prepared no less than five schemes for the building. But, we presume from want of money, the committee were unable to carry out any of them. Then a sub-committee was appointed to deal with applications for return of donations and payment of accounts. Mr. GOLDSMITH's bill amounted to 315%. At one time it was said that his charges were not admitted, and afterwards that 50% should be offered to him as a full settlement. Mr. GOLDSMITH properly declined to meet the committee. Then it was stated that a member made the offer to build the church if Mr. GOLDSMITH could complete it for a sum not exceeding 10,000%. That was an offer that could not be entertained by an architect, and no reply was sent. A High Court writ was on the 8th inst. served on the parties at the suit of Mr. GOLDSMITH to recover the 315%. The claim is to be defended. Judging from what may be regarded as the official statement, we think it would be wiser for the committee to save additional expenses by paying the account in full.

THE District Railway Company cannot be considered to be in a prosperous condition, but as electricity is to supersede steam as the motive power to work the line, it was necessary to obtain a site for a generating station. In such a case there was likely to be little choice, otherwise the site selected would be generally considered as unusually costly. It was obtained, however, by the company at what appears to be a low figure. It consisted of wharf property in Chelsea Creek, with the Ashburnham Works, having a frontage to Lot's Road, Chelsea. The premises were in the occupation of Mr. WALL, the builder. As Sir EDWARD CLARKE, his counsel, stated, the area to be taken was made up of 12,965 square feet used as a wharf, and 8,850 square feet, part of the Ashburnham Works, where the claimant had for many years carried on business. Owing to the absorption of the northern side of the Thames for public improvements in recent years, there was now hardly any wharf property on the north side of the river between Blackfriars Bridge and Chelsea Bridge. Consequently, the claimant would have to remove to the south side of the river to a site which would cost about 14,000%, and new buildings and machinery would represent another 17,500%, and for disturbance of the business a further 33,500% should be added. One witness said the amount of compensation should be 70,387%. Counsel for the District Railway maintained that 23,000% would be adequate compensation. The jury viewed the premises and awarded Mr. WALL 35,000%. The amount is a lower average than is usual in such cases, for if new premises and fitting them up will cost about 31,500%, there is little remaining for disturbance.

THE ardour of the Emperor of GERMANY has been somehow imparted to other departments besides those of the Army and Navy. It is displayed no less among the officials who have charge of the publication of Greek inscriptions. For years the preparation of the work was carried on in a perfunctory way which could not benefit scholars in Germany or elsewhere. A volume which has been compiled by Herr FRANKEL with the title "Corpus Inscriptionum Græcarum Peloponnesi," is complete. It includes inscriptions from Ægina and Argonis. Another volume relating to a great many places will soon be ready. Herr OTTO KERN, who has explored a large part of the country, is the editor. The inscriptions from Paros, found three years ago by Dr. RUBENSOHNS, are also in an advanced state of reproduction. The Austrian archaeologists have been compelled by the eagerness shown in Berlin to use expedition, and it is expected that the inscriptions from Lycia will shortly be forthcoming in a volume.

It may sometimes appear heroic for local authorities to expend the money of ratepayers in law courts, especially in cases where it is assumed official rights are at stake. It

would be interesting to ascertain how much money has been wasted in efforts to determine who must pay for a sewer in Colney Hatch Lane. The work was executed so far back as 1882, and the litigation is still in progress. Judging by the spirit on both sides, it will continue until the crack of doom closes police courts and courts of appeal. The summoning was commenced by the Clerkenwell Vestry, but that body had no authority over a part of the lane in which the sewer was laid. The claims of the Vestry have been set aside in all the Courts in which they were asserted. But in spite of experience which was bought so dearly by the Finsbury Borough Council, which is the Clerkenwell Vestry in another form, has again resumed the contest by claiming in the Highgate Police Court, 31s. 1d. from one of the residents in Colney Hatch Lane. As was inevitable, the summons was dismissed, and the defendant was allowed fifteen guineas costs. One of the magistrates said that local authority had been indulging in hopeless speculation, and it might be added, hopeless litigation also. But that consists the attractiveness of the struggle.

IN 1642 Cardinal RICHELIEU founded a royal printing office in the Louvre. As in other Government establishments, such as the Gobelins, it was expected that typography would be improved in the works, and there is no question that fine examples were produced. In 1795 the office was removed from the Louvre, and in 1808 it was transferred to the mansion constructed by Cardinal ROHAN in the early part of the eighteenth century. But the building could not accommodate the large number of men sometimes amounting to 1,200, who were employed there. As a result the death-rate increased beyond that in most other works in Paris. Besides, of late years the building had fallen into such a state that a large sum was required for repairs. The French Senate has at length determined on the erection of a new building at Grenelle; it will cost about 4,000,000 francs. On the other hand, the sale of the old Palais Cardinal will recoup the outlay, and it will be no longer needful to devote a considerable amount every year for repairs. Care will be taken to preserve the works of sculpture which belonged to the Palais.

WE have already mentioned Sir THOMAS DREW's recommendation about the removal of the fractured base stones in the piers of Truro Cathedral and the replacing them by stones of a different kind. The subject was considered on Wednesday by the building committee, and was decided to defer the removal of the base stones, as was found that during nine months the cracks had not increased. Sir THOMAS DREW considered that the disaster arose from the modern specification as to mortar and bedding being observed with a precision which was quite unusual in less conscientious builders. Beds of piers in old work were usually laid in a comparatively thick bed of mortar, not too good, which lent itself to certain elasticity. At Truro the mortar was to be theoretically perfect as a cohesive cement, and the jointing theoretically perfect. The result was that the several drums of the columns became so perfectly adhesive that the pier became practically a monolith, with the attendant risk of undistributed pressure all coming on a single bed under the plinth. The provision of a damp course of asphalt added to the evil.

## ILLUSTRATIONS.

PARR'S BANK, LIVERPOOL.

CATHEDRAL SERIES.—RIPON: THE CHOIR, LOOKING WEST.

DAWYCK, PEEBLESHIRE, N.B.

ALLIANCE ASSURANCE COMPANY'S PREMISES, STRAND.

COLLINS'S MUSIC HALL: PROSCENIUM AND PRIVATE BOXES.

A COUNTRY RESIDENCE: SOUTH-EAST AND SOUTH-WEST ASPECTS.



## THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday evening last, Mr. E. Guy Dawber, vice-president, in the

lessrs. H. C. W. Dod and J. A. Maxwell Stirling were

ed members.

he following recent donations to the New Premises Fund announced:—The Worshipful Company of Clothworkers Mr. J. T. Christopher 10*l.* 10*s.*, Mr. C. Harrison Town- 10*l.* 10*s.*, Mr. Louis Ambler 5*l.* 5*s.*, Mr. A. M. Torrance 5*l.*, Mr. C. F. Longden 5*l.*, Mr. H. Longden 5*l.*, Mr. F. nan 3*l.*, Mr. R. W. Collier 2*l.* 2*s.*, Mr. C. Dunch 2*l.* 2*s.*, E. W. Lees 2*l.* 2*s.*, Mr. W. J. N. Millard 2*l.* 2*s.*, Mr. A. W. orth 2*l.* 2*s.*, Mr. J. D. Slater 1*l.* 1*s.*; the total subscriptions ed to date amounted to 4,042*l.* 8*s.* 6*d.*

he House List for the session 1902-3, the nominations for will be made at the next meeting, includes the names of I. T. Hare as president, and Mr. W. A. Pite and Mr. Ambler as vice-presidents.

r. W. D. CARÖE read the following paper on

## The Preservation of Ancient Buildings.

ear my selection may be of too antiquated and archæol- a subject to interest the very latter-day architect, who in up-to-date styles, and who is apt to be indoctrinated he view that in architecture archæology has no proper but is merely a curb upon his rational (or irrational) nings. I approach my task with some misgiving, but if I seemed to you on your first thought to be asking your ion to only the dry bones of architecture, I shall do my o suggest to you—certainly by inference, if not directly— these are no dry bones at all, but that there lies within the of what we are about to consider many a pungent ht for each of us, and that as there is no more difficult, y and responsible branch of our many-sided calling, so is none more absorbing or interesting if approached in ue spirit, or more valuable in its object-lessons and ing.

the man of sympathy and imagination it is a real delight ch the history of an ancient building unfold itself little by to discover that the greater his learning, just so much ore will it whisper to him its secrets. True it is that knowledge and more imagination are needed to invest ranch of our craft with its full significance; equally true at imagination must not be permitted to outstrip know-

We owe much of ever fresh interest to the realisation, the centuries though it has come to us, that in every c of wrought stone or wood, almost in every brick, may be some definite history of the past, of its art or lack of it; tale of the manner of men our forbears were at any in any locality. Without this knowledge, derived from r. handiwork, history may be—has been—written awry. it, evidences derived from documents acquire a double

The two sources are mutually reflexive—taken together y become luminous. And it is part of our business as hcts to preserve this one, which is complementary to the record. It has come to be recognised all too late that preservation is a deep and difficult science, which is oined with pitfalls.

r. endeavour shall be to crystallise its somewhat indeter- ethics into a form which, I would fain hope, may be p in our practice. The lamp of memory shines brightest trimmed and lighted by John Ruskin, whose eloquent commend to all, both those who have studied it in t and perhaps put it by upon the shelf, and also our r friends who come with freshness and enthusiasm a absorbing subject. Such winged words as these will eary you in the repetition. Speaking of memory, s ("Seven Lamps," p. 178):—"It is as the centralisa- nd protectress of this sacred influence of memory t past that architecture is to be regarded by us with ost serious thought. We may live without her and sp without her, but we cannot remember without her."

ain, "If there is any joy in the thought of being remem- hereafter which can give strength to present exertion, ence to present endurance, there are two duties respect- onal architecture whose importance it is impossible to e—the first, to render the architecture of the day his- c; and the second, to preserve as its most precious ances that of past ages." Again, "We, as we live and re to be always thinking of those who are to come after at what we do may be serviceable as far as we can for them as well as for ourselves. Then, when we die, e duty of those who come after us to accept this work of th thanks and remembrance, not thrusting it aside or it down the moment they think they have no use for such only is the spirit in which we must seize ur difficult task. The semblance of any other, and, vll, any lurking suspicion of lucre, and the word may be at once that we are not fit for it. Here, then, we have

the very marrow of the subject in the words of a master of impressive language. Restoration, reparation, preservation, protection, call it what you will, this is our task and none other, to save the past for the future, to hand down intact, if may be, to posterity, what has been bequeathed to us.

Now, I have already indicated that the subject is, as the centuries go, a new one. In Ruskin's sense, in the sense in which (I hope) it appeals to us all, it was to the ancients quite unknown—except in relation to literature. As to our Mediaeval forefathers, although there are a few definite instances where ancient work was preserved, either for its sanctity, or for practical reasons, or for glorification, they were; as you all know, the most impenitent sinners. They implicitly believed—and, generally, not without good reason—in their ability at any moment to do something better than what they found, however beautiful. The eighth Henry's respect for antiquity I need not call to your mind; and yet the very destruction wrought by him and his assassins seems, through reaction, to have sown the seeds of a reverence which, fructified again by the depredations of Oliver Cromwell and his Puritans, became first a feeble sapling, but in these latter days has grown strong (I will not say quite healthy), and appeals more or less sentimentally to most men of culture and attainment. It has, in fact, become a cult, or, indeed, two cults. The one of Restoration, which, in the honest hopes of preservation or revival, has—unwittingly, no doubt, but no less ignorantly and ruthlessly—destroyed; the other of Preservation, which has, again by the force of reaction, become a fetish—a species of fanaticism—often so wanton and uncontrolled as to set men's faces against a great and good cause, at times inventive of schemes silly-seeming to the man of plain sense.

The Cambridge Camden Society did much to foster those principles of restoration which consist mainly in the would-be recovery of more ancient forms at the expense of later. Sir Gilbert Scott enunciated some wise principles in his eloquent and touching appeal for conservative restoration, and abjured the same principles steadfastly upon the many occasions when our greatest historical buildings fell into his hands—not do I think for one moment consciously or wilfully. But one of the first warnings in carrying out this fascinating work in actual practice will be to work steadfastly upon the curb. As years advance, and opportunities increase, it becomes more and more imperative to draw the rein tighter. The temptation to attempt the reconstruction of the past—restoration, instead of preservation—can grow like a fungus, as it did with Scott, and plunged a great and deserved reputation in the dust.

We may take another warning from our neighbours abroad. In France and Germany and also in Italy (although there the fortunately growing influence of Signor Commendatore Boni has helped to stay the regrettable practices in vogue), the idea that the past may be preserved by its wholesale destruction, and the reconstruction in its place of the would-be past most pleasing to the fancy of the reconstructor, and the tendency to depreciate the less in favour of the more interesting history, and to sacrifice the evidences of the one in favour of the other, have gone far to wipe off the slate the great historical buildings as such. They have in the process been largely transferred to the pages of erudite monographs, the actual buildings having become cast-iron echoes of themselves. Viollet-le-Duc deliberately sets before himself the goal of recovering the supposed form of a building at that precise period of its existence which he pedantically elects to be the most beautiful or most interesting or both. All the overlying evidences of other periods are to give way, and when those evidences sought are not found they may be manufactured in the form in which the eminent professor thinks, in his erudition, most probable and harmonious. This phase has its roots in a species of unholy pride, the refusal to acknowledge that any past century could do work as good as, or better than, the present. I can give no better illustration than the reconstruction of Leon Cathedral in Spain. The façades, our guide-book tells us with satisfaction, "have been purged of their Renaissance disfigurements." Observe the inanity of the Gothic which has taken their place, although it is fair to say that under the direction of Señor Madrazo, the architect, some clever under-building has been accomplished to the arcades and other parts which were seriously jeopardised by the great Lisbon earthquake and subsequent neglect. But there is great prodigality of new stone in all these works. The restoration of the walls of Carcassonne, upon which, under Le-Duc, the French Government has wasted untold thousands, and aided by which Le-Duc was able to lay before us, with a scholarly intuition and definiteness worthy of all praise, the history and science of Romanesque and Mediaeval fortification, forms a striking, not to say ludicrous, example of the failure of the method, even in erudite hands. The further works now in progress in which Le-Duc's methods are being carried forward are really more comical than words can express. One is indeed tempted to ask if these men are quite sane. All over Europe works of a similar kind have been during the last thirty years, and still are in active progress, and yet the modern spirit of a newly-emancipated Continent is



such that these gross misprisions of antiquity are warmly approved, and Mediæval travesties are too often regarded as glorious national monuments. If I am asked for examples, they occur in every town, almost in every village. Angoulême, with hardly an ancient stone left undisturbed; Leon largely rebuilt; Upsala a modern building; St. Mark's, Venice, externally an engineer's construction; S. Front, Périgueux, with the bottom knocked out of its remarkable history; Albi restored, and now being re-restored apparently for the sole cause that the French Government does not know what to do with its wealth; that marvellous courtyard of St. Gregorio at Valladolid, wrecked and rebuilt, and all its wondrous carvings scraped up into soapy whiteness; the delightful sculptures of Wisby being recarved because the architect (he told me so himself) thinks they are archaic and the heads too big for the bodies, and that he can draw them better, brilliant draughtsman as he undoubtedly is; Trondhjem and Stavanger new cut, Frederiksborgslot restored by a brewer like unto a public bar. And in Germany. The restorations made in Germany are more appalling than words can tell. I know not where to begin or where to stop in referring to them. I am not exempting our own country. We have suffered grievously—irrevocably—and not the least from the curious revivalist heresy that the art of architecture stopped short in the year of grace 1534. We are still suffering, but fortunately a sounder sense of proportion, which I am here to advocate to-night, the sense of preservation, is gradually making headway among us, and here and there some remnants are left to be saved almost at the eleventh hour, to show us and the future what has been wrecked under the hungry wave of restoration.

In passing I refer to one other "grim" one-man school of destructive restoration, which is fortunately individual and unique—the ignorant, conceited, self-opinionated "school" of Lord Grimthorpe. It has been as much a disgrace to the century and the Church which permitted it as to the man who directed and paid for it. Silence is perhaps most meet where memory is pain.

Parallel with this, but unfortunately on a wider plane, is the rapid destruction of ancient monuments to make way for so-called modern improvements, a process for which I venture to think our successors will curse us pretty roundly. We witnessed only lately how our County Council, priding itself on its enlightenment and supporting a committee for the registration of ancient monuments, nevertheless disgracefully destroyed one of the few remnants of the East End, that desert of modern dinginess. I refer to Tudor House, of course, which had to make way for an extra bit of asphalt. But preservation, too, has its extreme forms which, like all extremes, carry their dangers to a good cause; and in antithesis to the extreme continental practice of restoration, let us consider our own extreme cult of preservation, which carries something of fanaticism with it. But I should like to make it quite clear that I am most fully in sympathy with the primary tenets of the Society for the Protection of Ancient Buildings. No one recognises more fully the need there was for some earnest and tenacious effort to stay the work of unreasoning and ruthless restoration, which has already (always with the very best intentions) destroyed so much of the choicest beauties and deepest interests we had been fortunate enough to inherit from our predecessors. But agreeing thus heartily with the aims and tenets of the Society, I must not be held to endorse all its methods. These seem not infrequently to be directed to defeat its best objects—sometimes by exaggeration—sometimes even by childishness of statement—sometimes by the use of language seemingly calculated to annoy (the Society is an adept in the use of pinpricks), too often by carelessness or error, which come ill from those who affect infallibility of judgment. It may be said, indeed, against the Society that while it is the only organised upholder of a much-needed propaganda, it not infrequently goes far to set those who might be and would be earnest supporters against the good cause, which many of us have a right to claim as our own, with an enthusiasm as deep as the Society's most ardent member.

Now I commend the various advisory leaflets issued by the Society, with special mention of Professor Church's recent admirable excursus upon wall-paintings. They are generally sound and practical and instructive. But there will not be found very succinctly laid down the following somewhat inchoate and elusive principles which I have endeavoured to cull briefly from some examples executed and statements made by members of the Society:—(1) As a general axiom a building is to be considered as a gem, in a glass case. To touch or disturb it in any manner whatever is an act of sacrilege (a sentiment with which I, for one, heartily concur). (2) Nevertheless, you may whitewash it to any extent. You may rake out the inside of the walls and substitute blue brick for old core without stint. You may rebuild or finish an interior with blue bricks, or you may patch up cracks externally with blue bricks. (3) But you may not patch them up with the original material of which the wall is built. That is counterfeit. (4) When you come to tracery, however, you may repair that in

stone, and make such a copy of the old as you may be capable of. That, somehow, is not counterfeit. (5) You must use pin on all possible occasions. (6) And just as you may whitewash you may also use plaster. You may, indeed, "restore" ancient plaster in the fullest sense of the obnoxious word. In the eyes of the Society there is some special value in plaster as a Mediæval building material, which claims a treatment more exacting than you might accord to hewn wrought stone or timber, let us say. (7) Finally, the Society for the Protection of Ancient Buildings may advertise you for itself, or you may advertise the Society for the Protection of Ancient Buildings and yourself in the Press, or on quarterly lettered or ill-spelt tablets—if, that is, you are acting under aegis. (8) But woe betide you if you attempt anything whatsoever in any direction in connection with an old building without such imprimatur.

Here, then, I have briefly referred to the methods of the extreme schools on either side. The first is purely destructive and is fraught with disaster to the true preservation of antiquity. It has given us mainly blight and December leaves. The second is apt to destroy in its strenuous endeavour to do more wisely than restore in the extreme sense in which it might believe the first destroys. It creates in place a new method, apt to impress itself in illogical fads, as for instance when it whitewashes Exeter Guildhall, and is quite ready to have been informed, to whitewash Westminster Abbey. You must make what logic you can out of the precepts I have sketched for you above. Now I believe that wisdom lies more in the *via media*. If the tower and spire of Salisbury Cathedral were to fall to-morrow (from which catastrophe we have lately been saved by a restoration in defiance of the precept of the S. P. A. B., but against which no word of criticism was breathed), will any one say that we should do worse in rebuilding it on the old model, and all that it destroyed, its collapse? I certainly should recognise such a reconstruction as a legitimate "counterfeit." And if a whole, when also a part? It is almost impossible to deceive the future by a make-believe of the past, and if there be any fear, a record date will easily put that to right; and the better theoretical methods are understood and adopted and the old feeling expressed, the more harmonious and satisfactory will the result be. Too many windy words have been wasted over so-called "counterfeits." Do we blame the Perpendicular builders of Westminster Abbey and accuse them of counterfeit because they imitated the Early Decorated style, and in some places very cleverly? Or do we call in question Mr. Micklethwait's work, daily growing at the West End? It is, as I understand, a necessitous reproduction of ancient forms.

Now there is one skilful and many an unskilful way of treating each problem which comes before us, and there are many methods of preservation applicable only to individual instances. I can only here deal with the subject in its general aspect, and thus there are two primary principles which govern all cases:—1. In an ancient building, not a stick nor a nail shall be moved if a reason—a sufficient reason—is forthcoming to keep it where and how we find it. 2. When the work is done, no modern workman's mark shall be seen wherever it can be avoided. I do not mean to say that the condition of a building may not have been such—cumbered perhaps by restoration of fifty years ago or later—that even a transference of internal appearance may not have been a necessity, but its ancient work will all look reverently ancient, although scarred perhaps by past inroads, not by ours; and there will be nothing new inserted for newness sake, so that the feeling of antiquary on entering may feel that all is genuine and true tale, and that such as is new is legitimately, necessarily so, and such as is old untouched.

And what is the new to be? This is involved in the second question, "How far is the ancient to give way to modern requirements?" Primarily the answer is, and this must be our third principle, "It is not to give way." We can and do sometimes create *de novo* to suit modern needs. We cannot in ancient work reveal, but much more easily can we destroy. We cannot create what the past has bequeathed. That is gone and it may be gone for ever. Thus our third principle is vital one.

Nevertheless, common sense interposes and says that a building whose life, so to speak, is active must be suited to the needs of the day within reasonable bounds. But I would ask you to bear in mind steadfastly that the tendency of too much to do too much, and you will never err on the wrong side in the matter of adaptation (I am not now speaking of stultifying you too little. You cannot preserve too much).

It may be convenient at this stage, after the mention of these three guiding principles, to subdivide the buildings with which we are called upon to deal into three classes:—

1. Ancient buildings which have continued in the use for which they were erected up to the present, and which are desired to preserve for the same use. Cathedrals and churches, chiefly, detached monuments, some mansions and schools.
2. Ancient buildings which have gone out of use, but which



desired to recover to their old use or adapt to a new one incorporate into the midst of new buildings. Old manor become farms, or farms become cottages, or ancient buildings incorporated into a modern growth. ruins of ancient buildings which it is desired to preserve and to prevent from further decay.

while the same principles will govern in all divisions, practice in each will vary somewhat. In applying them let stipulate succinctly the three principles already enunciated. (1) Nothing shall be touched which can be left alone. must efface our own work. (3) Ancient work shall not be adapted to modern needs. These are primary precepts. In any case will it be possible unfortunately to fulfil out according to the measure of our success in doing so work will that work be itself successful. A fourth principle applicable to all cases has to be stated, that it goes as a matter of course. (4) Our first efforts directed to the building's stability. A fifth will perhaps be generally accepted in regard to all three divisions; (5) The beauty of an ancient building is not to be marred by modern accessories for any purpose whatever. The beauty, for instance, once made to build great brick buttresses up the west front of Peterborough Cathedral I regard as brutal, and an insult to the designers of that remarkable work. I cannot subscribe to Ruskin's precept, "Do not put the unsightliness of the aid," although I admit its tentative effectiveness. The sixth and last general principle will be (6) In all cases ivy must be removed and the building left to its own devices.

let us deal with our three classes of buildings:—(1) Buildings in active use. I confine myself for the nonce to the first class. Our third principle will be the most difficult to apply. Clearly its application will vary with individual cases, each one of which must be dealt with on its merits. I am aware of the difficulties, but would plead for the most stringent application of this principle. There are, unhappily, but few cases remaining in which modern needs have not been met by the removal of ancient evidences—very dear to us if we only now recover them. Our efforts in these latter days are often directed to restoring away the restorations of the last few years, as the late Archbishop of Canterbury once said. But we are frequently called upon to adapt, and our efforts should be directed to doing this without interfering with the original lines of the building. There are points where we may be tempted to break the rule:—(a) the levels of the floors, specially of the chancel floor; (b) the provision of vestry accommodation; (c) the disposition of the organ.

*Regarding (a) Floor Levels.*—More frequently than is generally thought the chancel was not raised above the nave, and the desire to elevate the chancel should not be permitted to disturb the original proportions of the building.

The same must be said of the frequent wish to elevate the chancel. This is specially unfortunate if there be a low-silled window. Be persistent in resisting such importunities. The level of the piscina will generally be a good guide.

*Vestries.*—Vestry accommodation is an undoubted need in these days. All I would do is to urge the finding of some space within the building which may be devoted, by screening off, to the purpose, if this be in any way possible, without committing yourself to extension. The tower space may be successfully thus utilised. But if vestries have to be added, be most careful to choose a position in which the new building will not interfere with ancient points of interest or beauty. A detached building connected by a covered passage may be better than an integral addition to the church.

*Organ Space.*—The choice of organ space is the direst problem in an ancient edifice, and demands all our care. It is confessed that the west-end position has musical advantages in its working in connection with our English method of choir in the choir stalls. There are cases in which it is impracticable, absolutely. If it can be adopted without destroying a west window, then by all means adopt it. But we are asked frequently to throw out an alternative place for the chancel, and I am bound to admit that sometimes no other possible alternative. It may be necessary to abrogate our second and third principles. But I have the matter weighed many times before taking the decision. If there are any unique features in the part of the building you would destroy refuse to do it. There is much to be said for the exercise of ingenuity in connection with the disposition of the organ, and there are really many unexplored places which courage will suggest. At Stratford-on-Avon Mr. Bodley solved the problem by placing the instrument in the western arch of the central tower. It is full of interest, certainly if ever removed the building will have suffered. Where there are transepts our difficulties may be eased, yet I know a case (at Clevedon old church) where a beautiful transept, wherein Arthur Hallam is commemorated, is absolutely ruined by a huge and blatant organ, set regardless of surroundings. To block up the chancel,

especially if it be narrow, with an instrument resting on the floor and projecting from the wall, is fatal. Even in a great church the ill effect of this treatment is patent, as in the restored abbey of Dunblane or at Boston. It must be remembered that few of our churches were built for organs, and the best we can do is a makeshift. If our difficulties be great they are diminished by having to provide for a small instrument, and perseverance and tact are all I can prescribe, together with that resoluteness in defence of the old, which will carry weight with most of those who have charge of our ancient monuments. To remove the organ from the organ-screen, where such exists, in order to open out a vista or for any practical purpose, to take down the rood-screen (and to remove it to the vicarage hall, as I have known done) in order to open out the chancel, to remove the interesting steps of a Norfolk font, because they occupied so much space, are types of deeds we mention only to deplore.

(To be concluded.)

## THE EGYPTIAN ANTIQUITIES DEPARTMENT.

IN his report on Egypt and the Soudan the Earl of Cromer writes:—

Under the able direction of M. Maspero this service can show improvement in all its branches. At the beginning of 1901 a special credit of 578E£. was granted by the Ministry of Finance, in order to enable the inspectors to travel more continuously. The results have been satisfactory, as the monuments are now under far better supervision than was formerly the case.

M. Maspero reports that he has observed a steady deterioration in certain of the older monuments, necessitating immediate repairs. This deterioration is chiefly due to the natural process of decay, but in some cases it is due to the fact of the earth covering the monuments having been removed without repairs having simultaneously been taken in hand. Amongst the monuments which have suffered thus, he instances the temples at Abydos, Luxor, Gournah and Edfou. This last is in a dangerous state, and measures are now in progress for its speedy consolidation. At the temple of Abou Simbel, M. Maspero deplors the habit of tourists of climbing on to the knees of the Colossi with a view to taking photographs. This has caused the existing cracks to widen, and he fears that large fragments will shortly fall. Repairs were undertaken upon many of the monuments, and a considerable number have now been provided with walls and gates.

The tomb of Amenhotep II. at Thebes was lately broken into by robbers, who burst the iron gate and searched the royal mummy in the hope of finding treasure. Not finding this, they contented themselves with removing the wooden boat, which was placed in the outer chamber. Fortunately the mummy suffered little harm. It seems incredible that such an entry should have been possible without the connivance of the armed guardians permanently stationed at this tomb. The matter is at present under inquiry by the police, and several persons have been arrested on suspicion.

The excavations are as usual mostly in the hands of private societies or of individuals who share their finds with the Museum Service. The Department itself carried out excavations at a cost of about 1,660E£. in 1901; 584 new objects have been added to the collection, some of them of much interest and value. The tourist fund brought in 3,213E£. in 1901, the Salle des Ventes 913E£., and the sale of "sebkah" (refuse on the sites of ancient towns and villages) 525E£. 248E£. was expended on additions to the Museum library.

At Karnak the whole of the fallen columns have been removed, and the foundations levelled and cleared. An experiment on a small scale is to be tried in the course of this year by rebuilding some of these columns upon a new and better foundation. In all 1,992E£. was spent upon repairs at Karnak in 1901. Many important statues were discovered during the excavations.

A project regulating the law for removing "sebkah" has been approved by the Government, and is now in force. Some modification in the law regulating the sale and transport of antiquities is at present under the consideration of the Government lawyers.

Good progress was made during the past year in the preparation of the catalogue of the Museum. Two volumes have been published, viz. those on Ostraca and on metal vases. Two others (on Coptic monuments and objects discovered by M. Loret at certain sites) will very shortly be published. Two more (stone vases and stelæ of Middle Egypt) are well advanced towards publication, and lastly, the proofs of three more (tombs of the Middle Empire, Græco-Roman stelæ and votive tablets) have been sent to their authors for correction.

### The Philæ Temples.

The construction of the Nile reservoir at Assouan will involve the annual submersion of a portion of the temples



situated upon the island of Philæ. This is much to be regretted, but it was unavoidable, as the Assouan cataract presented such advantages over every other site as to render its selection imperative. The Egyptian Government decided, in consequence, to take all possible steps to preserve a record of these monuments as they existed prior to the rise in the water-levels and also to lessen any danger which might arise from the annual inundation. With the first object in view, a volume, prepared by Captain Lyons, R.E., was published in 1897. It gives a full account of the temples and other structures on the island, and is furnished with photographs and detailed drawings of the buildings as they then stood.

In order to attain the second object a careful study of the foundations was made during the summer of 1901. Early in April a special staff was engaged for the purpose. Shafts were sunk alongside the foundations of the different buildings, and the nature of the soil and the depth of the rock were examined and ascertained. This work was completed, at a cost of 1,000*£*., before the arrival of the flood, and complete drawings and estimates were prepared.

After a close study of the question, and acting upon the advice of Sir Benjamin Baker, the Government decided to underpin the foundations, the method employed differing in each case according to the nature of the foundations.

Briefly, the following plan has been adopted. Wherever cross walls exist, upon which to support them, steel girders are introduced under each column and wall. These girders are then built over with masonry, and, finally, cement grout is poured in to fill up all interstices. Where girders cannot be employed, the space between the bottom of the existing foundations and the permanent saturation level is filled up with masonry, laid in cement. As the foundations of the great temple of Isis were proved by Captain Lyons to descend everywhere to the solid rock, it was decided to limit the operations to the consolidation of the following structures:—

(1) The eastern colonnade and the adjoining temples; (2) the temple of Nectanebo; (3) the western colonnade; (4) the temple of Isis Usret; (5) the kiosk, commonly known as Pharaoh's Bed.

The estimates for the above works amounted to 22,000*£*., including 3,000*£* for repairs to the superstructure. This sum has been granted by the Commissioners of the Caisse de la Dette.

In November 1901 a special staff of experts arrived and commenced work. By the end of the year the whole of the eastern colonnade had been underpinned, as also the foundations of the temple of Nectanebo. In addition to this, nearly two-thirds of the western colonnade were completed, and good progress was made with the foundations of the kiosk. The expenditure for 1901, excluding the preliminary examination, was only 1,400*£*., but this does not include the cost of materials and stores employed.

Very great credit is due to Dr. Ball and to Mr. M. Talbot for the excellent work which they have done in this connection. The task before them is extremely difficult and delicate, but so far they have been remarkably successful. Mr. Fitzmaurice, the resident engineer of the Assouan dam, was in charge both of the preliminary work and of the preparation of the estimates, and it is largely due to his energy that such satisfactory progress has been made. It is expected that the work will be entirely completed by the end of May 1902.

I have dwelt at some little length on this matter, as it has, from time to time, formed the subject of some controversy. Those responsible for the government of Egypt have been attacked from two opposite and antagonistic quarters, namely, by the engineers for paying too much attention to the artists and archaeologists, and by the latter for paying too much attention to the engineers. My own opinion is that to have deprived the people of Egypt, by reason of the artistic and archaeological objections, of the enormous and unquestionable benefits which they will derive from the construction of the Assouan dam would have been perfectly unjustifiable. On the other hand, I readily admit that all that is possible, consistent with the attainment of the main object in view, should be done to meet the wishes of those who represent the archaeological and artistic aspects of the question. This, in fact, is the course which has been adopted.

The committee charged with the preservation of Arab and Coptic monuments expended 7,300*£* last year. The expenditure was distributed over nine mosques and two tombs. A special grant of 20,000*£* was made by the Caisse de la Dette some few years ago to aid in the work of preservation and restoration. The unexpended balance of this grant now amounts to 2,565*£*., of which 700*£* for Arab and the balance of 1,865*£* for Coptic monuments. The committee propose shortly to apply to the Government for a fresh grant. Sir William Garstin writes:—"It will be observed that very little has as yet been spent of the credit of 2,000*£* allotted to the repair and preservation of Coptic monuments. There are many difficulties in the way of progress in this particular branch of the duties of the committee. The Coptic com-

munity, as a whole, and particularly the patriarch, still appear to view with disfavour any attempts of the committee to preserve these monuments, and considerable delay occurs whenever a proposal is made or an estimate submitted." The attitude of the Coptic authorities in connection with this matter is greatly to be regretted.

Before leaving this subject I may mention that an estimate is being prepared of the probable cost of restoring the important mosque of Sultan Hassan. Great care will have to be exercised in dealing with this matter.

## THE INSTITUTE OF PUBLIC HEALTH, EDINBURGH.

THE Public Health Laboratory in the University of Edinburgh was opened in 1884, and had to be extended in 1890 to provide further facilities for teaching and research in bacteriology and chemistry in connection with the diagnosis and prevention of infectious disease, but it was found that the department at the new University building was quite inadequate to supply the necessary laboratory accommodation for the chair. Sir John Usher, however, generously offered to underwrite and equip an Institute of Public Health. The University gratefully accepted this offer, and appointed a committee to look out for a site and take charge of the building and equipment. The committee appointed Messrs. Leadbetter & Fife, Edinburgh, to be the architects, and at their request, in order to insure that the new Institute should possess a most modern and approved arrangements, the architect and the professor of public health visited the great public health institutes on the Continent and in England. The results of their observations were embodied in plans which, before approval, were submitted to Dr. J. B. Russell, member of the Local Government Board of Scotland, who expressed his opinion that an institute so built would provide every facility for public health work such as was contemplated.

It was originally intended, says the *Scotsman*, that the Institute should be built on ground belonging to the University situated between the music classroom and the St. James' Union, but it was found that this site was unsuitable on account of deficient light. After consideration of various possible sites, one in Warrender Park Road was adopted. The Institute is situated on the south side of the roadway, with the principal frontage facing the north, and the amount of light available is in all respects all that could be desired, and the wideness of the streets adjoining no diminution of light can be caused by the erection of adjacent buildings.

The exterior of the building has been carried out in a simple treatment of Classic Renaissance detail, with the effect of giving a dignified elevation without any undue elaboration. It is roofed with red Roman tiles. It is rectangular in plan, and covers an area of 133 feet by 48 feet. The central part is recessed, and the main entrance is in the middle of the north elevation. On the stone lintel of the main entrance doorway three shields are being cut, one being the coat of arms of the donor (Sir John Usher), the other of the Chancellor of the University (the Right Honourable A. J. Balfour), and the third the centre will be the Scottish Lion. On the pediment high above the entrance door will be carved the arms of the University placed within an ornamental scroll. On the west front of the building there will be carved in incised letters the following inscription:—

University of Edinburgh.

The

John Usher Institute of Public Health,  
Presented to the University of Edinburgh  
by

Sir John Usher of Norton and Wells, Baronet.  
May, MDCCCII.

On the ground floor there is a spacious entrance hall, panelled with wainscot oak, an easy and well-lighted staircase, a museum, research room, gas analysis and micro-photography room, three laboratory work rooms designed for carrying on the bacteriological work in connection with the public health administration of the city, and two large and well-lighted subsidiary work rooms and caretaker's house. The first floor contains a chemical laboratory, balance room, optical room with dark room adjoining, reading room for students, veterinary analysis room, research room and cloak room, and a lecture theatre with preparation room adjoining. Under the stage of the lecture theatre are store rooms for apparatus and instruments and a mechanics' workshop. The second floor contains a bacteriological laboratory, research room, observation room, disinfection room, two incubation rooms, small lecture room for the advanced class, professor's laboratory, retiring room and library, and assistants' room. The upper storey of the central section of the building gives accommodation for the extract ventilation chambers, &c., and provision has been made upon the roof for experiments being carried



the open air. In the basement floor there are a  
ting room, an incinerating room, a room contain-  
large centrifugator with electric motor, and a room  
are air and water apparatus. A lift from the basement  
to the upper floors. The building is throughout of  
construction, the heating is by hot water, while extract  
is carried from every room, and from the various  
d fittings, in separate tubes to the extract chambers on  
where two speeds of exhaust ventilation are worked  
lectric fan. The building is lighted throughout by  
y, and electric motors are used for all appliances  
mechanical power.

nuseum is 40 feet by 25 feet, of lofty proportions, and  
ct access from the entrance hall. It is floored with  
osaic, and the cases and other fittings are made of  
mahogany. The museum is designed for educational

In three large cases will be arranged tubes con-  
bacteriological cultures of micro-organisms found in  
r, soil, &c.; also the recognised organisms of disease;  
l specimens illustrating the diseases of animals com-  
e to man; apparatus used in hygienic investigation,  
teriological, chemical and meteorological. Working  
s of filter beds and working examples of filtration of  
; samples of the means adopted for the protection of  
engaged in noxious trades, and disinfectants and the  
as used in disinfecting, &c., will also be exhibited here.

chical laboratory on the floor over the museum is of  
ze. It is fitted with three centre work-tables accom-  
eighteen workers. It has a large fume closet,  
drying chamber, a filter chamber, and the  
necessary fittings of a well-equipped laboratory.  
ork-table is supplied with cold water, pressure  
pressure air, steam, gas and electricity to the  
occupied by each worker. The pressure water  
an ingenious arrangement of pipes, is returned to the  
k for reuse. The tables also provide drawers, cup-  
writing flap and shelf accommodation for each worker;  
y fumes from the several spaces provided for the  
are immediately carried off to the exhaust chamber.

he private research rooms each give accommodation  
orkers, and are fitted with work tables arranged for  
ic, chemical and bacteriological work. The bacterio-  
laboratory, situated over the chemical laboratory and  
size, is fitted with three centre work tables for twenty-  
workers. The design and ventilation of these tables are  
those in the chemical laboratory. The special fittings  
om are a stone topped table for incubators, another  
iser, a steam jacketed filtering apparatus, a steam  
autoclave, &c.. The professor's laboratory contains a  
rk-table with all the appliances supplied to the tables  
laboratory, as well as a combustion table and other  
s. This room communicates with the advanced class-  
The lecture theatre has accommodation for 274  
at the seating being staged on the line of a catenary  
nd three sides of the room, while the rostrum, the  
screen, &c., are placed across the remaining side, with  
iving access to the preparation room. The theatre is  
well lighted, and there are arrangements for instantly  
ng the room for experiments or lantern demonstration.  
ation rooms are insulated all round, and the heating  
automatic electric hot-water boilers. The system adopted  
ld room is Hall's patent carbonic anhydride refriger-  
chine.

as analysis-room contains a centre work-table, various  
tles and fittings, and a micro-photographic apparatus  
specially constructed floor of concrete. The water  
oom has a work-table for two workers; a distilling  
a combustion table. The general plan of the building  
arrangement of the fittings exhibit the most careful  
on and research on the part of the architects, and it  
ed that the Institute will compare favourably with any  
ilding of its kind either in this country or abroad.  
rincipal contractors were:—Mason and timber, Messrs.  
lashiels; plumber and electrical work, Mr. J. M.  
uensferry Street, Edinburgh; general furnishings,  
William Patterson & Co., Queensferry Street, Edin-  
nd painters, Messrs. George Dobie & Son, George  
inburgh.

ing the Institute to the University, Sir John Usher  
st the University Court to provide accommodation for  
out scientific work in connection with the public  
ministration of the city. The importance of bacterio-  
investigation as an aid to the diagnosis of infectious  
is now generally acknowledged. In the case of  
of these diseases, especially at the beginning of an  
in a large city, cases may occur which are so slight  
e detection altogether in the absence of bacterio-  
amination, and yet these cases are able to convey the  
o others in a more virulent form. The success of  
e measures is dependent on the early notification of  
s, and bacteriological work assists greatly in securing

this end. In some cities, such as Glasgow, the corporations  
have laboratories of their own, and it was in order to  
save the city of Edinburgh the expense of erecting such  
a laboratory that Sir John Usher made the request  
above mentioned to the University Court. The com-  
mittee of the Institute, in order to fully carry out the wishes  
of Sir John Usher, set apart the three rooms above mentioned  
on the ground floor of the Institute as a bacteriological  
laboratory for the city. Two of these rooms are designed as  
laboratories, and will be specially fitted up with appropriate  
apparatus. The third room will be fitted up for clerical work.  
In this room the samples for examination will be received, the  
result of the examination recorded, and the reports of the  
results despatched to the medical officer of health or to the  
medical practitioner as the case may be. These rooms consti-  
tute a department considerably larger than the bacteriological  
laboratory of the city of Glasgow, but while these rooms are  
specially set apart for the city's work, all the special equip-  
ment of the Institute will be available for this work in case of  
need.

In 1898, shortly after Sir John Usher had announced his  
intention of giving the Institute, and his wish that it might be  
made useful to the city, the committee informally communicated  
with the late Mr. Pollard, the convener of the public health  
committee, and informed him that the committee would shortly  
submit certain proposals for the consideration of the Town  
Council. In 1899 the committee formally requested a con-  
ference with the public health committee, and laid before them  
detailed proposals. These were not entertained by the public  
health committee, but on a report to the Town Council the  
matter was remitted back to the public health committee for  
reconsideration. At the urgent request of Sir John Usher the  
committee reopened negotiations with the Town Council, and  
submitted amended proposals, which were also rejected by the  
public health committee. A fortnight ago a report was made  
to the Town Council by the public health committee, but the  
Town Council refused to adopt it, and accepted generally  
the proposals of the committee of the Institute. These pro-  
posals are, in brief, as follows:—

1. That the three rooms above mentioned be entirely set  
apart for the city's work.

2. That a qualified assistant be appointed who shall attend  
exclusively to the city's work, and that the services of an  
attendant be available.

3. That the whole work be done under the supervision of  
the professor of public health, who shall alone be responsible  
to the city for the work.

4. The scope of the work to be as follows:—

(1) Bacteriological examinations required by the medical  
officer of health in the daily work of dealing with infectious  
disease. (2) Bacteriological examinations required by the  
sanitary inspector. These would include examinations of  
water, milk, foodstuffs, flesh; also for anthrax and glanders.  
(3) Bacteriological examination of specimens in cases of  
diphtheria, typhoid fever and tubercular disease which may be  
sent by medical practitioners in the city for the purpose of  
assisting them in their diagnoses.

5. That the University agrees to perform the whole work  
for the outlay incurred. The committee estimate that for the  
investigation of 1,000 specimens the cost will be about 300/  
per annum, this being founded on the experience of cities  
where a similar arrangement prevails.

The Institute is just on the eve of completion, and will, it is  
expected, be opened in the middle of May by the Right Hon.  
A. J. Balfour, M.P.

## WORCESTERSHIRE ARCHÆOLOGICAL SOCIETY.

THE Worcestershire Archæological Society held its annual  
meeting at the Shirehall on Friday last, Lord Beauchamp  
presiding. There were also present the Rev. R. R. Duke,  
Miss Duke, Revs J. K. Floyer and Gordon H. Poole (hon. secs.)  
and H. Kingsford, Messrs. S. G. N. Spofforth, F. T. Spackman,  
F. R. Jeffrey (hon. treasurer), W. Wood, T. Duckworth and  
J. K. Randall. Apologies were received from Canon Cattley,  
Messrs. Cordy Manby, A. H. Parker and T. H. Parker.

The statement of accounts, submitted by Mr. Jeffrey, showed  
that the year was started with a balance of 54*l.* 0*s.* 7*d.* The  
total receipts amounted to 103*l.* 1*s.* 4*d.* The Society had now  
a balance of 44*l.* 14*s.* 1*d.* The fact that they drew 20*l.* from  
the deposit account of 50*l.*, partly accounted for that. Through  
the energy shown by the hon. secretaries the membership had  
increased and the funds of the Society were in a satisfactory  
condition. The Wayside Cross Restoration Fund showed  
that the Eckington Cross had been restored at a cost of  
35*l.* 10*s.* 7*d.* The sum of 3*l.* 12*s.* 11*d.* left in hand after the  
completion of the work was put to the Hanbury Cross Fund.  
That work had been completed at a cost of 25*l.* 19*s.* 11*d.*  
Mr. Jeffrey proposed the adoption of the accounts.



The Rev. J. K. Floyer, in seconding, described the financial position of the Society as very satisfactory. Of the 20% taken from the deposit account 11% was spent on a bookcase, which would increase their capital. He thought the 20% might be replaced out of the balance now in hand. For some time the Society had been working at a loss, but they had now turned the corner.

The accounts were adopted.

The annual report showed an increase of ten members, and summarised the doings of the Society during the past year.

Mr. Jeffrey proposed that the recommendation that Messrs. Porter, H. Kingsford and R. R. Duke be elected vice-presidents of the Society be adopted, and referred in terms of the highest praise to the services rendered to the Society by these three gentlemen.

Mr. Spofforth seconded, and the resolution was carried.

On the motion of the Chairman, seconded by Mr. Spackman, the Revs. J. K. Floyer and H. Gordon Poole were re-elected hon. secs., Mr. Jeffrey hon. treasurer, Mr. A. B. Pinckney librarian and Mr. Ernest Day auditor.

The executive committee were re-elected, with the omission of Mr. W. Pearce, who desired to resign, and the addition of Messrs. Spackman and Duckworth.

A letter was read from the British Archaeological Association to the effect that their Council would gladly co-operate with the Association in protesting against the sale or alteration of Hartlebury Castle.

The Chairman said it had never been proposed to alter Hartlebury Castle. It would be quite time for the Society to take action when the building was threatened in any way.

The letter was allowed to lie on the table.

It was decided to ask the Bishop of Worcester to become a patron of the Society, the Chairman hoping that the Bishop would be informed of the fact that former bishops had taken a keen interest in the Society, and had given them an opportunity of inspecting plans of proposed church restorations, which enabled them to prevent any attempt at vandalism.

The Rev. H. Kingsford said two old minute books of the Society, recording its doings fifty years ago, had been discovered.

The Rev. H. Kingsford proposed a vote of thanks to Lord Beauchamp for his excellent paper on "The Coronation."

Mr. Spackman, seconding, urged that it should be included in the Society's report.

Mr. Spofforth supported.

Earl Beauchamp said the paper did not contain original information, but simply the results of research, and he did not therefore think it worthy of being included in the Society's report.

The request was pressed, and his lordship said he would confer with Mr. Floyer on the matter.

## EDINBURGH ARCHITECTURAL ASSOCIATION.

A MEETING of the Edinburgh Architectural Association was held on the 2nd inst. in the Rooms, 117 George Street, Mr. Henry F. Kerr, A.R.I.B.A., the president, in the chair. Mr. James Bruce, W.S., submitted the following motion:—"That it be remitted to the committee of management to consider the provision made in the Scottish Universities for the teaching of architecture, and in the event of the committee being satisfied that the same is inadequate, to report whether in the opinion of the committee an application should be made to the trustees of the Carnegie Trust, with a view to more adequate provision being made for such teaching." Mr. Bruce remarked that in the University of Edinburgh there were fifty-two Professorships, but among them all there was not one devoted to architecture. In the Faculty of Law there were no fewer than seven Professorships. When they thought of the enormous importance of architecture to the health, happiness and comfort of the people, it was really a very extraordinary thing that in the University of Edinburgh there was no such thing as a Professorship of Architecture. More than that, so far as he knew, in no Scottish University was there any provision made for a Professorship of Architecture. The Carnegie Trust had just been considering the wants of the Scottish Universities. The Universities had been asked to indicate where their wants lay, and although he had gone over the statements published on behalf of the University authorities, in not one of them was there even a hint that there was any lack in the matter of the teaching of architecture. Surely that was a strange position for the Universities of Scotland to occupy. Accordingly he thought it would be well for a body such as the Edinburgh Architectural Association to directly press upon the Carnegie Trustees the advisability of something further being done in the matter of the teaching of architecture in the Universities. He used the phrase "something further," because to some slight extent the matter was attended to in the University of Edinburgh through the Chair so well occupied by Professor Baldwin Brown, namely, the Chair of Fine Art.

Mr. G. S. Aitken seconded.

The Chairman, in supporting the motion, suggested that the matter, instead of being remitted to the committee of management only, should be remitted also to the Council. He read a letter from Professor Baldwin Brown, who expressed a cordial agreement with Mr. Bruce's motion. Even though the Carnegie Trustees had too many claims before them to do anything in the matter immediately, it would be a good thing to put the demand for a Chair of Architecture in some agency of the kind, distinctly before the public. Chairman added that he had seen a good deal of what was done in the teaching of architecture both in France and America, and he was perfectly confounded with the ordinary development of the teaching of architecture in these countries. In some cases they had twenty-six or twenty-seven teachers of one kind or another in that subject alone. Why should it not bulk more largely in Scotland? The sooner they tackled the subject the better.

The motion was unanimously adopted.

Afterwards Mr. Wilson Beaton read a paper, written by Mr. James Millar, I.A., on the Glasgow International Exhibition of 1901. The paper was illustrated by drawings, photographs and limelight views.

## LOADS AND WORKING STRESSES FOR BUILDINGS.

THE committee appointed in 1899 by the Austrian Society of Engineers and Architects to report on "Specifications for the loading of structures and the working stresses of materials of construction" have published the results of ten years' labour. The following figures compiled from the report by Mr. F. C. Kunz, assistant to vice-president, engineering department, American Bridge Company, are of great interest for comparisons, says the *Engineering Record*, as they actually cover the same ground as our building laws. They are of local interest only, like data for special timber and for special stones, have been omitted. All figures are given in numbers.

### Weight of Masonry.

	Lbs. per Cubic foot
Common brick masonry, lime mortar	100-5
Common brick masonry, cement mortar	105-0
Hard brick masonry, Portland cement mortar	100-0
Best pressed brick masonry, Portland cement mortar	120-5
Hollow brick, lime mortar	80-
Porous brick, lime mortar	70-
Rubble masonry, light	12
Rubble masonry, medium	13
Rubble masonry, heavy	15
Ashlar masonry, sandstone	130-5
Ashlar masonry, limestone	125-0
Ashlar masonry, granite	16
Portland cement concrete, brick	11
Portland cement concrete, lime or sandstone	13
Portland cement concrete, granite	15

### Weight of Building Material.

	Lbs. per Cubic foot
Masonry débris	9
Sand	9
Slag	4
Coal ashes	4
Dry lime mortar	9
Dry cement mortar	10
Asphaltum	125-0
Gypsum	60-
Cinder concrete	60-
Glass	16
Dry earth	8
Wet earth	9
Gravel	12
Clay	95-1
Turf	10-

### Floor Live Loads.

	Lbs. per Square foot
Mansard rooms	3
Residences	5
Schoolrooms	6
Stairs, corridors, theatres, ballrooms, gymnasiums, armouries, assembly rooms	8
Offices, light storage, above first floor	9
Offices, light storage, first floor	11
Ice storage (ice 3 feet high)	15

### Wind and Snow Loads.

	Lbs. per Square foot
Horizontal wind pressure on vertical plane	
Snow pressure on horizontal plane	

Only horizontal wind is to be assumed. If wind and snow loads are used combined, only two-thirds of the latter is to be considered.



*Working Stresses of Portland Cement Concrete Six Months Old.*

	Sand; Gravel.				Lbs. per Square Inch.
1.	3	.	.	.	600-710
2.	3½	.	.	.	470-570
3.	4	.	.	.	340-430

*Working Stresses of Iron, Timber and Glass. In Pounds per Square Inch.*

	Tension.	Comp.	Bending.	Shear.
Cast iron and ingot iron	14,200	14,200	14,200	11,400
Steel	2,850	8,530	3,560	2,850
Timber	—	1,000	850	—
Glass	—	1,000	570	—

et holes have to be drilled. Maximum pressure on surface of rivets, 23,000 lbs. per square inch. For iron and steel bridges special instructions exist.

*The Working Stresses of Timber.*

Compression, from	.	.	.	.	1,140 to 1,420
Bending, from	.	.	.	.	850 to 1,000
Shear, from	.	.	.	.	1,140 to 1,420
Parallel to grain	.	.	.	.	140 to 210
Perpendicular to grain	.	.	.	.	280 to 420

ing and eccentric loading have to be considered (see formula given.)

*Working Stresses of Dimension Stones and Piers. In Tons per Square Foot.*

	I	IIa	IIb	IIc
Granite	100	60	50	25
Granite, hard limestone	70	40	30	—
Sandstone, medium limestone	50	30	25	—
Sandstone, soft limestone	35	20	15	—
Sandstone	15	10	—	—

es to single dimension stones, with a factor of safety 5; IIa to piers whose height does not exceed 6 to 8 times their least dimension; IIb to piers whose height does not exceed 8 to 12 times their least dimension; and IIc to piers whose height does exceed 12 times their least dimension. Stones, except granite, which are kept continually wet, these rules do not apply.

*Working Stresses for Other Masonry. In Tons per Square Foot.*

	a.	b.	c.
Common brick, lime mortar	5	7.5	10
Common brick, Roman cement mortar	7.5	5	—
Common brick, Portland cement mortar	10	7.5	5
Brick, lime mortar	4	—	—
Brick, Roman cement mortar	5	—	—
Brick, Portland cement mortar	8	—	—
Pressed rubble, Portland cement mortar	10	—	—
Brick, Portland cement mortar	12	8	6
Pressed brick, Portland cement mortar	20	15	10
Concrete for foundations:			
Common cement 1, sand and gravel 5	5	—	—
Concrete for walls:			
Common cement 1, sand and gravel 3	18	—	—
" " 1, " " 5	12	—	—
" " 1, " " 8	8	—	—
" " 1, " " 10	6	—	—

These groups a refers to walls not under 18 inches thick whose height does exceed six times their least dimension; b walls under 18 inches thick, and piers whose height does exceed six to eight times their least dimension; and c piers of at least 12 inches smallest dimension, whose height does not exceed eight to twelve times their least dimension.

*Working Stress in Masonry Arches up to 30 feet Span. In Tons per Square Foot.*

	Comp.	Tension.
Common brick, lime mortar	7	0
Common brick, Roman cement mortar	7.5	0
Common brick, Portland cement mortar	10	1
Brick, Portland cement mortar	12	1
Pressed brick, Portland cement mortar	20	—
Concrete, Portland cement 1, sand and gravel 3	18	3
Concrete, Portland cement 1, sand and gravel 5	12	2
Concrete with iron (Melan, Monier, &c., system), Portland cement 1, sand and gravel 3	21	8
Dimension stones (except soft sandstone) in Portland cement mortar	30	1

These figures are based on a mortar of 1 : 3.

missible working stress for stone stairs can be taken as 1/3 of the ultimate stress for bending.

*Pressure on Foundations. In Tons per Square Foot.*

Clay and wet sand	1.0
Ordinary clay and dry sand mixed with clay	2.0
Hard clay and sand without clay	4.0
Coarse sand and gravel	6.0

in loose, wet soil should not be stressed more than 1/2 ton per square inch of their cross-section. They should be spaced not more than 3 feet apart.

TESSERÆ.

The Art of the Portraitist.

IN portrait-painting, the value of making everything subservient to the principal object is most apparent; and this seeming neglect of detail is perfectly true to the impression given by the person depicted. In studying his character, we are almost ignorant of the accessories around him, and taste alone can guide the artist in the selection of such as will least weaken the force of the head, which, in the picture as it is in nature, should be the primary object of attraction. To attain this object, the greatest masters of the Venetian school—Rembrandt, Vandyke, Reynolds, and above all Velasquez—sacrificed those little truths which if destructive to the end in view are but as lies. What they saw and felt was merely the character of the sitter, and that they sought to render with all the force and truth in their power to give; but they wisely abstained from introducing anything which might destroy the impression they sought to convey, often blending the figures into the backgrounds, and so causing the interest of the spectator to concentrate on the face, and thence gradually decrease as the eye receded from that point of observation. And this practice is perfectly true to nature; for what we term aerial perspective affects the appearance of objects, not alone in the manner usually accepted, that is, in proportion to their direct distance from the eye, but also even laterally and perpendicularly. If you keep your eye on a man's face you will perceive that all other portions of the figure, in proportion to their distance from the head, are less obtrusive in form, in colour and in tone. What is commonly called the outline is less defined, the colour is less positive and the tone less forcible; and though the folds of drapery are apparent, the shadows are not so dark nor are the lights so brilliant as they would appear if the eye were fixed thereon. For, be it ever remembered, the force of nature solely arises from the comparative indistinctness of every object but the one immediately under observation; and though in a picture it may be almost impossible to fully carry out this great truth, yet the nearer the artist approaches it the greater will be his success.

Fuseli on Michel Angelo.

Fuseli had from his boyhood admired Michel Angelo in engravings, and he adored him now in his full and undiminished majesty. It was a story which he loved to repeat, how he lay on his back day after day, and week succeeding week, with upturned and wondering eyes, musing on the splendid ceiling of the Sistine Chapel—on the unattainable grandeur of the Florentine. He sometimes, indeed, added that such a posture of repose was necessary for a body fatigued like his with the pleasant gratifications of a luxurious city. He imagined, at all events, that he drank in as he lay the spirit of the sublime Michel, and that by studying in the Sistine he had the full advantage of the mantle of inspiration suspended visibly above him. The flighty imagination of Fuseli required a soberer master; the wings of his fancy were a little too strong sometimes for his judgment, and brought upon him the reproach of extravagance—an error so rare in British art that it almost becomes a virtue. He was no idle votary, for he strove to imitate; he was no ignorant admirer, for he thus praises his great master:—"Sublimity of conception, grandeur of form and breadth of manner are the elements of Michel Angelo's style. By these principles he selected or rejected the objects of imitation. As painter, as sculptor, as architect, he attempted—and, above any other man, succeeded—to unite magnificence of plan and endless variety of subordinate parts with the utmost simplicity and breadth. His line is uniformly grand; character and beauty were admitted only so far as they could be made subservient to grandeur; the child, the female, meanness, deformity, were by him indiscriminately stamped with grandeur. A beggar rose from his hand the patriarch of poverty; the hump of his dwarf is impressed with dignity; his women are moulds of generation; his infants teem with the man; his men are a race of giants. This is the 'Terribil via' hinted at by Agostino Caracci, though perhaps as little understood by the Bolognese as by the blindest of his Tuscan adorers, with Vasari at their head. He is the inventor of epic painting in that sublime circle of the Sistine Chapel which exhibits the origin, progress and final dispensation of Theocracy. He has personified motion in the groups of the Cartoon of Pisa; embodied sentiment in the monuments of St. Lorenzo; unravelled the features of meditation in the prophets and sibyls of the chapel of Sixtus; and in the Last Judgment, with every attitude that varies the human body, traced the master trait of every passion that sways the human heart. Though as sculptor he expresses the character of flesh more perfectly than all who came before or after him, yet he never submitted to copy an individual, Julio the Second only excepted, and in him he represented the reigning passion rather than the man. In painting, he contented himself with negative colour, and as the painter of mankind, rejected all meretricious ornament. The fabric of St. Peter, scattered into infinity of jarring parts by



Bramanti and his successors, he concentrated, suspended the cupola and to the most complex gave the air of the most simple of edifices." This character carries the image of the author's mind; the style, however, is clearer, and the expression less complicated or obscure than was common with Fuseli. No unimaginative dauber ever hid his ignorance of anatomy under a redundancy of drapery more effectually than this remarkable man could veil ordinary thoughts under colossal words.

#### Voronikhin, the Russian Architect.

In 1800 the Emperor Paul conceived the idea of building a magnificent cathedral in the "Nevskii Prospect" of St. Petersburg, to be dedicated to "Our Lady of Kazan," and Voronikhin, who was then professor at the Academy of Arts, was appointed architect. In the following year the first stone was laid by the Emperor Alexander, and the edifice was completed and solemnly consecrated in September 1811. Criticism has not been sparing of its remarks—some of them exceedingly captious—on this piece of architecture. For no other reason than because the principal façade is extended by a semicircular colonnade, it has been called a copy of St. Peter's at Rome on a reduced scale, whereas there is no one point of similarity between the two buildings in any other respect. To note but one or two trifling differences, the front of St. Peter's has no prostyle or portico, and the pediment is a mere sham one of most insignificant proportions; the colonnades again are there neither on the same scale nor of the same order as the church itself, nor are they combined with it. Andrei Nikophorovitch Voronikhin, the architect, was born in 1760, among the peasantry of Count Alexander Stroganov, who having heard of his talent for drawing sent him in 1777 to Moscow in order to be properly educated as an artist, and he there received some instruction from Bazhenov and Kazakov, two eminent architects. He was then sent to travel with his patron's son, Count Paul Stroganov and after visiting the southern provinces of Russia, Germany and Switzerland, resided for some time at Paris, diligently profiting by the opportunities there afforded of pursuing his architectural studies. In 1790 he returned to St. Petersburg, where Stroganov's protection soon brought him into notice and obtained for him employment.

#### GENERAL.

Herr Max Klinger has completed the statue of Beethoven on which he has been engaged for fifteen years. In it, as in some of his former works, he has endeavoured to suggest the difference between Christian sorrow and Pagan joyousness.

The School of Art Wood-carving, South Kensington, has been reopened after the usual Easter vacation, in rooms on the top floor of the new building of the Royal School of Art Needlework in Exhibition Road, and we are requested to state that some of the free studentships maintained by means of funds granted to the school by the Technical Education Board of the London County Council and by the Drapers' Company are vacant. The evening class has been reopened, and will meet on three evenings a week and on Saturday afternoons.

The District Councils of Llandudno and Penmaenmawr and the Conway Town Council held a conference at Llandudno Junction, at which it was decided to jointly offer a site, consisting of 80 acres of meadow land on the sloping ground above the Conway River, free to the University College of Wales.

Cardinal Vaughan laid the foundation-stone last week of a new church at Acton, London, W., which is to be erected on the site of the old priory. The nave of the new church will be 75 feet long by 31 feet wide, and the total width of nave and aisles will be 39½ feet. The style will be Romanesque; the building will be of red brick, with stone dressings and wood block floor, while the chancel will be of marble. The cost of the entire building will be about 5,000*l.* The church, which will seat 500 persons, is expected to be completed by the end of June. The architect is Mr. Edward Goldie.

The Royal Dublin Society have offered the following prizes in competition at the Art Industries Exhibition which is to be held in August next in Dublin:—Lace embroidery and designs, 110*l.*; wood-carving, 50*l.* 10*s.*; artistic metalwork, 32*l.*; artistic leatherwork, and pokerwork or pyrography, 10*l.* The rules state that each competitor must be resident in Ireland.

Excavations in Bailgate, Lincoln, have resulted in the discovery of a portion of the old city wall, consisting mainly of stones weighing three-quarters of a ton each.

The Paris Municipality will pay 95,000 francs for the installation of electric light in the Tuileries Gardens, as well as a contribution of 11,500 francs annually. But the liability of the city is not to arise until the State has arranged to bear a share in the outlay.

The Works and Streets Decorations Committee, London County Council, in conjunction with the deputation of City wards through which the Coronation procession will have resolved that the decoration of the line of route through the City should be carried out on a uniform principle of private enterprise full scope in regard to the embellishment of buildings. The decoration of the municipal buildings and the erection of costly structures of a decorative character in the streets will be carried out by the works and street decorations committee, apart from any contributions which the various wards will make towards a general scheme of ornamentation.

Mr. W. W. Astor has given 20,000*l.* for the endowment of existing undendowed professorships at University College, London, in connection with the appeal for the endowment of advanced University education and research in London.

Messrs. Martin, Wells & Co. have succeeded in their action against the Army and Navy Co-operative Society, claiming 2,900*l.* balance due. The defendants contended that they were entitled to deduct the amount as penalties for non-payment. Judgment was given for plaintiffs for the full amount of interest at 4 per cent. and costs.

Messrs. G. T. Smith & Wield have obtained the first premium in the competition for workmen's houses in Battersea and Mr. J. S. Brocklesby the second premium. The drawings will be on view next week in the Battersea Town Hall.

The Mezzotint Portraits belonging to the Royal Hibernian Academy in Dublin were sold by auction. The amounts were:—The Countess of Carlisle, by J. Watson, second prize, 45 guineas; Lady O'Brien, by J. Dixon, first prize, 155 guineas; Mrs. Musters as "Hebe," by C. H. Hodges, 26 guineas, and Lady Betty Delmé and child, by V. Green—25 guineas.

Sir W. Chandler Roberts-Austen will deliver the "J. Forrest" lecture on Wednesday next at the Institution of Mechanical Engineers. The subject selected is "Metallurgy in relation to Engineering." It will be repeated on the following Wednesday.

The Marchioness of Granby will preside at the annual dinner of the Artists' Benevolent Fund which will be held at the Galleries of the Royal Institute of Painters in Water Colours on Tuesday, April 29.

M. Loubet will take to Russia for presents a number of artistic products from the State tapestry and porcelain establishments of Beauvais, Aubusson, the Gobelins and others. These gifts are for high Russian officials and for members of the Russian Government.

Mr. H. L. Florence is the architect of the new building for the Institute of Journalists, of which the foundation-stone was laid by Sir Edward Lawson last Saturday.

The Public Baths and Washhouses which have been erected at Walham Green by the Fulham Borough Council from the designs of Mr. H. Dighton Pearson, at a cost of 62,000*l.*, have been opened. The building has been erected on a site that cost the Council 10,500*l.* to secure, and is provided with three swimming-baths, eighty-four private baths and a house containing stalls for sixty-six washers.

M. Jules Dalou, the French sculptor, died in Paris on the sixty-fourth year. He obtained a medal in the Salon of 1875. The group of the "Triumph of the Republic" was by him, as well as several other works in Paris.

Mr. J. H. Oglander has been elected president of the Hampshire Field Club and Archaeological Society.

The Tower of the cathedral of Cuenca collapsed on Sunday last. The town is about 80 miles south of Madrid and contains 8,000 inhabitants. The cathedral is large and its interior is adorned with beautiful marbles.

Paisley Abbey will be dedicated after restoration on Thursday next. The work has been in progress for about three years and has cost 20,000*l.* Increased accommodation has been obtained in the transepts.

The Loan Exhibition of some of the works of the principal English and French painters of the eighteenth century will be opened at the Guildhall Art Gallery on Monday next.

The Erechtheion is to be restored. The greater part of the famous ruin on the Acropolis is still standing, and fragments necessary for its complete reconstitution are lying around.

Mr. George Eve, of the Royal Society of Painter-Engravers, who has designed the King's invitation to the Coronation ceremony in Westminster Abbey, has designed fifty sets of the new book-plate which he has just designed for His Majesty, to be sold at eight guineas a set, for the benefit of the King Edward's Hospital Fund. These book-plates are of three sizes, the designs of each being different.

An Armenian Church will be erected as a pendant to the memorial chapel which was erected on the site in the Rue de la Goujon, Paris, where the bazaar was held which was destroyed by fire a few years ago. The architect will be M. Gliboff, who designed the chapel.

The Late Mr. Sidney Cooper's works, which were sold by auction last week, reached a total of 8,172*l.* 4*s.* 6*d.*



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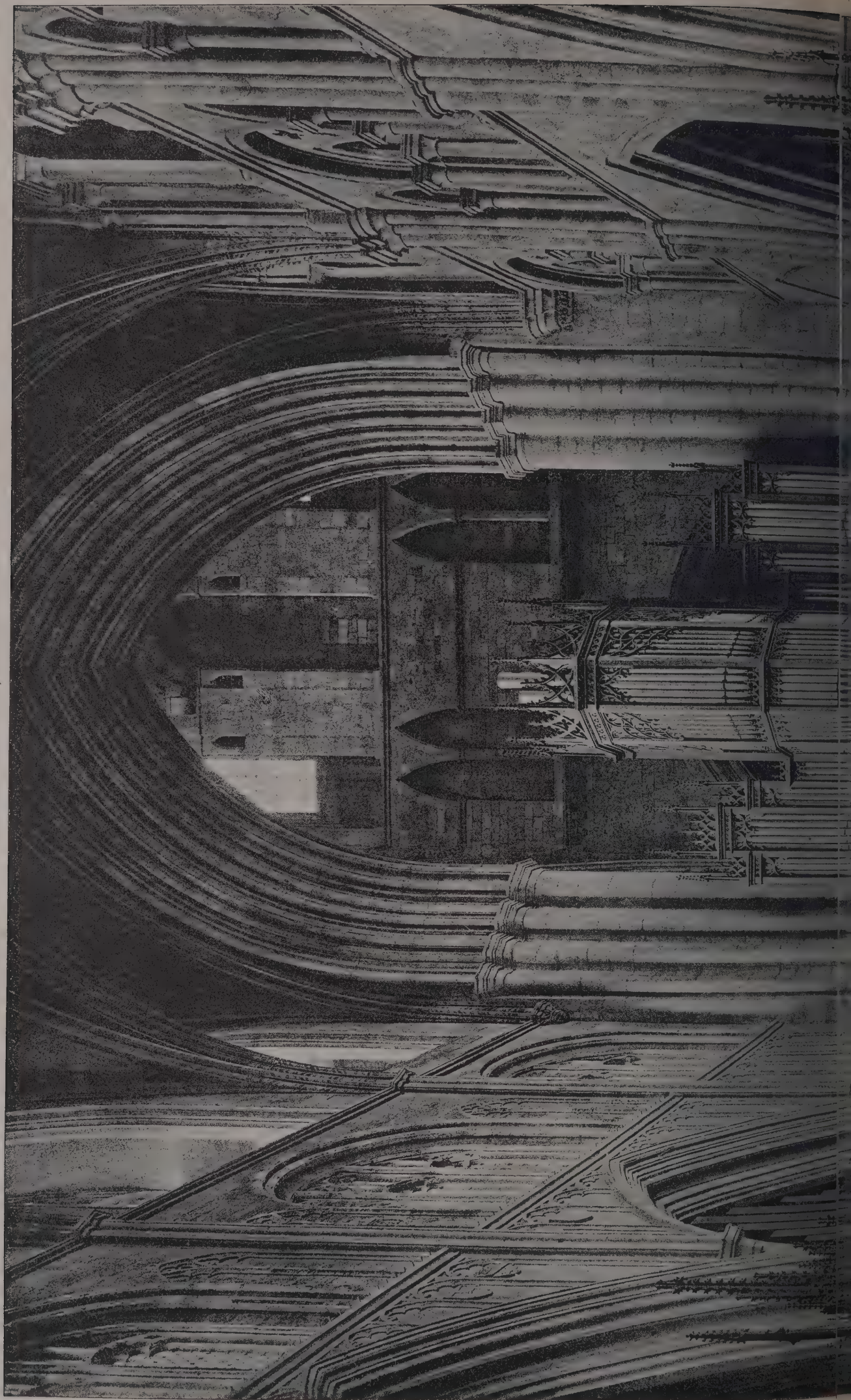


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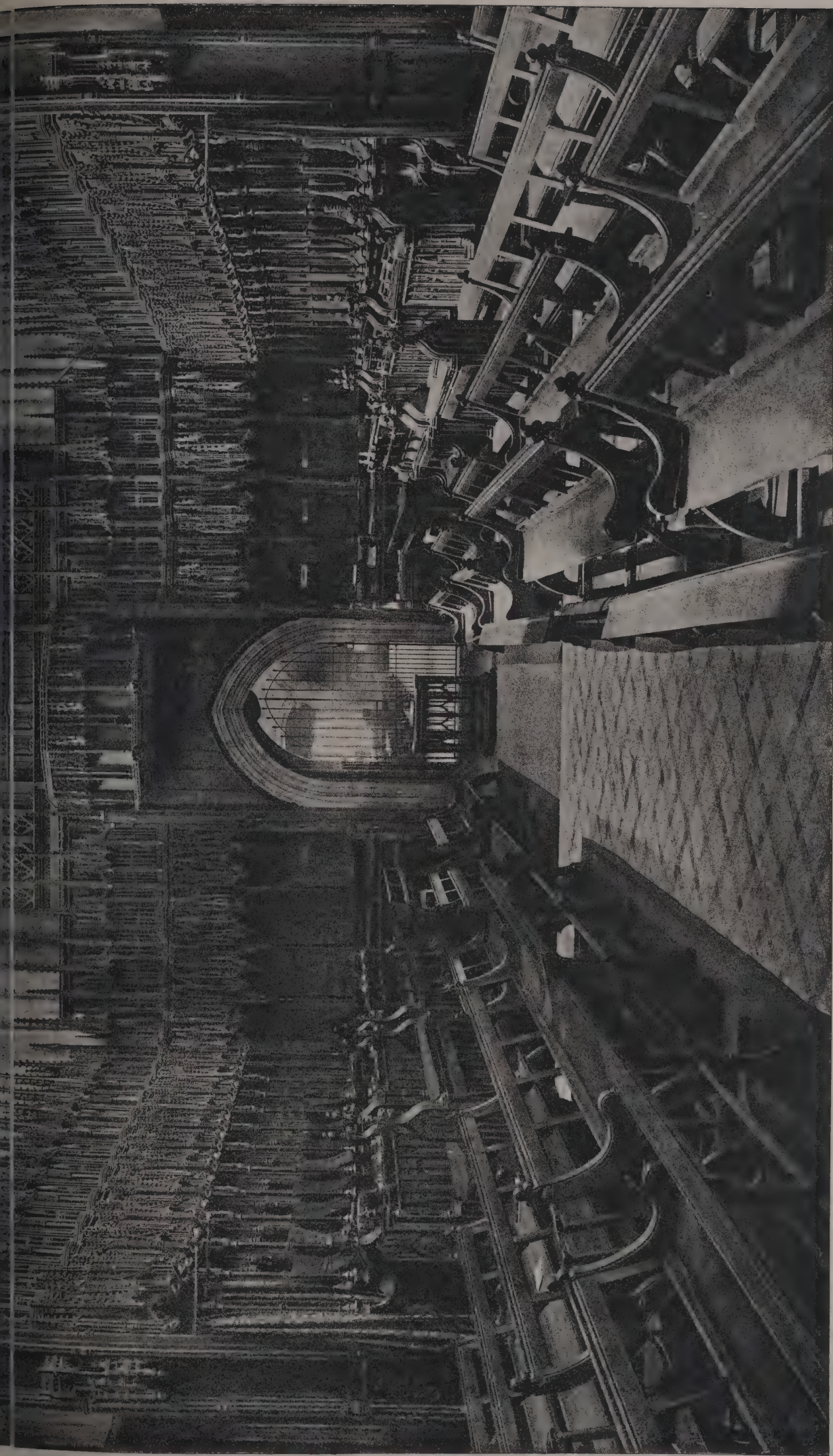


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# THE Architect and Contract Reporter.

## EDITORIAL NOTICES.

of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our list of A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

## TENDERS, ETC.

A great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

SYDNEY.—May 1.—Designs are invited from sculptors for a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West.

HARROGATE.—May 14.—Designs required for a new town hall. Premiums, 150*l.*, 100*l.* and 75*l.* Mr. F. Bagshaw, Engineer, Harrogate.

COLERAINE.—April 21.—Designs are invited for twenty-five houses for the Coleraine Urban District Council. Mr. W. Henry, clerk to the Council.

COLERAINE.—April 21.—Prizes of 20*l.* and 10*l.* respectively awarded for the first and second schemes in order of merit utilising to the best advantage a plot of ground offered by the Council for the erection of about twenty-five houses in Coleraine. Mr. William Henry, clerk, Coleraine.

KNARESBOROUGH.—June 1.—The Harrogate and Knareborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital at Thistle Hill, Knareborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

MEXBOROUGH.—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25*l.* and 10*l.* are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

SCOTLAND.—April 30.—Designs are invited for a branch library for the Anderston district, Glasgow. Sir J. D. Marwick, town clerk, Glasgow.

SUNDERLAND.—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

YORK.—May 1.—Designs are invited for a Memorial to the late Queen Victoria to be placed in the Guildhall, York. The design must include a representation of Her Majesty, and be accompanied by an estimate of the cost of the work complete, such cost not to exceed 1,000*l.* A prize of 50*l.* (to merge in the commission) will be given for the accepted design. Mr. W. H. Andrews, town clerk, Guildhall, York.

## CONTRACTS OPEN.

ARCLID.—April 24.—For erection of a building for the steam road-roller at Arclid, Cheshire. Mr. Alfred Price, architect, Elworth.

ASHFORD.—April 25.—For erection of earth-closets at the receiving-wards of schools at Ashford, Middlesex. Mr. F. G. Beeching, clerk, West London School District, Ashford, Middlesex.

ASH-NEXT-SANDWICH.—April 24.—For erection of ten cottages in New Street, Ash-next-Sandwich. Mr. F. J. Ralph, Lord Warden inn, Sandwich.

BARNSELY.—April 22.—For wiring and providing and fixing the necessary electrical fittings to the Kendray hospital. Mr. J. Henry Taylor, borough surveyor, the Manor House, Barnsley.

BEXLEY HEATH.—April 28.—For the supply of tramway rails and accessories, and the supply and erection of engines, alternators, dynamos, &c. Mr. T. G. Baynes, clerk, Public Hall, Bexley Heath.

BLACKBURN.—April 22.—For erection of premises in Darwen Street, Blackburn, for the Lancashire and Yorkshire Bank, Ltd. Messrs. Stones & Stones, architects, 10 Richmond Terrace, Blackburn.

BOSTON.—April 25.—For foundation works in concrete and brick for the erection of municipal buildings. Mr. Jas. Rowell, architect, Borough Offices, Market Place, Boston, Lincs.

BRADFORD.—April 23.—For erection of a pair of semi-detached villas in Cranbourne Road, Chellow Dean, Bradford. Messrs. Fairbank & Wall, architects, Craven Bank Chambers, Bradford.

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**BURTON-UPON-TRENT.**—May 5.—For the following buildings and works, for the Corporation:—Labourers' dwellings; (contract No. 4) sewerage and making-up street about 150 yards in length; (5) erecting a block of 38 cottages; fire-brigade station and dwellings, new street, highways, &c., depôt, Park Street, comprising stables for 12 horses, sheds, &c., and dwelling-houses; reconstructing Horninglow Canal bridge (1) brickwork, (2) steelwork. Mr. George T. Lynam, borough surveyor, Burton-on-Trent.

**BURY.**—April 24.—For conversion of house and premises, 3 New George Street, Elton, into butcher's shop and news-room. Mr. D. Hardman, architect, Agur Street, Bury, Lancs.

**CALLINGTON.**—May 7.—For erection of a Bible Christian chapel, Callington, Cornwall. Rev. J. Datson, Launceston Road.

**CANTERBURY.**—April 26.—For erection of new buildings at Supperton Farm. Mr. G. Smith, architect, 34 S.E.R. Station Road, Canterbury.

**CARLISLE.**—April 23.—For erection of house and shop, London Road. Mr. J. H. Martindale, architect, Viaduct Chambers, Carlisle.

**CARLISLE.**—April 26.—For (1) plastering in cement the walls of No. 2 female block; (2) renewal of the sanitary fittings of the workshop block; (3) part renewal of the sanitary fittings of No. 6 female block at the Garlands Asylum. Mr. Geo. Dale Oliver, county architect, 5 Lowther Street, Carlisle.

**CHARMINSTER.**—May 22.—For erection of a house for private patients on land adjoining the county asylum, near Charminster, Dorset. Mr. George T. Hine, architect, 35 Parliament Street, S.W.

**CHESTERFIELD.**—For re-erection of the Cross Keys hotel and two new shops at Bolsover. Mr. W. H. Wagstaff, architect, 57 Saltergate, Chesterfield.

**CHESTERFIELD.**—For erection of the Lords Arms hotel, Temple Normanton, near Chesterfield. Mr. W. H. Wagstaff, architect, 57 Saltergate, Chesterfield.

**COCKERMOUTH.**—April 26.—For erection of bridges at Greentrees, Blindboethel, and at Legburthwaite, in St. John's-in-the-Vale, Cockermouth. Mr. J. B. Wilson, Court Buildings, Cockermouth.

**CONGLETON.**—April 24.—For erection of a building for the steam road-roller at Arclid, Cheshire. Mr. Alfred Price, architect, Elworth.

**DURHAM.**—For erection of Wesleyan church (with spire) and schools at Durham. Messrs. W. J. Morley & Son, architects, Swan Arcade, Bradford.

**EAST HAM.**—April 22.—For erection of additional buildings at the electric tramcar station, Nelson Street, East Ham. Mr. A. H. Campbell, surveyor, Public Offices, Wakefield Street, East Ham.

**ELHAM.**—April 23.—For erection of new lavatories at Elham Union, Elham, Kent. Mr. A. Bromley, architect, Radnor Chambers, Folkestone.

**ESH WINNING.**—April 28.—For erection of a branch station at Esh Winning, near Waterhouses, Durham. Messrs. V. & T. R. Millburn, architects, Sunderland.

**ETWALL.**—April 30.—For erection of an isolation hospital at Etwall, Derby. Mr. Arthur Eaton, architect, 6 St. James Street, Derby.

**EXETER.**—May 1.—For rebuilding a portion of the Seabeach hotel. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

**HORNSEY.**—April 21.—For erection of firemen's quarters at Globe Road and a fire-escape shed, &c., at Lothair Road, depôt, Harringay. Mr. E. J. Lovegrove, engineer to the Urban District Council, Southwood Lane, Highgate, N.

**HUDDERSFIELD.**—April 29.—For erection of seven blocks of hospital buildings and boundary walls at Spring Hill, Meltham. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

**HULL.**—April 22.—For erection of a junior department in connection with the Paisley Street Board school, King's Road, upon-Hull. Bills of quantities, &c., on application at the School Board Office, Albion Street, Hull.

**HULL.**—April 24.—For plant and work required at the coates Lane generating station, for the electric lighting committee: (contract 36) pipework, pumps, motors, &c. Mr. T. G. Milner, city treasurer, Town Hall, Hull.

**HUNGERFORD.**—For erection of a house at Hungerford. Mr. Walter H. Bell, architect, The Market Place, Newbury.

**ILFORD.**—April 21.—For erection of a lodge in the Central Park, Green Lane, Ilford, similar to that in the Central Park, Cranbrook Road, Ilford; and for erection of a three-stall lavatory, and supplying and fixing a gymnasium in the same park. Mr. H. Shaw, surveyor, Town Hall, Ilford.

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IRELAND.—For erection of three residences at West End Park, Londonderry. Mr. J. P. McGrath, architect, 28 Carlisle Road, Londonderry.

IRELAND.—April 21.—For additions and alterations to the parish church, Kilkeel, co. Down. Mr. Samuel P. Close, architect, Donegall Square Buildings, Belfast.

IRELAND.—April 21.—For erection of houses as follows, for Great Northern Railway Company (Ireland):—Stationmaster's house (two storey) at Ballybay, 26 miles from Dundalk; stationmaster's house (one storey) at Aldergrove, near Limerick; stationmaster's house (one storey) at Glenavy, near Limerick; four gatekeepers' cottages on Hill of Howth, near Dublin; porter's cottage at Duleek, five miles from Drogheda; signalmen's cottages at Donabate, 11½ miles from Dublin; signalmen's cottages at Fintona Junction, near Omagh; a terrace of ten workmen's houses at Dundalk. Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

IRELAND.—April 22.—For erection of two houses, Lower Road, Londonderry. Mr. W. E. Pinkerton, architect, 11 Quay Street, Londonderry.

IRELAND.—April 23.—For repairs to the county courthouse, Kilkenny. Mr. George J. Morris, secretary to County Council, Kilkenny.

IRELAND.—April 23.—For alterations and improvements to workhouse buildings, Glennamaddy. Mr. Robert J. Kirwin, architect, Glennamaddy.

IRELAND.—April 24.—For supply and erection of (Sec. A) engine-house plant—one 300 kw high-speed dynamo and accessories, with pipes; (B) extension of switchboard—cables and instruments for dealing with above; (C) electricity supply mains, at Rathmines. Mr. F. P. Fawcett, town clerk, Town Hall, Rathmines.

IRELAND.—April 24.—For erection of business premises for Pinger's entry, High Street, Belfast. Mr. Samuel P. Close, architect, Donegall Square Buildings, Belfast.

IRELAND.—April 24.—For erection of national monument on Grand Parade, Cork. Mr. D. J. Coakley, architect, Charlotte Quay.

IRELAND.—April 29.—For erection of a rectory at Ballymore, Clondahorkey, co. Donegal. Mr. R. Eccles Buchanan, architect, Castle Street, Londonderry.

KIRKBY LONSDALE.—April 21.—For erection of houses, Bive Road, Kirkby Lonsdale. Mr. John F. Curwen, architect, 26 Highgate, Kendal.

LANCASTER.—April 21.—For remodelling Kelsall's vaults, Penny Street, and new front to the Horse and Farrier, Brock Street. Mr. John Greene, architect, Meetinghouse Lane, Lancaster.

LANCASTER.—April 22.—For erection of a water-meter house near Cross Hill. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

LEATHERHEAD.—April 22.—For erection of a brick wall at St. John's Foundation school, Leatherhead. Rev. Sutton Patterson, 1 The Sanctuary, Westminster Abbey, S.W.

LEEDS.—For erection of two houses and two shops, Dewsbury Road, Leeds. Messrs. Buttery & Bird, architects, Albion Walk, Leeds.

LEICESTER.—April 25.—For construction of foundations, abutments, wing walls, &c., for two bridges over streams crossing Coalpit Lane, Aylestone. Mr. E. G. Mawbey, borough surveyor, Town Hall, Leicester.

LONDON.—For alterations and additions to the London Club and Institute, 34 Rodney Street, Pentonville, N. Mr. Max Clarke, architect, 4 Queen Square, Bloomsbury.

LONDON.—April 22.—For supply of (1) locomotive passenger tank engines, and (2) locomotive goods engines and tenders, for the Bombay, Baroda and Central India Railway Co. The Offices, Gloucester House, Bishopsgate Street Without, London, E.C.

LOW FELL, & C.—April 30.—For additions and improvements to station buildings at Low Fell, Lamesley and Birtley, for the North-Eastern Railway Company. Mr. William Bell, architect, Central Station, Newcastle-on-Tyne.

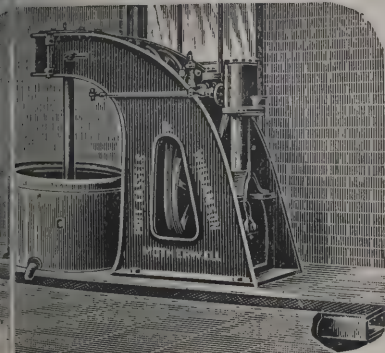
LUTON.—April 23.—For repairs, new roofing, &c., to the old brewery premises, Park Street, Luton. Messrs. J. R. Brown & Son, architects, Castle Street Chambers.

MIDDLESBROUGH.—April 30.—For erection of the new grand opera house, Middlesbrough. Messrs. Hope & Maxwell, architects, Trinity Buildings, New Bridge Street, Newcastle-on-Tyne.

OXENHOPE.—For erection of a residence at Oxenhope, Yorks. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

PLYMOUTH.—April 22.—For additions to the asylum buildings, Blackadon, for 200 patients. Messrs. Hine & Odgers, architects, Lockyer Street, Plymouth.

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**POPLAR.**—April 30.—For erection of a shelter, conveniences, &c., at Island Gardens. Particulars can be obtained at the General Section, Architect's Department, County Hall, Spring Gardens, S.W.

**SALFORD.**—April 28.—For alterations to the Royal Technical Institute. Mr. H. Lord, architect, Deansgate, Manchester.

**SANDWICH.**—April 21.—For carrying out alterations to the sewage-disposal works for the parish of Ash, near Sandwich, Kent. Mr. F. S. Cloke, clerk to the Eastry Rural District Council, Sandwich.

**SCOTLAND.**—April 21.—For erection of tenements and saloons on east side of High Street and north side of Duke Street, Glasgow. Messrs. Frank Burnet Boston & Carruthers, architects, 180 Hope Street.

**SCOTLAND.**—April 21.—For erection of a dwelling-house at Bridgefoot, Wardhouse. Mr. John Craigen, solicitor, 193 Union Street, Aberdeen.

**SCOTLAND.**—April 24.—For triple-expansion engine and dynamo, 750 kw. capacity at 200-230 revolutions, to be supplied and erected at the electrical power station, Dudhope Crescent Road, Dundee. Mr. Walter H. Tittensor, city electrical engineer, Dudhope Crescent Road, Dundee.

**SCOTLAND.**—April 28.—For erection of a villa for patients at Sunnyside, near Montrose, in connection with the Montrose Royal Asylum. Mr. John Sim, architect, 160 High Street, Montrose.

**SCOTLAND.**—April 28.—For erection of a Gothenburg public-house, shops and dwelling-houses at Lumphinnans. Mr. William Birrell, architect, 205 High Street, Kirkcaldy.

**SCOTLAND.**—April 28.—For supply to the city of Edinburgh of electricity meters for twelve months from May 15. Mr. Thomas Hunter, town clerk, City Chambers, Edinburgh.

**SCOTLAND.**—April 30.—For extension and renovation of the parish church of Glass, Aberdeenshire. Mr. John Robertson, architect, Inverness.

**SCOTLAND.**—May 7.—For supply and erection of a 20-ton electrically-driven overhead crane, with the necessary supporting columns and girders, at the Dee village electricity works, Aberdeen. Mr. J. Alex Bell, city electrical engineer, Cotton Street, Aberdeen.

**SHEPHERD'S BUSH.**—April 21.—For erection of boundary walls to enclose the site of the proposed new Board-room and

clerk's offices, receiving home for children, and out-relief department at Goldhawk Road. Mr. J. Lamb, clerk to Guardian 75 Fulham Palace Road, Hammersmith, W.

**SWINDON.**—April 26.—For alterations and additions to the Moravian Church, Dixon Street. Mr. R. J. Beswick, architect, 35 Regent Street, Swindon.

**TENDRING.**—April 22.—For alterations and additions to the workhouse, Tendring, near Colchester. Mr. F. Whitmore, architect, 17 Duke Street, Chelmsford.

**UCKFIELD.**—April 25.—For erection of police building consisting of residences for a superintendent, sergeant and two constables, charge-room, four cells and stabling, at Uckfield East Sussex. Mr. F. Merrifield, clerk of the County Council, County Hall, Lewes.

**ULVERSTON.**—For erection of a porter's lodge at the Ulverston Joint Hospital. Messrs. Settle & Farmer, architect, Ulverston.

**VENNANTONLEAGUE.**—May 3.—For proposed enlargement and renovation of the United Methodist Free church and erection of Sunday school at Vennantonleague, near Hayle, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

**WALES.**—April 21.—For erection of twenty cottages at Llanharan. Plans and specifications may be seen at the Court House, Pencoed.

**WALES.**—April 21.—For erection of eight cottages near Gellyrheina. Plans and specifications can be seen at Mans House, Chapel Lane, Carndiffaith, Mon.

**WALES.**—April 22.—For cementing Siloah Welsh Independent chapel, Abardare. Mr. T. Roderick, architect, Ashbrook House, Clifton Street, Aberdare.

**WALES.**—April 23.—For enlarging St. John's parish church, Canton, Cardiff. Mr. G. E. Halliday, architect, Cardiff.

**WALES.**—April 23.—For erection of a chapel in the Ogmore Valley. Mr. W. Richards, The Square, Ogmore Valley.

**WALES.**—April 24.—For erection of a schoolroom at the rear of the Welsh Baptist chapel, Rhosddu, Wrexham. Rev. John Thomas, 47 Lorne Street, Rhosddu.

**WALES.**—April 25.—For erection of thirty-four or more houses at Godre Aman, Aberaman. Mr. T. Roderick, architect, Clifton Street, Aberdare.

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**— 163 STRAND —**



WALES.—April 28.—For erection of a mixed and infant's school to accommodate about 368 children, with caretaker's house and other works, at Fleur-de-Lis, in the county of Monmouth. Mr. R. L. Roberts, The Firs, Abercarn, Mon.

WALES.—April 29.—For erection of Board school buildings at Cwmystwyth, Llanfihangel-y-Croyddin. Mr. J. A. Jones, architect, 7 Queen's Terrace, Aberystwyth.

WALES.—May 5.—For erection of a dwelling-house and buildings at Dyffryn Mill, near Aberporth. Mr. D. Morris, d surveyor, Cardigan.

WALTHAMSTOW.—April 23.—For erection of out-patients' block, new ward and operating-room, and a mortuary. Messrs. Mannington & Son, architects, Hastings House, Norfolk Street, Strand.

WATERLOO.—For erection of branch shop and cottages at Waterloo, Lancs. Mr. A. Howcroft, architect, 12 Clegg Street, Wham.

WEDNESFIELD.—April 23.—For rebuilding Wednesfield parish church. Mr. Fred. T. Beck, architect, Wulfrun Chambers, Darlington Street, Wolverhampton.

WEST HAM.—April 22.—For erection of steam road-roller shed and offices at the Abbey Road depôt, Stratford. Mr. Ed. E. Hilleary, town clerk, Town Hall, West Ham.

WHICKHAM.—April 22.—For additions to Dunston school, Whickham, Durham. Mr. J. Wm. Rounthwaite, architect, 13 Mosley Street, Newcastle-on-Tyne.

WIMBLEDON.—April 22.—For extending the free library Hill Road, Wimbledon. Mr. R. J. Thomson, architect, Hill Road, Wimbledon.

WORMWOOD SCRUBS.—April 21.—For erection of boundary walls and railing to enclose the site of the proposed new warehouse and infirmary, Wormwood Scrubs. Messrs. Giles, Cough & Trollope, architects, 28 Craven Street, Strand, W.C.

THE directors of John Oakey & Sons, Ltd., have declared eighteenth dividend on the Six per Cent. Preference shares for the six months ending April 30, 1902, payable on May 1. Preference books closed from April 25 to May 1, both days inclusive.

MR. J. DRUITT, jun., who has held the office of town clerk of Farnmouth since the borough was incorporated in 1890, and who for many years previous was clerk to the old Board of Commissioners, has announced his intention of resigning in the next.

TENDERS.

ACCRINGTON.  
For street works. Mr. W. J. NEWTON, borough engineer.  
FRENCH & CLOUGH, Burnley (accepted).

ARDINGLY.  
For construction of a new sewer at Ardingly, with manholes, &c. Mr. BEACH, surveyor, Munster Green, Hayward's Heath.  
T. Pedrette . . . . . £1,149 0 0  
Wells . . . . . 750 0 0  
Pickhard . . . . . 744 0 0  
King . . . . . 735 0 0  
Osenton . . . . . 728 0 0  
KETTERINGHAM (accepted) . . . . . 710 7 0

BIRKENHEAD.  
For street works in Fairfax and Oriol Roads. Mr. CHARLES BROWNRIDGE, borough surveyor.  
Fairfax Road.  
T. HORROCKS, Greenwich Road, Walton, Liverpool (accepted) . . . . . £207 8 3  
Oriol Road.  
T. HORROCKS (accepted) . . . . . 445 11 5

BRADFORD.  
For erection of a terrace of eight houses in Killinghall Road, Undercliffe. Messrs. EMPSALL & CLARKSON, architects, 7 Exchange, Bradford.  
Accepted tenders.  
T. Shackleton & Co., Clayton Heights, Queensbury, mason and bricklayer.  
Carpenters and Joiners' Society, Bradford, carpenter and joiner.  
A. Ross, Shipley, plumber and glazier.  
J. & W. Bates, 827 Manchester Road, Bradford, plasterer and concreter.  
W. Thornton, Bingley, slater.  
H. Hirst, Shipley, painter.  
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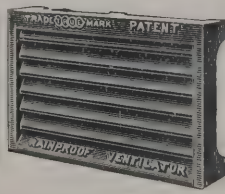
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W. Burkitt . . . . .	95	12	6
T. Burrell . . . . .	88	6	0
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J. Harding . . . . .	45	7	0
C. E. Slade . . . . .	38	5	0
W. J. HUTCHINGS (accepted) . . . . .	34	9	6

## DOVER.

For street works in Union Road, Dover. Mr. HENRY E. STILGOE, borough engineer.

Austen & Lewis . . . . .	£549	11	6
G. MUNRO, Heathfield Avenue (accepted) . . . . .	495	9	5

## EARLESTOWN.

For construction of the following works at the gasworks, viz:  
(1) two additional lifts to gasholder, 100 feet diameter;  
(2) two settings of regenerative retorts; (3) extension of retort-house, 50 feet by 30 feet.

Accepted tenders.

- (1) Clayton, Sons & Co, Ltd, Hunslet, Leeds.
- (2) Drakes, Ltd, Halifax.
- (3) H. Fairclough, Warrington.

## EASTBOURNE.

For relaying common drains at the rear of 61 to 67 Pevensey Road, 13 to 15 Tower Street and 22 to 28 Tower Road. Mr. R. M. GLOYNE, borough engineer.

W. & E. Noakes . . . . .	£136	16	9
A. HUDSON (accepted) . . . . .	102	10	0

## EXETER.

For street works at Newtown.

W. GIBSON (accepted) . . . . .	£1,964	18	9
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ERITH.

Street works in Norman Road, Caldly Road and Station Road North, Belvedere, Kent. Mr. A. H. JENNINGS, surveyor.					
W. Fair & Co.	£3,134	12	6		
W. Fair & Co.	2,889	1	9		
W. Fair & Co.	2,780	0	0		
W. Fair & Co.	2,749	2	5		
W. Fair & Co.	2,630	2	4		
W. Fair & Co.	2,619	2	4		
Maintenance and Stone Supply Com-					
W. Fair & Co.	2,514	3	0		
W. Fair & Co.	2,442	10	2		
W. Fair & Co.	2,336	8	7		
W. Fair & Co.	2,312	5	10		

FRINTON-ON-SEA.

Drainage part of Queen's Road, Frinton.					
W. Anderson	£565	0	0		
W. Anderson	532	13	0		

GOSPORT.

Erection of a fire-brigade station. Mr. H. FROST, sur-					
W. F. A. Lane	£1,670	0	0		
W. F. A. Lane	1,659	0	0		
W. F. A. Lane	1,650	0	0		
W. F. A. Lane	1,639	0	0		
W. F. A. Lane	1,595	0	0		

GRIMETHORPE.

Erection of six houses in Joseph Street, Grimethorpe.					
Messrs. R. & W. DIXON, architects, 5 Eastgate, Barnsley.					
Accepted tenders.					
G. F. Brown, Barnsley, builder.					
G. & L. England, Barnsley, carpenter and joiner.					
J. Binns, Cudworth, plumber.					
J. H. Seacroft, Grimethorpe, plasterer.					
E. Fleming, Barnsley, slater.					
J. P. W. Sykes, Cudworth, painter.					

GATESHEAD.

For erection of a public mortuary at Dunston. Mr. J. B. RENTON, surveyor, Parish Offices, Whickham.					
W. B. Collin	£120	0	0		
J. Ross & Son	100	0	0		
A. NOBLE, Dunston (accepted)	89	15	0		

HAYWARD'S HEATH.

For sewerage works in the Balcombe Road and College Road, Hayward's Heath, Sussex, with manholes, &c. Mr. W. BEACH, surveyor.					
Soan	£3,550	0	0		
Rayner	2,985	0	0		
Osenton	2,922	0	0		
Collins	2,900	0	0		
Pedrette	2,573	0	0		
King	2,300	0	0		
ANSCOMBE & HEDGECOCK, Lindfield (accepted)	1,983	0	0		
Ketteringham	1,965	0	0		

HOVE.

For street works. Mr. H. H. SCOTT, borough surveyor.					
Accepted tenders.					
Montgomery Street.					
J. Parsons & Sons	£353	0	0		
W. Whitman	336	17	0		
J. Parsons & Sons	279	0	0		

ILKESTON.

For Contract No. 2, Meerbrook Sough pumping station and Chadwick Nick service reservoir. Messrs. G. & F. W. HODSON, engineers, Loughborough and Westminster.					
J. & T. Binns	£61,392	0	0		
B. Cooke & Co.	57,850	0	0		
J. H. Vickers, Ltd.	57,000	0	0		
P. Drake	55,000	0	0		
J. F. Price	51,700	0	0		
W. Moss & Sons, Ltd.	48,750	0	0		
T. Smart	48,360	0	0		
H. Ashley	48,299	0	0		

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**ED GRINDROD & CO.,**  
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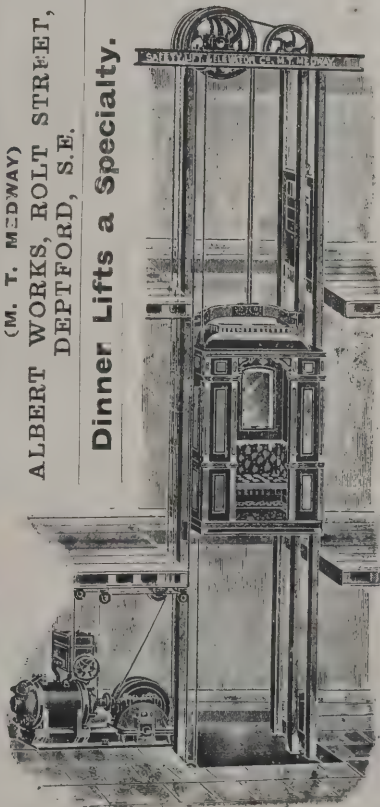
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 LONDON, E.C.



## IRELAND.

For additions and improvements at Peterborough Cottage, Glasheen, Cork. Messrs. W. H. HILL & SON, architects, 28 South Mall, Cork.

J. KEARNS, Fish Street, Cork (*accepted*) . . . £330 0 0

For erection of a residence on the Donovan Estate, Gillabbey. Messrs. W. H. HILL & SON, architects, Cork.

J. DELANEY & CO., Henry Street, Cork (*accepted*) . . . £1,140 0 0

## KIRKLINTON.

For restoration of Kirklington Church, Carlisle. Mr. J. H. MARTINDALE, architect, Viaduct Chambers, Carlisle.

*Ceilings, seats, &c.*

J. Phillips . . . £1,520 0 0

J. H. Reed . . . 1,439 0 0

G. Black, Carlisle\* . . . 1,176 6 0

*Painting*

Taylor & Clifton . . . 412 0 6

W. M. Hill & Son . . . 88 12 6

R. M. Hill & Son . . . 74 0 0

D. Canning . . . 60 0 0

R. S. Kirk . . . 49 17 6

PENFOLD & SON, Brampton (*accepted*) . . . 34 17 6

R. Westray . . . 34 0 0

*Heating apparatus.*

Langfield & Co. . . 98 0 0

Grindrod & Co. . . 79 0 0

Greenwood & Co. . . 73 0 0

Dinning & Cooke . . . 67 17 6

Werner, Pfeiderer & Perkins . . . 63 8 6

Dargue, Griffiths & Co. . . 62 8 6

Corbett & Son . . . 52 16 0

H. Skidmore . . . 48 0 0

Seward & Co., Preston\* . . . 38 8 0

\* Provisionally accepted.

## LONGTOWN.

For erection of two bridges at Stapleton, Longtown, Carlisle. Mr. JAMES MURRAY, surveyor, Kirklington, Carlisle.

Quantities by surveyor.

MURRAY & SON, Stapleton (*accepted*) . . . £379 13 1

Surveyor's estimate, £380.

## KEIGHLEY.

For erection of a four-storey wool warehouse in Dalton and Keighley. Messrs. MOORE & CRABTREE, architects, York Chambers, Keighley.

*Accepted tenders.*

T. Moore, Keighley, mason.

J. Hartley, Keighley, joiner.

H. Firth, Keighley, plumber.

J. Greenwood, Keighley, plasterer.

J. Barrett, Keighley, ironfounder.

W. Thornton, Bingley, slater.

W. H. Heywood & Co., Huddersfield, patent glazier.

## LEEDS.

For cleaning-down, painting, &c., various police stations in city of Leeds.

*Accepted tenders*

G. Sherbon, Mabgate—Millgarth Street and Marsh Lane . . . £48

G. Hall, Woodhouse Lane—Kirkstall and Kirkstall Road . . . 31

Roylance & Horsman, Raglan Road—inspector's house and bridewell, town hall . . . 31

J. Priest, Jack Lane, Hunslet—York Road, East Street, Hunslet, and Hunslet Road . . . 22

Jenkins, Lollerton & Co., Merion Street—Sheepcar, Headingley and Chapeltown police stations . . . 21

T. E. Knowles, Beeston Hill—Holbeck, Beeston and Beeston Road . . . 15

C. Hirst, Beeston Hill—New Wortley, Upper Wortley and Farnley . . . 15

J. Naylor, Town Street, Bramley—Armley and Bramley . . . 13

## LITHELAND.

For construction of a new approach footbridge over the Leeds and Liverpool Canal. Mr. A. H. CARTER, surveyor.

Bruce & Still . . . £862

Heenan & Frowde . . . 819

McIntyre & Jones . . . 785

Wood & Co. . . 766

G. Wilbey . . . 762

BLAKELEY & CO., Liverpool (*accepted*) . . . 718

J. R. & T. Ashmore . . . 690

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Grimsby Road, CLEETHORPE

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ARCHITECTS

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Asphalte supplied from the Cap

Freehold Mines in the SEYSEL

5 Laurence Pountney Hill, Cannon Street



LITHERLAND—continued.

Street works in Linacre Road from Bridge Road to the bottle boundary. Mr. A. H. CARTER, surveyor.			
Lowland . . . . .	£3,436	0	0
Rechts & Owen . . . . .	3,361	0	0
arr & Sons . . . . .	2,578	0	0
Wens. . . . .	2,485	0	0
ynson. . . . .	2,457	0	0
ynson . . . . .	2,366	0	0
hadwick . . . . .	2,229	0	0
ALMER, Aintree (accepted) . . . . .	2,197	0	0

MANCHESTER.

Sewerage works, Alderley Edge. Mr. HAROLD SHELDON, A.S.I., surveyor.			
WINKINS & SON, Blackburn (accepted). . . . .	£491	10	0

MARYPORT.

Construction and delivery at Maryport Harbour of two travelling steam cranes.			
LBURN, Workington (accepted). . . . .	£795	0	0

MIDDLETON-ON-THE-WOLDS.

Erection of Wesleyan chapel and schools at Middleton-on-the-Wolds. Messrs. GELDER & KITCHEN, architects, 7 Lowgate, Hull.			
Reason & Son . . . . .	£799	0	0
ansfield . . . . .	779	19	3
ons . . . . .	778	0	0
ackburn & Sons . . . . .	758	0	0
Co-operative Builders . . . . .	739	12	6
orton . . . . .	733	0	0
Intoft . . . . .	730	0	0
Foley . . . . .	730	0	0
p & Son. . . . .	719	0	0
Sullathorne . . . . .	709	5	0
rdam . . . . .	707	0	0
arnes . . . . .	699	0	0
ge . . . . .	653	0	0
utt . . . . .	649	9	6
EASTWOOD, Driffield (accepted) . . . . .	615	5	6

MIDDLETON.

For street works in Andrew Street, from Haworth Street to Haslam Street.			
Fletcher & Bailey . . . . .	£222	8	5
R. Partington & Son . . . . .	217	7	3
R. Heard . . . . .	203	6	6

NEWTON-LE-WILLOWS.

For sinking a well to the depth of about 200 feet, and the driving of headings at the pumping station, Newton-le-Willocks, Lancs.			
J. J. POOLE, St. Helens (accepted).			

RAWMARSH.

For sewerage and street works in Wannop, Fitzwilliam, Coleman and Foundry Streets, leading from Broad Street and Greasborough Road, Parkgate. Mr. WM. J. PETCH, surveyor.			
A. Mottram . . . . .	£1,045	13	1
M. Hall & Son . . . . .	841	18	1
C. Harris . . . . .	836	9	7
R. Morton . . . . .	723	0	1
B. Boot . . . . .	708	5	6
C. GREEN & CO., Rotherham (accepted). . . . .	655	6	10

SANDBACH.

For erection of a detached villa for the Wesleyan minister. Mr. A. PRICE, architect, Sandbach.			
J. Stringer . . . . .	£765	0	0
W. Street . . . . .	625	0	0
A. E. Lee . . . . .	596	0	0
BIRCHALL BROS., Middlewich (accepted) . . . . .	598	10	0

SCOTLAND.

For roof of retort-house at Broughty Ferry.			
G. B. SMITH & CO., Craighall Ironworks, Glasgow (accepted).			
For erection of a bench of gas retorts, Arbroath.			
Accepted tenders.			
R. Dempster & Sons, Elland, brickwork of retort bench . . . . .	£1,100	0	0
H. Balfour & Co., Leven, ironwork of retort bench . . . . .	821	0	0
R. Brand & Sons, Arbroath, concrete foundations of retort bench . . . . .	160	0	0

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## SCOTLAND—continued.

- For sewerage works at Drumore Road, Campbeltown.  
D. & A. HAMILTON (*accepted*) . . . . . £50 13 8
- For extending and laying-out cemeteries at East Wemyss and Methilmill, including the building of a lodge, mortuary and boundary walls, the formation of drives, the laying of a 2-inch cast-iron water-pipe, and other works.  
Mr. WILLIAM D. SANG, engineer, Kirkcaldy.  
J. & J. FARMER, Methil (*accepted*) . . . . . £2,628 16 8
- For repair of Arbeadie Terrace. Mr. FERRIES, burgh surveyor.  
Grieg . . . . . £287 0 0  
DAVIDSON BROS., Banchory, Kincardineshire (*accepted*) . . . . . 204 17 6
- For extension of the auxiliary filter north of Perth bridge.  
D. & R. TAYLOR, Perth (*accepted*) . . . . . £442 17 0

## STOCKPORT.

- For painting the exterior of the technical school buildings.  
Mr. J. ATKINSON, borough surveyor.  
T. A. J. Barnes . . . . . £53 10 0  
J. Longson . . . . . 45 0 0  
R. Hunt & Co. . . . . 40 15 0

## SWINDON.

- For additions and alterations to 38 Regent Street. Mr. R. J. BESWICK, architect, Swindon.  
Parker & Sons . . . . . £486 0 0  
Tydeman Bros. . . . . 460 0 0  
C. Williams . . . . . 459 0 0  
Spackman Bros. . . . . 420 0 0  
S. Chambers . . . . . 389 10 0  
A. J. Colborne . . . . . 367 16 3  
J. WILLIAMS, Swindon (*accepted*) . . . . . 366 0 0

## WALES.

- For construction of a steel conical buoy, for the Cardiff Corporation. Mr. WILLIAM HARPUR, borough engineer.  
Hills Dry Docks and Engineering Co., Ltd. . . . . £45 0 0  
Tyneside Engine Works, Ltd. . . . . 37 0 0  
Mordey, Carney & Co., Ltd. . . . . 36 0 0  
Mountstuart Graving Docks and Engineering Co., Ltd. . . . . 29 10 0  
E. LACE & SON, LTD. (*accepted*) . . . . . 28 12 0

## WALES—continued.

- For painting interior and exterior of the Central Market, Mary Street, Cardiff. Mr. WILLIAM HARPUR, borough engineer.  
D. Mullens . . . . . £1,447  
W. Davis & Son . . . . . 642  
F. Robbins . . . . . 509  
E. Turner & Sons . . . . . 488  
GOUGH BROS, Cardiff (*accepted*) . . . . . 487
- For laying new 6-inch water-main to Rhos Trillo, Colwyn Bay.  
Mr. WILLIAM JONES, surveyor.  
*Excavating, laying and jointing.*  
W. Westwood . . . . . £371  
B. C. Farmer . . . . . 269  
T. Rowland . . . . . 224  
R. D. Hughes . . . . . 222  
P. Mooney & Co. . . . . 216  
Parry & Jones . . . . . 212  
Hughes & Rowlands . . . . . 206  
D. CALDER & H. O. EVANS, Colwyn Bay (*accepted*) . . . . . 163
- For erection of a classroom and other additions to the Neyland school buildings, Llanstadwell. Mr. D. EDWARDS, architect, Victoria Place, Haverfordwest.  
J. Davies . . . . . £665  
J. HARRIES, Neyland (*accepted*) . . . . . 544  
Cole & Son . . . . . 540
- For erection of public shelter, park lodge and branch room, Penarth.  
*Accepted tenders.*  
*Esplanade shelter.*  
J. Jones & Sons, Station Road . . . . . £2,000  
*Park lodge.*  
J. Jones & Sons, Station Road . . . . . 658  
*Reading-room.*  
J. Pickford, jun, Bromfield Place . . . . . 543
- For supply, delivery and erection at the generating station Swansea, of the following plant:—Two 600 kw. continuous steam dynamos, together with condensing apparatus, steam and exhaust pipes and valves, for the Corporation.  
BRITISH WESTINGHOUSE ELECTRIC MANUFACTURING CO. LTD., London (*accepted*).



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## TRADE NOTES.

THE heating of Ebenezer Wesleyan chapel, Shalesmoor, Sheffield, and also the new pianoforte warehouse and show-rooms of Messrs. W. F. Cole & Sons, Surrey Street, Sheffield, have been successfully carried out by Messrs. Alfred Grindrod & Co., heating, ventilating and drying engineers, of West Street, Sheffield, on the small-pipe high-pressure system. The same firm have also heated with improved low-pressure apparatus the new conservatories at "Brantwood," Sheffield, for Mrs. Thomas Roberts, and the offices of Messrs. Joseph Wright & Co., Norfolk Street, Sheffield.

IN the new Avenue piece, "The Little French Milliner," Messrs. Oetzmann & Co., of Hampstead Road, W., who are experts in the art of furnishing daintily and inexpensively, have provided a beautiful scene for the Tea Room Club, in which an exquisite shade of rose-hued silk predominates, while in the hero's flat there is much quaint and pretty furniture, brightened by a handsome striped green silk brocade. The two scenes are well inspired "those about to marry" with a desire to visit Oetzmann's and secure some such dainty equipments for their prospective homes.

SOME years ago a Merryweather vacuum apparatus was applied to Pokesdown, near Bournemouth, and met with great success both as regards time and labour occupied in emptying the cesspools and the abatement of nuisance caused by the old van system. Then the city of Rochester adopted this new apparatus with similar results, and now Bournemouth is just ordered an equipment. The vacuum apparatus referred to consists of an air-tight van, a strong pump and a

portable stove. In use a suction pipe of the pump is connected into the cesspool, the suction pipe of the pump is connected also to the cistern and the delivery pipe to the stove. Pumping results in a vacuum being created in the cistern as drawn up, the discharged air passing through the fire in the stove to eliminate the foul gases. There is no slop or smell, and the van, when full, can be drawn by a horse to any convenient place of discharge and emptied by simply opening a valve.

MESSRS. AUSTIN & Co., of the Newcastle Elevator Works, Newcastle-on-Tyne, have just prepared an illustrated pamphlet descriptive of their various makes of electric and hydraulic elevators. The former are so constructed that overloading (which is so damaging to this kind of elevator) is impossible, (as should the load be excessive they will repeatedly cut off the current circuit until the maximum safe load has been defined, and if the supply is turned off at any time one may easily work them by hand-power, being provided with a hand wheel for this express purpose. They are also proof against overcrowding, having not only a limit stop at the extreme ends, but also a patent automatic reserve stop in case of the ordinary ones breaking from any cause, and should the car be obstructed in descending by any means the lifting ropes would then all uncoil off the barrel and get twisted together, but to prevent this possibility these machines have a very simple appliance whereby they automatically stop themselves when any obstruction occurs; and, in case of the steel lifting ropes ever breaking, the double-safety apparatus will instantaneously arrest the car and sustain it from the guides; the greater the load the more effectual will it grip until repaired, thereby avoiding what might have been a serious accident. The hydraulic elevators are used very extensively where water pressure is available; they are divided into three classes—high, medium and low pressure. The high pressure can only be obtained by having a pump and an accumulator, which is rather costly except where there are a few machines to feed. The medium pressure, about 700 lbs. per square inch, comes next, and can be obtained at a nominal cost, there being hydraulic supply stations in most large towns. Low pressure can be obtained by placing a reservoir on the top of the building, or direct from the ordinary supply in the street. Hydraulic elevators occupy very small floor space, make very little noise, require less attention, and have fewer working parts than any other kind of elevator, and are not at all liable to get out of order where they have a medium pressure of water.

**7 PALL MALL, S.W.**



MESSRS. GLOVER & CO, wood-working machinists, Leeds, have long been favourably known as manufacturers of machines for making bundles of firewood from waste or fresh wood. Hitherto the sticks from the chopping machine had to be gathered up from the floor by hand. Messrs. Glover have, however, now succeeded in devising a gatherer which will pick up sticks from irregular heaps on the floor, and place them side by side in regular rows for bundling. As the sticks are sifted they drop into narrow spouts, which cause them to assume a uniform position lengthways, in which direction they are shot forward by rapidly moving travelling belts into narrow travelling boxes working on the top of a belt, which is about as wide as the sticks are long. By means of an ingenious arrangement of clapper the sticks are placed either perfectly straight in these boxes or else they are made to drop out, in which latter case they travel back, and accomplish the journey once more. Being compactly arranged, this stick-arranging apparatus occupies very little floor space, and as the mechanism is very simple it is readily operated, and not likely to get out of order. From the chip-arranging machine the sticks are conveyed by a travelling band to the bundling machine. They are first fed into a measuring box, from which they pass down into a cylinder, in which they are shaken by a spring and cam arrangement, and the ends levelled. Two pairs of formers now bring the collection of sticks into a cylindrical form, and whilst the bundle is held in this position the sticks are finally straightened. Although both pairs of formers act upon the sticks simultaneously, they are withdrawn alternately, so that the shapeliness of the bundle is preserved until the compressing jaws secure it. A plunger then further advances, placing the formed bundle of sticks within the compressors, and then quickly returns, so that a new charge of sticks may be placed in front of it for another bundle. Wire is next fastened round the bundle while under pressure by a wire-twisting apparatus, and, the pressure having been removed, the finished bundle is automatically pushed out of the machine by its successor. Messrs. Glover & Co. are also, as our readers are aware, the makers of the "Ideal" saw guard, of which the popularity increases, owing doubtless to the fact that it is a thoroughly and well designed arrangement for the purpose, which is now being adopted by many firms who were previously strongly prejudiced against such appliances, but who find the "Ideal" to give perfect satisfaction where other guards have been found unsatisfactory, obstructive, and in some cases even dangerous.

### THE "ONLY" STORAGE CISTERN.

WE have pleasure in drawing our readers' attention to system of water storage invented by Mr. D. Grundy, 13 King William Street, E.C., which should be widely adopted as an effective means of avoiding the contamination of the water used for domestic purposes. The principle of this invention is comprised in the fact that the cistern—a cylinder—is absolutely closed, and the water passes through it from the main to the tap without coming in any way into contact with the atmosphere. The clumsy device of the ball valve is superseded, the supply of water being regulated by a check valve placed under the cistern, which, when the latter is full, automatically shuts off the supply; while a valve of similar but reversed action, prevents the return of water into the main. This appliance, in addition to rendering contamination impossible, would obviate the discomfort and expense attendant on the breaking of pipes through frost.

### MESSRS. JEFFREY & CO.'S NEW PREMISES

MESSRS. JEFFREY & CO, for so many years established in the Essex Road, Islington, have come to the conclusion that the works, however admirably suited they may be for manufacturing purposes, are no longer conveniently situated for architects and the class of clients for whom they cater, and therefore, following the westward trend of fashion and progress, they have taken capacious premises at 31 Mortimer Street, Regent Street, where, in a handsomely appointed gallery, some 90 feet by 30 feet, they are showing *in situ* some very beautiful designs in wall-decorations. The gallery itself is hung with the latest decoration by Walter Crane, consisting of a swag frieze of fruit in bright colours on a light ground over a wall surface hung with a simple stripe of olive sprays in a delightfully quiet and at the same time rich green, the whole forming a charming background for furniture and pictures. In the gallery are also exhibited the "Lion and Dove" frieze and "Rose Bush" paper, also designed by Mr. Crane, which was exhibited in Paris in 1900, where the firm were awarded the two gold medals; and two colourings of the "Estuary" frieze, designed by Horace Warner, a very artistic frieze which has the merit of not appearing to "repeat." Here are also various examples of ceiling papers, from designs by Heywood Sumner and other artists. The entrance hall is hung

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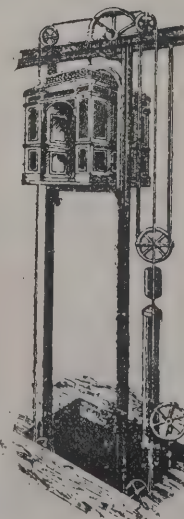
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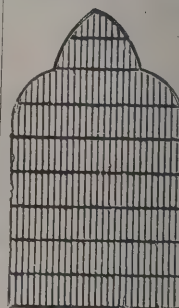
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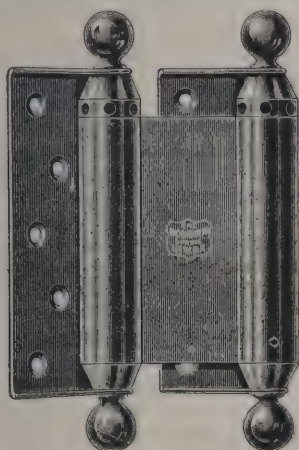
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with choice examples of their finest work, including embossed leather papers, lacquered printed papers on gold ground, and silk flocks. The new "Coronation" damask, taken from one of those old Venetian designs in which the crown is made the leading feature, also forms an important part of this exhibit. The gallery will be open on Monday next, the 21st, and will contain a large display of new season's decorations and wall-papers, as well as of those which have been designed by leading architects and designers during the last thirty years, amongst which will be found specimens of the work of Owen Jones, Dr. C. Dresser, W. Burges, E. W. Godwin, Albert Moore, C. L. Eastlake, B. T. Talbert, A. F. Brophy, Kate Faulkner, W. J. Muckley, J. D. Sedding, Brightwen Binyon, H. Mackmurdo, S. Mawson, H. W. Batley, G. C. Haité, Haward, C. F. A. Voysey, and include the latest designs of Walter Crane, L. F. Day, Heywood Sumner, A. F. Vigers and Stephen Webb.

### BOMMER SPRING HINGES.

We give herewith an illustration of a new spring hinge which possesses three valuable attributes, *i.e.* simplicity, efficiency



and cheapness. This hinge is made in both single and double form, is self-acting, has adjustable tension, and is practically

indestructible. It is supplied in all sizes from 3 inches upwards, and in every variety of finish. It does not necessitate the cutting away of the woodwork of either door or jamb beyond what is required for the ordinary butt hinge, and as the spring is contained in every hinge, instead of as is customary, one hinge of a pair, the required amount of tension is secured with less strain than is usual. This hinge, which is of American origin, has been largely employed in public buildings throughout the States, and almost equally widely in Germany, where it has established an excellent reputation. It is now being placed on the English market by Mr. Walter P. Notcutt, agent for the United Kingdom, at Bristol House, Holborn Viaduct.

### ELECTRIC NOTES.

THE new electricity station of the Middleton, Lancs, Corporation was opened on Monday last. It is situated in Townley Street, and contains three engines and dynamos. The contracts for the erection and equipment of the station amount to 32,995/.

THE Elland District Council have just received intimation from the Local Government Board that they are prepared to sanction a loan of 16,000/ for the dual scheme of electric lighting and refuse destructor.

PROFESSOR THWING, of Syracuse University, has, it is said, invented a thermo-electric generator which he claims greatly reduces the cost of obtaining electric power. By the new method electricity is generated from heat more directly than by any method known at present. The new generator could be employed in electric automobiles.

THE Croydon County Council have appointed Mr. John G. Scott, burgh electrical engineer of Leith, to the office of Corporation electrical engineer, at a salary of 400/., rising to 600/. There were fifty applications. Twelve candidates were interviewed by the committee, and four came before the Council, Mr. Scott eventually being unanimously elected. He has had previous electrical engineering experience at Glasgow, Coatbridge, Bradford and Whitehaven. Mr. Scott's closest competitor for the appointment was Mr. Wilfred C. Thomson, electrical engineer to the Great Northern Railway Company.

A LOCAL Government Board inquiry was held last week at the town hall respecting the proposal of the Brighton Town



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Council to borrow 45,000*l.* for establishing a municipal telephone system. The intention is to cover not only the borough, but a radius of about ten miles, Burgess Hill being reached on the north, Steyning on the west and Lewes on the east. The only opposition came from the neighbouring town of Hove, where, it was stated, the Town Council desired to retain the sole control of their roads. Replying to the Inspector, the Engineer advising the Brighton Corporation said it would much embarrass the scheme if Hove persisted in refusing permission to cross its streets, but it would not prevent it from being carried out.

### VARIETIES.

THE new church of All Saints, Weston-super-Mare, was dedicated on the 10th inst. by the Bishop of Bath and Wells.

H.R.H. PRINCE CHRISTIAN has appointed May 29 for the laying of the foundation-stone of the new municipal buildings which are to be erected in Lichfield Street, Walsall.

A BLOCK of buildings erected by a joint committee representing the whole of the Fylde Union, with the exception of Blackpool, as an infectious diseases hospital at a cost of close upon 20,000*l.*, was opened at Moss Side on Monday afternoon in the presence of a representative gathering from all parts of the Fylde. The hospital is situated on the road from Kirkham to Lytham.

A NEW Wesleyan church which has just been erected at Walsall Wood was opened last week. The building is in the modern Gothic style with terra-cotta facings and stained-glass windows. A vestibule extends the whole length of the building, and there are classrooms, vestry and orchestra. The seating capacity is nearly 400, and a peculiar feature is a sloping floor of wooden blocks. The architect is Mr. C. W. D. Joynson.

THE cross which was erected by the Dowager Duchess of Argyll on a headland at Macharoch, Argyllshire, in memory of her husband, the eighth Duke of Argyll, and which was injured by the hurricane of November 12 last, has been restored. The design of the cross is the same, but the construction has been greatly strengthened and the base is more massive. The pedestal with the inscriptions was not injured, and remains as it was.

THE reopening after restoration of Brunswick Wesleyan chapel, Leeds, took place on Sunday. The interior of the building has undergone complete renovation, and now presents

a bright and attractive appearance. The improvement is estimated to cost 2,250*l.*, which will include the practical rebuilding of the organ, a work that will be undertaken almost immediately, the contract having been let. Electric light has been installed.

THE chancel of the new church of St. Luke, which is intended to meet the religious requirements of the Burton Lane district of York, was consecrated on the 12th inst. Owing to lack of funds, the church, which is eventually to consist of a nave and a chancel, under one vaulted roof, 113 feet long by 22 feet wide, has to be built in sections, and it was the first portion—the chancel—which the Archbishop consecrated on Saturday. The estimated cost of the church is 8,000*l.*, and when complete it will accommodate 800 worshippers. The section finished consists of the vestries, chancel and aisles, which will accommodate 300, with a temporary west end, which can be taken down when the remainder of the work is proceeded with.

THE Executive of the British Fire Prevention Committee announce that Mr. Ellis Marsland, district surveyor of Camberwell, has consented to act as honorary secretary, thus supporting Mr. Edwin O. Sachs, the chairman, in respect to the testing work, which has grown far beyond what was originally anticipated. Mr. Marsland, who has been closely associated with the committee from its outset, is this year Master of the Worshipful Company of Tylers and Bricklayers. The working executive has also been strengthened by the following additional members, namely, Mr. J. W. Sheppard, North British and Mercantile Insurance Company; Mr. Langridge, A.M.Inst.E.E., Royal Insurance Company; and Mr. Hamilton, A.R.I.B.A., district surveyor for North Fulham. As to the testing arrangements of the committee for the coming session, tests are being arranged with another heavy warehouse floor with roofing by the Vulcanite Company, Ltd., with glass by the Union Plate Glass Company, Ltd., who wish to have their wired glass compared with the glazing of the Luxfer Prism Company, and Messrs. Pilkington, whose materials have already been under investigation.

THE question of vaccination in factories is one of such great importance, and the prejudice generally against vaccination is apparently so great among mechanics and labourers, that the directors of Electric Lighting Boards (British Manufacturing Company), Ltd., thought it advisable to allow every member of their staff half a crown as vaccination bonus money

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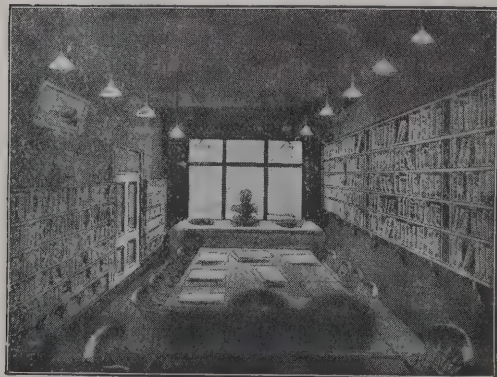
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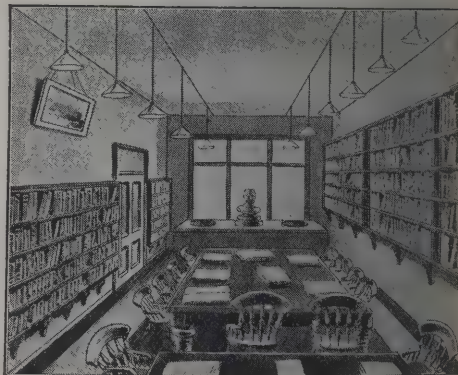
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ve on full pay in the event of any member of the staff unable to work owing to vaccination. Under these arrangements the entire staff of the Electric Lighting Boards' Manufacturing Company), Ltd, factory, 80 York King's Cross, some hundred hands in all, from the directors to the girls and smallest boys, were all vaccinated, and the directors thought that, owing to many difficulties in execution, the example set might judiciously be followed in factories, more particularly in the North of London, where the returns of smallpox cases have been recently very

COLLECTION of drawings, formerly belonging to Charles Kean, has recently been presented to the Victoria and Albert Museum by Mr. and Mrs. F. M. Paget, the latter being a niece of Charles Kean, and it will shortly be on view in the galleries. These drawings of theatrical scenery and costumes were executed for Charles Kean by his scenic artists W. Telbin, T. Grieve, H. Cuthbert, W. Gordon, and others, as a record of the Shakespearean and other plays produced by him at the Princess's Theatre during his career from 1851 to 1859. There will also be exhibited a full-length portrait in water-colours, by Sir William Ross, R.A., of Charles Kean as Margaret of Valois, Queen of Navarre, in "Francis I.," written by Fanny Kemble and produced at the Cent Garden Theatre in 1832.

### BUILDING AND BUILDERS.

Foundation-stone has been laid of St. John the Evangelist Church, Sandiway, in the parish of Weaverham, Northwich. The church is to cost about 5,000l.

A new post-office is to be erected in Vaughan Street, London, adjoining the Mostyn Art Gallery and close to the railway station, at a cost of about 8,000l.

The foundation-stone was laid on Saturday last by Sir William Lawson, of the Institute of Journalists. The building, which it is hoped, will in course of time become a sort of house—is at the corner of Bridewell Place and Tudor Street, Blackfriars.

The existing Roman Catholic school chapel at Rotherhithe is to be replaced by a handsome Gothic church capable of meeting the requirements of an estimated population of 5,000. Recently a start was made, when the foundations of the new edifice were prepared. The church will cost 7,000l.

THE deputation from Glasgow Corporation which visited Manchester and Liverpool to inquire into the question of Corporation dwellings have reported favourably on this class of house as managed in these cities. The ordinary tenants in Manchester include such persons as dock labourers, earning 4s. 6d. a day, but rarely working full time; a plasterer's labourer, earning 6d. an hour, also with broken time; and a cleansing department employé, with 18s. a week, but seldom earning the full wage. Some houses are kept standing empty in readiness for displaced tenants. The members of the deputation were informed that the moral effect on the tenants of living in these houses had been most satisfactory.

NEW offices are in course of erection for the Birkenhead Guardians, and the foundation-stones have recently been laid. They will have a frontage of 59 feet to Argyle Street, 176 feet to Conway Street and 100 feet to Oliver Street. Outwardly the building, which is three-storey, will have a most imposing appearance, being constructed in Ruabon red brick with terracotta dressings with Crowndundale stone. The angle at the corner of Argyle Street and Conway Street is octagonal, and at the head of the building at this point is an ornamented turret of elegant design with a dome, the roof of which will be covered with copper. The main entrance is from Argyle Street, and the entrance for relief applicants in Oliver Street. The main porch is deeply recessed, with a moulded arch of terracotta and red stone intermixed. Immediately inside the main entrance is the main staircase, at either side of which will be granite columns and arches in Crowndundale stone. Over the staircase will be a dome, through which light will be obtained for the main entrance hall. Inside the architect has certainly made the most of the space at his disposal, the various rooms having been conveniently arranged. The departments in the basement are utilised principally for storing purposes. On the ground floor are the general offices, clerks' offices, marriage-room, conference offices, relieving-rooms, doctors' rooms, dispensary, and a spacious waiting hall measuring 56 feet by 46, for the accommodation of those who are waiting to make applications for relief. The Board-room, which is 52 feet by 36, more than twice the size of the present Board-room, is on the first floor, and on the same floor are the general committee-room, assessment-room, extra committee-room, consulting-room, lavatories and cloak-rooms, a corridor being constructed in such a way as to give access to each of these rooms. On the second floor are the valuer's

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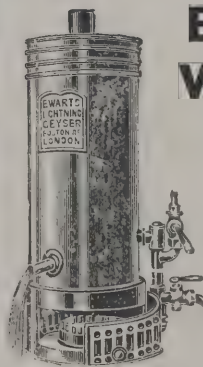
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private office, the vaccination office, book store and extra committee-rooms, while at the rear of this floor is the caretaker's residence. The third floor is utilised for domestic purposes. The building is fitted up on modern principles and lighted throughout by electricity. The architect for the building was Mr. Edmund Kirby, the contractor Mr. W. H. Forde, and the clerk of works Mr. W. Hughes. It is expected that the building will be completed in about twelve months' time.

### METHODS OF THE AMERICAN STONE TRADERS.

AMERICAN business methods have recently called out wide comment in other countries owing to our tremendous industrial growth, which has enabled us, says Mr. George Barnum in *Stone*, to take the foremost place among the world's producers. Intelligent critics in every land have dwelt upon the fact that we do not seem to fear competition, and so do not guard our mills and factories and our great industrial plants with the jealous secrecy that is the rule across the ocean. In all my experience in the stone business I have known only three or four proprietors of quarries or stone mills who have refused free permission to visitors to inspect the works. In every one of these cases the man who interposed an objection was a foreigner. It is worth while considering whether anything lies back of this free-handed and open-minded spirit.

I think I can best convey the lesson I have in mind by recounting a conversation I recently held with a stone producer. For various reasons I cannot give full particulars as to his business and its location. It is enough to say that he was a foreigner by birth, that he has an immense and lucrative business and that no stone of the exact kind that he produces is now sold in this immediate market. Naturally he desired to get a foothold here in New York. My conversation with him was held in the presence of a machinery maker who was endeavouring to interest him in a new stoneworking appliance. The machinery man fell to talking of the conservatism of stone men and their unwillingness to give a trial to new machinery. He mentioned incidentally that one of his practices was to install a machine in some stone-working centre without any initial expense to the stone man, provided that the other producers in the neighbourhood should be allowed to inspect its workings.

"Well, I can tell you one thing," said the quarryman; "if I install one of your machines, none of my rivals will be

allowed to see it. I do not propose to spend my good money in experimenting for the benefit of those who have entered competition with me."

"There is where I think you make a very great mistake," I replied. "That is not the American method. It is open to our entire industrial spirit, and it is worth considering whether there is not some good reason why we have never carried out a narrow spirit of rivalry in this way. Let us first take up a special case, and to do this I must ask you some very searching questions. Is your stone a good one? Is it perfectly adapted for the New York market, providing you can make price deliveries right? Are you content to let your stone speak for itself when once it has been introduced into this market? In other words, if your stone should be used in some immense striking building, would it advertise your quarries and business to lead to a further demand for this particular stone? Do you consider yourself as enterprising and as liberal as your immediate competitors?"

The quarryman was taken aback by this rapid fire of questions, but he said with justifiable warmth that his stone was the best in the world, that if it once got a foothold in the market it would push all similar stones hard, and that in the matter of price and deliveries he was sure he could meet any competition. As to his enterprise, he thought the fact that he was on the field ready to make a fight for the desired market while his rivals stayed at home and carried on a letter-writing campaign, was proof positive that he was just a little ahead of them in this matter.

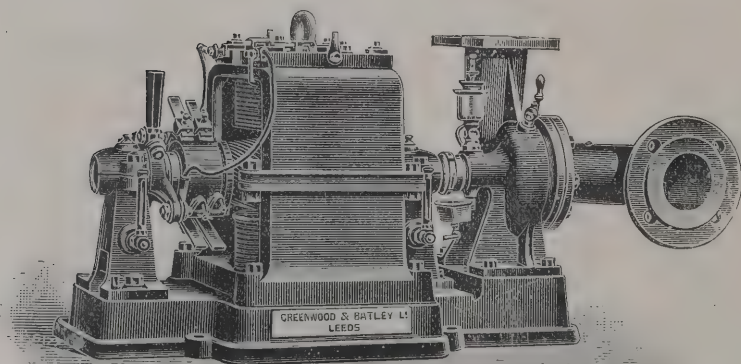
"Then, in the name of all the prophets, why are you so afraid of competition?" I asked him. "This is a pretty big market, and if you had it all to yourself it would swamp you completely. To swing the business would require millions of capital. Do you not think, too, it is a pretty big task for one man to capture the entire market for himself? Your stone is not represented here at present. If you seek to introduce it, you will meet not only with criticism and bitter opposition, but with absolute indifference as well, and this is the very hardest thing to overcome. Once your stone is firmly established in the market, the obtaining of orders will be merely a matter of hustling for the share of contracts. In the long run the amount of your business in this market will be greater than if you seek to bar your rivals out completely and to fight single-handed for the entire stone."

"But," said the quarryman in a puzzled way, "grain

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you are right in these particulars, how will I be served by my competitors to see what labour-saving devices I and so let them cheapen their methods of production? will keep copying after me and so may be able to get to my figures."

do not think that this fear need cause you much loss of The copyist is a hopeless distance in the rear of the tor. If you install this machine it will be months before competitors can take it up. By this time you will be to try something else, and if you keep your wits about you need be no difficulty in staying at the head of your You may ask what you would gain by having your cheapen their methods of production. In the first place tried to show you that the best chance for getting your in this market is to have all of the men who quarry it heart and soul to have it adopted by the architects and s. If by the use of improved machinery you can get it s market very much cheaper than they, then you will e single-handed fight which I have been deprecating. second place, when we give out our contracts we like ition. Let us suppose that your variety of stone is d for a big job. You can rest assured that your rivals asked to figure as well as yourself. When the bids are if there is a very great difference in the totals it will oment. Not only the other quarrymen, but also the ealers who put in bids based on their figures, will naturally that your stone is cheaper because it is inferior. The ct has no time to unravel all of these disputes, and he is o turn at once to another stone with which he is more . But, you will say, I can keep my figures up to about s of my competitors, and put in my pocket the differ- at comes from improved methods of production. The to this is simple. In any way you look at e are seeking to shut out competition in your line, without competition your stone will never get a foothold here. Look at the history of the stone e this country. The stones that have made their way ghest favour are those where competition is keenest. e, for instance, that there was just one quarry producing limestone. If it had millions of capital and facilities uring out unlimited quantities of stone, do you suppose ne would ever have come into such general use as at e? Now there are scores of strong companies, each one y in every possible way to advance the use of Indiana e. Every building that is put up in which the Bedford

stone is used is an advertisement, not alone for the quarry from which these special blocks were obtained, but for this variety of stone itself. Nowhere has there been a hotter competition. The small and unprogressive producers may have been forced to the wall, but the big and enterprising companies have had all the business they could attend to. Exactly the same case is true of the Georgia marble producers. I mention these two stones because, being centralised in certain definite localities, they naturally lend themselves to illustration. Instances from the granite and sandstone districts could also be given."

The quarryman was not quite convinced. "We have tried a number of times to form an association in our district in order to keep the prices up and to regulate the business. It has always failed. My leading competitor will not 'play fair.' He has broken all agreements and we have forced him to pay many fines."

"There is another mistake you have made," I retorted. "Why do you want any agreement? If you tie yourself up in any way like this your rivals get much of the benefit of your enterprise and hard work. Have a good understanding with them, and even enter into an association, so long as it does not propose to regulate prices or parcel out the market. I believe in associations, but only as long as they occupy themselves with their proper province. Let the association settle terms of sale, questions of credit and the like, but leave prices alone. What will build up your business is not pushing prices up, but cutting the cost of production down. This is a matter for you to settle for yourself alone. Cut off needless wastes, institute rigid economies, install the best and most improved machinery, send out of date equipment to the scrap-heap, and then welcome any honest competition. If you are worth your salt you can more than hold your end up. If you are afraid of what your rivals may do, hire a man with more push and activity than yourself to manage your business. Such men can be had, and they are cheap in the long run, no matter what salary they ask."

The quarryman mopped his brow, and asked in a very quiet tone, "Well, then, what would you advise me to do?"

"Go back to your quarries and install this machinery that you are looking at. Do not build a shed around it, and put guards at the doors to keep out visitors. Rather invite your local newspaper to write it up, so that you may get an incidental advertisement from it. If your competitors express any curiosity concerning it, ask them to call and take half a

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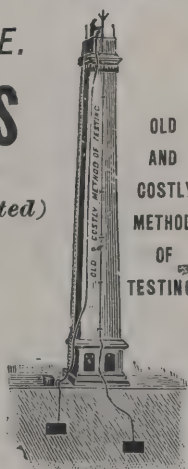
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day off to show it to them. Tell them frankly how it works, and if it saves you money say so. Let it be known that you intend to get your stone into the New York market, if possible, because you are sure there is a good field there. Take every occasion to show that you are the most widely awake and enterprising quarryman in your territory. Advertise your stone so that architects and stone men will not have to be told what it is and what its merits are when they hear it mentioned. Above all, do not try to work in the dark like a mole, even if you are getting stone out of the earth. Come out into the sunlight as if you feared no man. Show that you have perfect confidence in yourself and in your stone, and that competition has no terrors for you, as you mean always to keep just a little in advance of the procession. Then hustle—everlastingly hustle."

### HEATON NORRIS NEW COUNCIL OFFICES.

A HANDSOME pile of buildings which has been erected as a home for the Urban District Council of Heaton Norris, Cheshire, has been recently opened. The new council offices are of stone construction, having Yorkshire parpoint facings with Alderley stone dressings, the roof being covered with Tilberthwaite green slates. The design of the main façade which fronts Thornfield Road is symmetrical, in accordance with the true spirit of Renaissance architecture. This main front has a predominating projecting central portion flanked by two wings more restricted in treatment and of less altitude.

Approached by a short flight of steps flanked with sweeping balustrades on either side is the principal entrance, designed in the Doric order with a quaint freedom characteristic of Elizabethan architecture. This leads to a spacious vestibule decorated in faience, tiles and mosaics. A few steps from the vestibule give access to the ground-floor corridor, the main staircase to the first floor being central and immediately facing the principal entrance. Here again the symmetrical plans of all the three floors, viz. basement, ground and first, evince the true spirit of the Renaissance. Entered from the main corridor on the ground floor are the administrative offices. Those of the collector and surveyor are on either side of the principal entrance, and are lighted by stone-mullioned windows from the front. Communicating respectively with these, as well as directly from the corridor, are the clerk's general

and the surveyor's general offices. These are also lighted similarly from the front, and are in the flanking wings on either side of the predominating central portion of the main façade. The clerk's private office opens off the corridor and communicates also with the clerk's general. It is lighted by a large mullioned window as before from the side elevation facing Green Lane. Its more secluded position obtains for greater privacy and quiet. Also on the ground floor in the rear of the building are provided an overseer's and san inspector's offices, as well as additional rooms, available as spare offices, waiting-rooms, &c. At the end of the passages on either side of the principal stairs a telephone room and ante to the back entrance are respectively provided.

The approach to the first floor is by means of broad and easy stairs, commencing at the line of the ground-floor corridor and going up centrally in a staircase 18 feet wide. This single stair is in two flights, with a landing midway in the height, and terminates at a spacious half-landing the full width of the staircase, and at a level between the ground and first floors. From this landing to the first-floor level the approach is by double stairs against either of the staircase walls. The stairs, newels and balusters are of the massive Elizabethan style, and are in oak and pitch-pine. The staircase is well lighted by a large mullioned window glazed with leaded light of handsome design, colour being introduced in excellent taste and proper restriction.

On the first floor is a similar corridor (8 feet wide) to that on the ground floor, and directly approached from this is the council chamber occupying the entire central part of the first floor of the building. It is a room nearly 40 feet long by 20 feet wide and 16 feet in height. The ceiling is covered so as to give resonance to the voice. At either end is a handsome carved oak mantel-piece with the crest of the council on a cushion surrounded by strapwork characteristic of the style. The lower part of the walls have a wainscot dado, the upper portion being decorated in subdued harmonious tints. Opening off the council chamber, as well as directly from the corridor, are the council retiring-room and committee-room. The former occupies the entire left wing of the building from front to back, as is well lighted on three of its sides, two stone and mullicorn oriel windows occurring symmetrically on the longest side. This room is divisible into two, when desirable, by a panel folding screen. Its dimensions are:—Length, 41 feet; width, 21 feet; and height, 13 feet. The council retiring-room and committee-room are finished similarly to the council chamber.

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are also two waiting-rooms, a stationery store, lavatories, at this level. The basement is approached under the stairs on ground floor; this is devoted to heating and utilitarian purposes. The rooms, however, are lofty, and well lighted, and can readily be adapted for all classes, &c.

The architects are Messrs. Woodhouse & Willoughby, who were the first premium in the limited competition held some years ago among nine competitors.

## NEWPORT AND FOREIGN COMPETITION IN THE IRON TRADE.

returns just issued by the Customs Statistical Department show some interesting particulars relating to the importation of this country of steel billets during last year from foreign sources.

The largest importer is, of course, Liverpool, which received 16,432 tons from Holland, 15,413 tons from the United States, and 2,632 tons from Belgium. Manchester received 10,800 tons from Holland, 3,171 tons from Germany and 2,912 tons from the United States. London received from Sweden 1,525 tons, from Holland 1,717 tons and from Belgium 1,525 tons, and several smaller quantities from other countries. Leeds received 8,361 tons from Germany, 648 tons from Belgium and 7,500 tons from the United States. Swansea received 1,469 tons from Germany, 4,023 tons from the United States, 2,152 tons from Sweden and 2,922 tons from Holland. With the exception of Liverpool, by far the largest importer (in former years) in the whole of the United Kingdom is Newport, which received 6,308 tons from the United States, 4,404 tons from Belgium and 13,811 tons from Holland, being a total of 30,813 tons, which, compared with the importations of Newport of 27,008 tons in 1900, shows an increase of 3,805 tons. This large growth, as far as Newport is concerned, is undoubtedly due to the local demand for the manufacture of iron and galvanised sheets, tinplates, wire and nail rods, and for similar articles, and with the establishment here of the new works of Messrs. John Lysaght, Ltd., Messrs. W. & A. Musker, Ltd., and other cognate industries for which Newport offers the advantages of cheaper coal and deep-water wharves with direct over-sea carriage, there is every prospect of its still more largely developing in this trade, and especially in the cheap coal-shipping charges and ocean lines of

steamers now running from Newport to the River Plate, Africa, China, Japan, Brazils and India.

## THE NEW GREENWICH UNION WORKHOUSE.

THE new workhouse in Grove Park, Kent, formally taken over by the Guardians by the chairman of the building committee, Mr. J. P. Lewis, on the 9th inst., was decided to be built on the site at Grove Park, in February 1896, a previous scheme, considered as long ago as November 1887, for providing additional accommodation by extension of the present workhouse buildings at East Greenwich, having been vetoed by the Local Government Board, on the ground that the present East Greenwich site was already congested.

The site of the new workhouse, the total area of which is 10 acres, the level at the entrance being 120 feet above Ordnance datum, was purchased in August 1896 at 400l. an acre.

The plans of the new buildings were prepared by the Board's architect, Mr. Thomas Dinwiddy, F.R.I.B.A., F.S.I., assisted by his son, Mr. T. Norman Dinwiddy, A.R.I.B.A. After approval of the plans by the Local Government Board, tenders were advertised for, and that of Mr. T. Rowbotham, at 175,020l., was accepted. Mr. Dinwiddy first became architect to the Greenwich Guardians in 1882, in an open competition for the infirmary extension, his designs being then chosen out of twenty-three submitted by the final selection of the Local Government Board.

On June 15, 1899, the foundation-stone was laid by Mr. John Anderson, the then chairman of the Board of Guardians.

The accommodation provides for 256 aged and six infirm males, 172 aged and six infirm females, 200 able-bodied males and 100 able-bodied females, and there is, in addition, a pavilion for twelve old married couples, making with the receiving wards and a small isolation ward a total provision for 816 inmates; the accommodation for the male inmates is on the left (north) of the site, and the female on the right (south).

At the entrance from Marvels Lane are placed on the left the porter's lodge, and on the opposite side waiting and visiting rooms, with the male and female receiving wards (complete with bath, search-rooms, &c.), and on either side stores for inmates' clothes and effects. To the left, again, are the disinfecting chamber and mortuary, fitted with post-mortem table

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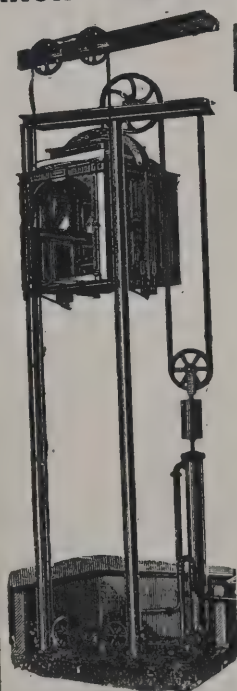
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and appliances, also stabling for four horses, with residence over for coachman.

The administrative block, with its main elevation fronting Marvels Lane, is centrally placed, and approachable from all parts of the institution. On the left, near the entrance, are the master's offices, with waiting-room, and, adjoining, the committee-room, with small ante-room. A surgery is provided. On the right of the entrance are the master and matron's apartments, with matron's office, linen and serving rooms adjoining. Following to the left and right respectively, are stores fitted for males and females' clothes and washed linen, and between a spacious general store approached from the male and female sides, with a gallery round three sides, top lighted, and fitted for the dry goods and grocery provisions for the institution; the goods entrance is through a square courtyard overlooked from the master's office. In the rear section of the administrative block are placed the aged and able-bodied inmates' dining-halls, divided for the sexes by movable partitions, and so planned as to be capable of extension to provide additional accommodation without material alteration. The kitchen and scullery (centrally planned with serving hatches into each section of the dining-halls), are fitted with steam and gas-cooking appliances, and meat store, bread-room, larders and pantries are situate on either side, within easy access. The male and female officers' mess-rooms are to the left and right of the aged dining-hall. The nurses' quarters and accommodation for assistant master and other officers are situate on the first floor.

The pavilions, accommodating the male and female aged and able-bodied inmates, as above, are grouped to the left and right of the administrative block, the pavilions for able-bodied being in the rear; all are connected with the administrative building by covered corridors, with open arched sides, beneath being subways for steam and water-mains and electric cables. The numbers in each pavilion vary from 80 to 100.

The dormitories, arranged for two rows of beds, allowing the most effective cross ventilation, in place of the old system of four rows of beds with a central partition, occupy the first and second floors, and the day rooms, with attendant's room and small scullery, the ground floor. Special attention has been given to lighting and ventilation, and the rooms are of varying sizes to admit of classification. Bathrooms and lavatories are placed in annexes, disconnected from the main buildings by ventilated lobbies. In the pavilion for married couples there are separate bedrooms and a common dayroom,

with small scullery and larder. External fire-escape balconies and staircases are provided to all the pavilions.

The chapel, which has seating for 400, is centrally placed, connected to the main corridors, and within easy reach from the pavilions. The laundry block contains the receiving-room, spacious washhouse with separate small washhouses for female and officers' linen, drying and ironing rooms and delivery room the machinery being driven by steam power. In the engine room are two electrical engines, each driving a 50-k w. dynamo, a well with engine alternatively coupled to a spare 25-k dynamo, and a vertical engine driving the laundry machinery. There is a battery of electrical accumulators capable of maintaining 200 lamps for 10 hours. There are three ovens in the bakery, of capacity sufficient for the requirements of the institution, with bread-room attached. The flour store is situated over, in the water-tower, on which is a cold-water storage tank of 24,000 gallons capacity. There are four Lancashire boilers placed below the ironing-room, with coal vaults and a well, and ventilated stokery. The isolation ward provides two wards for two beds each, with nurses' room, &c. Workshop with hand corn-grinding mills, are situate near the able-bodied males' pavilions. There are small workshops placed near the aged males' pavilions for use by the aged inmates.

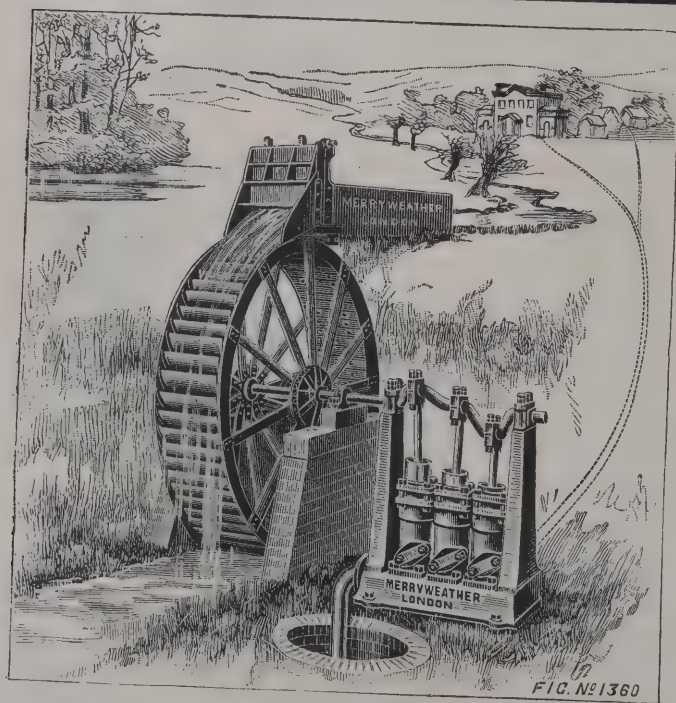
The buildings are all heated by hot water, in addition to subsidiary open firegrates.

The whole of the institution is lighted by electricity.

The engineering work has been carried out by Messrs. Moorwood, Sons & Co., Ltd., of Sheffield and London; the electric lighting by Messrs. H. F. Joel & Co., of South Molton Street, W., and the well by Messrs. T. Tilley & Sons, of Commercial Road, E.

The question between the Guardians and the Local Government Board, which has been the subject of wide reference in the press, is apart from the fitness of the buildings for their purpose. This is testified by the fact that the Local Government Board selected the designs of these buildings for illustration at the Paris Exhibition as a perfect type of such an institution. The resulting agitation in the press, however charging the Guardians with providing palatial accommodation, conveys a reflection on all concerned in the building, and calls for correction. The following are some extracts from eight leading journals:—"Mosaic flooring, beautiful panelling, a dining-hall fit for royalty and a church which any rector would envy." "The awe inspiring entrance is worthy of Kensington Palace, which certainly does infinite credit to the

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ect." "Fitted up with the utmost luxury." "Neat little  
aries, which any undergraduate at Oxford would be only  
lad to have." "The spacious courtyards are worthy  
a Mediaeval monastery." "Suited for the English home  
American millionaire." "New paupers' palace at  
"A handsome series of structures." The most  
cal reply to these criticisms is that the total site and  
ing cost, including the addition for well and electric  
hig (beyond which there have been practically no extras)  
cuts to 237% per inmate, which is rather under than over  
ost of parallel institutions in the Metropolis of modern  
te A neighbouring workhouse of contemporary date and  
extent, where there is no suggestion of excessive outlay,  
57% per inmate; moreover, in our Greenwich example,  
ministrative quarters have been provided of extent suffi-  
to cope with future pavilions for possible extension to  
a further 200 inmates; besides the margin in kitchen  
undry, this has involved an additional floor on the central  
ilings for staff, which will for the time be in reserve. The  
wich contract has also comprised an unusually complete  
ion of seating, store-room fittings, &c., often dealt with  
tl subsequent furnishing.

# INSTITUTION OF JUNIOR ENGINEERS.

meeting of this Institution held at the Westminster  
Hotel on April 11, the chairman, Mr. Percival Marshall,  
esing, the paper read was entitled "Notes on Modern  
house Construction," by Mr G. Drysdale Sweetman, of

illustrate the evolution of structural design, the four  
econs on the Eddystone were briefly examined, and their  
ie points of difference indicated as follows:—The base of  
in anley's tower (1695) was built of stone strengthened with  
on ands; its sides were vertical and were encumbered with a  
of ion of unnecessary and even dangerously obstructive  
ment. It was in the form of an octagon and 100 feet high.  
esayed by a storm in 1703. Rudyerd's tower (1705) was  
il of wood ballasted with stone; its plan was circular and the  
wildy ornament was omitted. In section it was a frustum of  
cd, 23 feet in diameter at the base and 14 feet at the top,  
d out 67 feet high. The foundation rock was levelled off  
s and the tower united to it by means of bolts keyed into  
ock. It was destroyed by fire in 1755. Smeaton's  
c structure was finished in 1759. The material was

stone, and for external form the trunk of an oak tree was  
chosen. The base was thus considerably broadened and the  
waist narrowed in comparison with Rudyerd's tower. The  
masonry was bonded together and into the rock by an elaborate  
system of dovetailing. It was 76½ feet high, and was partially  
removed in 1882 owing to the concussive erosion of the bed-  
rock which threatened its stability. Douglass's new Eddystone  
was built of granite, and differed from the last named in having  
a cylindrical base with vertical sides carried 2½ feet above high-  
water mark. The tower, which was a concave elliptic frustum,  
started from the top of this vertical plinth. The total height  
from foundation to vane was 170 feet. The walls were 8 feet  
6 inches thick at the base and 2 feet 3 inches at the top. The  
tower was solid to a height of 25 feet 6 inches above high  
water.

In some experiments on wave power, made at the Skerry-  
vore and at the Bell Rock by Thomas Stevenson, so great  
forces as 6,083 lbs. per foot at the former and 3,013 lbs. at the  
latter station had been recorded; with these stupendous forces  
to combat, it behoved the designer to appreciate every minute  
detail of the disturbing elements and to endeavour to neutralise  
their action.

By spreading out the base, not only was a broader founda-  
tion area obtained and the centre of gravity lowered, but also  
the force centre of each wave stroke was raised by the  
momentum of its impact, and a portion of its violence dissipa-  
ted in overcoming the force of gravity. There was a limit,  
however, to this base spreading policy set by the tendency of  
the wave crests and spray to rise so as to obscure the lantern,  
and it was partly to obviate this difficulty that the late Sir  
James Douglass designed the new Eddystone with a cylindrical  
base.

The generally accepted shape for a lighthouse in plan was  
circular, but the suggestion was offered that with a polygonal  
plan of many sides but little more obstruction would be made  
to the waves, and instead of swirling round as in the case of a  
circular tower, the waves would be made to take a rather  
divergent course and so offer a leeside for landing purposes.  
The foundation courses should in all cases be sunk below the  
surface of the rock, for though the stability of the structure  
depended for the most part on its weight and the low position of  
its centre of gravity, the idea was to make the tower virtually  
a projection of the rock itself.

It was important that the pressure of all the materials and  
structural units within the tower acted vertically, so as not to

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**ELECTRICITY**

GENERATED BY

**STEAM**

**AS**

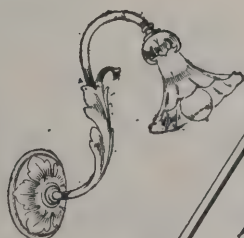
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produce a resolved force operating laterally as an outward thrust. Care should be taken to so locate the openings in the tower as to afford them the greatest protection. It was interesting to note that the presence of seaweed was of great advantage in breaking the force of waves. The internal accommodation usually comprised the service-room, which contained the lantern, attendants' room, bedroom, general stores, oil stores or (as the case might be) gas store, dynamo-room, &c. A water-tank low down in the base and a crane were also necessary.

The author, in referring to materials of construction, pointed out that, although skeleton towers were often easier to erect than were masonry ones, owing to the difficulty of devising a safe landing-stage during rough weather, and also to the impossibility of fixing any floor below the highest probable wave crest, accommodation was greatly hampered if a very high tower were not otherwise necessary. For masonry structures the granites, syenites and porphyries were the most useful stones. In some situations the use of concrete had much to recommend it, and if only the difficulties of cracking could be obviated there was no doubt but that the material would be more largely used. Besides the popular theory of expansion and contraction, the possibility of some sudden chemical change in the later portions of the settling process producing a disruptive molecular disturbance, or perhaps of the mass being in itself in such a state of initial tension or compression that it was sensitive to æthereal or seismic tremors which would not affect a more resilient material, were advanced to account for the cracking of mass concrete.

The invention of the Argand burner (1870) marked the commencement of the concentrative systems which, starting with oil, had probably reached their maximum intrinsic brightness in the electric arc. The Trinity House oil burners were generally of the five or six concentric wick type, with intervening air spaces, the outer diameter of a six-wick lamp being  $4\frac{3}{4}$  inches. A great number of wicks was sometimes used, but the heat from them was enormous. A seven-wick lamp consumed about a gallon of oil per hour. The oil in the lamps was supplied under pressure by gravitation, air or hydrostatic head, or by clockwork pumps. The introduction of incandescent mantle burners had given a fresh impetus to oil illumination. The two principal systems were the oil gas and the petroleum vapour. In the former the oil was vapourised at a shore station, and the gas compressed to ten or twelve atmospheres; the burning pressure was usually 2 to 3 lbs. per

square inch; the consumption 1-16 cubic foot per unit candle of flame intensity at one atmosphere.

From the fact that, among others, the French fifth or occulting light at St. Nazaire was left unattended during the night, the system seemed quite reliable. The apparatus consumed about 800 $\frac{1}{2}$ . In the petroleum vapour system the oil, under a pressure of from two to three atmospheres, was forced through a vapouriser which was heated by the burner itself at lighting; the consumption was about 8 grs. per unit candle. This system was not so easy to work as was the oil gas, but required less apparatus. The electric light had many advantages, and except in a few cases, could not be said to warrant the increased expenditure over other methods. Its glare made it very unpopular with mariners, and it was also deficient in penetrative power through fog, owing to its containing so large a quantity of highly refrangible rays. The proportionate reduction in a thick fog was four times greater than gas. Oil and gas were about equally affected by atmospheric condition. In fine weather the present arrangements were quite sufficient, but at the first sign of mist they were practically useless, and it was in this direction that future improvement must be looked for. The extensive use of coloured lights was impossible owing to the great absorption of light in passing through the screens. Taking white light of unit intensity, red was one-third, green one-fifth and blue one-seventh. Red was therefore the only permissible colour from an economic point of view; it also possessed the advantage of being less easily absorbed than white light in foggy weather. The introduction in 1890 by the late M. Bourdelles of the mercury float mechanism was a great point of progress, and it, in the feu éclair or lightning-flash system, a far more powerful beam and quicker flash was made possible by the faster rotation of a less extensive lens field.

The conclusion of the paper was devoted to the consideration of optical arrangements. The great superiority of the dioptric and catadioptric glass lens over the older catoptric metal reflector system was an established fact, and it was not possible to totally reflect or refract nearly every ray issuing from the source of illumination into a useful path.

A discussion followed the reading of the paper, and a vote of thanks was accorded the author. After his reply, the proceedings closed with the announcement of the ensuing meeting on May 2, when a paper would be read by the hon. librarian, Mr. Lewis H. Rugg, on "Some Factors in Colonial Railway Construction."



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# The Architect.

## THE WEEK.

A fire which has occurred in Barbican has caused surprise among experts than would be expected in a disaster which affects in different degrees about fifty structures. As in the case of Cripplegate in 1897, the roofs of the buildings formed hives in which rooms of various sizes were packed with objects that not only easily burned, but helped to extend the progress of the flames. Among the businesses carried on were wood-working, millinery, match-making, furniture, artificial flowers, games, &c. It will be apparent that the goods stored in the houses were extremely dangerous from a fireman's point of view. It is admitted that the brigade worked with their accustomed energy, and there was no lack of water. It is easy for amateur judges to assert that the buildings were of clumsy construction, but they appear to have been substantial as could be expected under the circumstances. High rents are not to be obtained in such a quarter, and the returns to the building-owners, therefore, are not excessive. Whether it is wise to allow a series of the kind to be congregated within a limited area may be doubted, but authorities have to deal with the situation as it is, not with a Utopian city. Business creates its own quarters, and it is usually bad policy to interfere with it. When the traffic in the streets of the Metropolis is properly arranged, it will be time enough to talk about "This manufacturer shall sell in such a spot and no other of a similar kind within a prescribed distance." However may be the amount of the loss it must be repaired, but when all circumstances are taken into account the loss in such a district must be accepted as among the inconveniences which are inevitable in such a city as London and under existing conditions.

THE report which was presented at the annual meeting of the Liverpool Architectural Society announces that the society has been incorporated by the Board of Trade, and the word incorporated will have to be added to the title. The Council made an effort to have the word omitted, but the Board of Trade was firm. Several of the members, whose interest in the Society has for some time been dormant, regarded the incorporation as an opportunity to resign. The membership has therefore greatly decreased. The fellows, associates and students numbered respectively fifty-two, forty-seven and twenty-six, against fifty-five, fifty-three and twenty last year. The ordinary membership stands at fifteen, making a total of 140. The Council protested against the selection of St. James's as a site for the proposed Liverpool Cathedral, but the choice was ratified at a public meeting, they failed to oppose what was evidently the wish of the majority of those outside the profession. The charges connected with the incorporation amounted to 43*l.* 6*s.* 6*d.*, and the Cathedral competition 12*l.* 16*s.* 8*d.* At the beginning of the year the balance was 185*l.* 19*s.* 0½*d.*, and at the close of the year 130*l.* 14*s.* 8½*d.* The annual subscriptions amount to 2*l.* 5*s.* 6*d.* The Manchester Society of Architects report that the aggregate membership is 193, viz. ninety-two fellows, fifty-two associates and forty-nine students, as against a membership of 182 at the date of the last report, an increase of eleven. The subscriptions received during the year made a total of 160*l.* 3*s.*, but the expenses were in excess of income to the extent of 31*l.* 7*s.* Since the last annual report of the Northern Architectural Association four members, three associates and twenty students have been elected, as compared with one member, two associates and twelve students in the previous twelve months, and the roll now stands as follows:—Members, twenty-seven; associates, seventy-four; students, eighty. At the Council meeting held on December 27, 1901, it was resolved that the following note be issued to members:—There appears to have been some recent misunderstanding as to the correct charges for quantities, the Council of this Association wish to place on record

that the understood charge is from a minimum of 1½ to a maximum of 2½ per cent., exclusive of lithographing or copying." The subscriptions amounted to 114*l.* 4*s.* 6*d.* The expenditure did not exceed income; for at the beginning of the year the balance was 89*l.* 4*s.* 6*d.*, and at the end of 1901 88*l.* 19*s.* 9*d.*, an insignificant difference. In the Glasgow Institute of Architects there are seventy-two members, the same number as last year, including nearly all within the district of the necessary standing and qualifications. The income was 63*l.* 1*s.*, and the expenditure 52*l.* 7*s.* 3*d.* The capital account was reduced by 63*l.* 2*s.* 8*d.* for expenses connected with the visit of the R.I.B.A. to Glasgow.

AMONG the men who are entitled to be honoured in France is M. MARCEL DIEULAFOY. By the explorations which he carried out in Susa with the aid of his wife he gave a revelation of the use which was made of tiles or glazed bricks in Persia, and in that way enabled the history of ceramics to be more completely written. We have lately commented on the discourtesy shown to M. DIEULAFOY when it was proposed to introduce objects found in Persia at a later period into the room containing his famous frieze, without consulting him as to whether the intrusion would not be injurious to the decoration. A more marked instance of official sentiment towards him was displayed a few days ago. M. DIEULAFOY is a candidate for election as Deputy at Villefranche, and he already holds the position of Councillor of the Haute-Garonne; he is also one of the engineers-in-chief of the department of Ponts et Chaussées. It appears he attended a meeting of the electors without obtaining authority from the Minister of Public Works, and for that offence he has been suspended from office for three months. The real reason, he states, was that the Government were anxious to see a different deputy elected. M. DIEULAFOY has resigned, and in a note he says that, although his professional career has been sacrificed, he does not think the price too high for representing a place where his family have been respected for many generations.

THE examination of the atmosphere of the House of Commons has produced remarkable results. The amount of carbonic acid, which was only 5.2 volumes in 10,000, is very little in excess of the quantity usually met with in the air of cities, and far less than is generally present in places of assembly. The bacteriological test revealed an undue number of micro-organisms, but none of them are found to be disease-producing. The First Commissioner of Works proposes that further experiments shall be made in order to discover the cause of the presence of so many microbes, with a view to taking suitable measures of improvement. From the time it was first opened there have been complaints about the oppressive atmosphere of the House, and yet there never was a building in which so many precautions were taken from the commencement to oppose everything that could be considered deleterious. The great difficulty arises from the want of direct communication with the open air and the care which is observed to keep all the approaches closed. When it is known that the foremost scientific men in England would co-operate to make the building safe, it is unaccountable that every session there should be a repetition of grumbling by the members.

As the land occupied by the fortifications of Paris will be used for building sites, the municipal authorities have wisely decided that a commencement is to be made with the part lying between the Porte d'Auteuil and the Porte Maillot. This means a strip extending along the east side of the Bois de Boulogne. M. BOUVARD, who is the architectural director of the municipality, has resolved that the ground is to be laid out in keeping with the commanding position. Every plot will allow of a large garden in addition to a house and offices. The roads will run as far as possible in an oblique direction, and will be broken in places with "ronds-points." No plan will receive approval which does not show a house or villa of an architectural character which will be worthy of the surroundings. The new district will be a rival to the quarter of Paris that is near the Parc Monceau.



## JULES DALOU.\*

THE nearest approach to the millennium desired by ROBERT BURNS, when "man to man the world o'er should brothers be," is to be found among artists, and it is never likely to be superseded. Geographical boundaries are of less account with them than with most other men. They have bonds of style and practice which are continually renewed. The loss of a great artist is therefore not confined in its effects to the country or city in which he lived. But the ordinary regret can be sometimes intensified in its depth in foreign lands, and one of those cases has arisen by the death of JULES DALOU, the French sculptor, who a week ago was laid to rest in the cemetery of Montparnasse, in Paris. In England we are indebted to him. He came to us as an exile, and as he was unknown in London he had to suffer the chilling fate which awaits most strangers. But when an opportunity was offered to him he paid us for shelter with a generosity that was without precedent. He not only imparted his art to students, but he kindled a living flame which we hope will never be extinguished. Those who are old enough to remember the sculpture in the Royal Academy's exhibitions some thirty years ago and will compare it with what can now be seen, will testify to the remarkable progress which has been exemplified in a short period. JULES DALOU was the light-bringer who revealed, as it were, the new world. It is true he found many eager youths who were groping their way after an ideal which they knew must exist, although the principal evidence of its existence was to be found in their own aspirations. But the services of JULES DALOU as a Phosphorus could not be dispensed with.

In the first place, he created a relationship with students of sculpture of which they could have had no experience. In this country, unlike France, masters in any branch of art are not disposed to impart their dear-bought knowledge to those who may one day be their rivals. A French artist's reputation is enhanced by the success of his pupils, and in consequence he is compelled to be communicative. The oldest member of the Académie des Beaux-Arts would not hesitate to mount to the highest garret in Paris if he thought his presence would be of any use in helping a young fellow whom he had encountered with a crowd of others in his atelier.

JULES DALOU possessed all the qualities which were desirable in a teacher, and especially for one who was to revolutionise the cast-iron system of the Science and Art Department, or rather to emancipate his pupils from that cramping thralldom. He may be regarded as being self-taught, and men of that class have most sympathy with a beginner's difficulties. He had attended classes in the schools of Paris, but he did not bear the hall-mark of the Ecole des Beaux-Arts, and officialdom could not point to him as a proof of the success of its method. It might be said with little exaggeration that he had to practise as a sculptor before he was taught. He belonged to a family of artisans, and he looked on himself as no more than one. If he worked, therefore, for ABEL DE PUJOL, DURET and CARPEAUX, it was as a practitioner rather than as a pupil. From the former two he quickly discovered the art of composition regardless of inspiration, and was not enamoured with it. But in CARPEAUX he recognised a spirit akin to his own, who was worthy to carry on the tradition of RUDE, imparting to it, however, a grace which was foreign to the virile talent of the sculptor of the *Departure of the Volunteers*. CARPEAUX was also a master bust maker, and DALOU was at least his equal if he did not surpass him. It seemed for a long time as if DALOU were destined to be a sculptor to the trade and no more. He had little time for experimental study, and from day to day it was his business to realise ideas which were not his own. But in 1870, when he was in his thirty-second year, he was awarded a third-class medal for his *Brodeuse*. By that modest distinction he advanced a step beyond the crowd of able but unknown men who were attached to sculpture in Paris.

Soon after, the greatest struggle since the Revolution of 1789 took place in France. DALOU's sympathies were with the labouring classes and other proletarians. He was

therefore found in the ranks of the Communists, and became an official of the Fine Arts Department under the new régime. Unlike GUSTAVE COURBET, he did not make war on Royalist or Imperial sculpture, and it cannot be said of him that he ordered the destruction of any fragment of ornament on a public building. All his energy was directed to the preservation of the treasures in the museum and public collections. France, nay, all the world, must be considered as indebted to him for the safeguarding of works which without his influence would have been destroyed or stolen. But when the party of order gained the upper hand DALOU's services were of no account in the eyes of the inquisitioners, and he wisely fled to London, the city in which sculpture was less valued than in most of the other of Europe.

DALOU was able to rely on the earnest patriotism of M. LEGROS, to whom so many Frenchmen have turned in despair, because they knew he believed, with RABELAIS that "les hommes sont nés pour l'aide et secours de hommes." DALOU was versatile, dexterous and industrious. He employed his genius in the production of genuine pot-boilers of various kinds. But a market did not exist in those days among us for figures which a sculptor could carry in his arms, and DALOU was taught by sad experience how bitter is the exile's bread, and how sick the heart grows with hope deferred. If he had always signed his name on those clay or terra-cotta figures, there would, of course, be no difficulty in identifying them. They are only to be traced by those who are well acquainted with the characteristics of the master's style. The search for them would reward connoisseurs; for, in spite of all the trouble which surrounded him, DALOU often found consolation in expressing the grace with which he was endowed. His fingers were extraordinarily delicate, and he was able without an instrument to model the smallest buttons on the garments of one of his statuettes. In those we have met with that sentiment is manifest which FALCONET considered to be the soul of sculpture—each figure has an individuality of its own clearly expressed.

It was soon seen that France could not for ever continue to be celebrating the triumph of one political party by vengeance on another. The days for a Reign of Terror were over. An amnesty was passed, and JULES DALOU was again free to add to the glory of his country by the exercise of his art. In 1873 his works were found in the Salon. His talent, it was quickly perceived, had not become weakened or led astray during his exile. Teaching, like mercy, sometimes blesteth him that gives and him that takes, and his temporary professorship in London may have given definiteness to his thoughts. Every year the interest of his works seemed to increase, until the climax was reached when the model was exhibited of the memorable scene at Versailles on June 23, 1789, a work which won for the sculptor the *médaille d'honneur*, and was judged worthy of place in the Palais Bourbon. As we publish an illustration this week of what is the masterpiece of JULES DALOU, may not be unnecessary to describe the incident represented as shortly as we can.

Our word Parliament has a French sound, but before the Norman Conquest there were *michel-gemotes* and *zwitten-gemotes*, or general councils of wise men, among the Saxons. But there is uncertainty about their constitution. One of the agreements in Magna Charta was that barons and other representatives were to be summoned, and this is circumstantial enough to show that the Normans were also acquainted with deliberative assemblies. The French States-General formed unquestionably a very old institution, and in course of time, besides the nobility and clergy, deputies from certain towns were admitted, thus forming the Three Estates of which so much has been said. The times of meeting were irregular and at long intervals. Absolute power was possessed by the king, and the States-General were only needed in extraordinary emergencies.

LOUIS XVI. found that the legacy left him by his predecessors in the shape of debt was too heavy to be sustained, and in the hope of finding some means of escape in 1789 the States-General were summoned. As a similar convocation had not been held since 1614, there was some difficulty in arranging the procedure. There were 270 nobles, 291 clergy and 557 of the Third Estate who responded. A general feeling prevailed that the new

\* See Illustration.



semblage was unlike its predecessors, and the first question that came up for argument was the title of a relief which was expected to exert much authority. The Third Estate wished to arrogate to itself the title of "National Assembly." MIRABEAU proposed "Representatives of the People" as more suitable, but eventually "National Assembly" was adopted by a majority. In that case the existence of the clergy and nobility was ignored. The Commons retained possession of the hall at Versailles, in which they had only a partial claim; for the Three Estates were supposed to deliberate as one body. On June XVI., realising that as his approval was not sought, power was at stake, made an order that separate halls and chambers should be used by the Three Estates. To execute his command, he sent his grand master of ceremonies, the Marquis DE BRÉZÉ, to direct the Commons to withdraw. The transaction has been graphically described by THOMAS CARLYLE in the following words:—

"For the séance itself, the carpenters seem to have accomplished their platform, but all else remains unaccomplished. Futile, we may say fatal, was the whole matter. Louis enters through seas of people, all grim-silent, and with many things, for it is a bitter rain, too. Enters to the Third Estate, likewise grim-silent, which has been wetted and wringing under mean porches at backdoors, while Court and privileged were entering by the front. King and garde des sceaux (there is no Necker visible) make known, not without windedness, the determinations of the royal breast. The Estates shall vote separately. On the other hand, the Commons may look for considerable constitutional blessings, as specified in these Five-and-thirty Articles which garde des sceaux is waxing hoarse with reading. Which Five-and-thirty Articles, adds His Majesty, again rising, if the Three Orders do not unfortunately cannot agree together to effect them, I myself will effect—" *Seul je ferai le bien de mes peuples*," which may be interpreted may signify, "You, contentious Deputies of the States-General, have probably not long to be here." But in fine, all shall now withdraw for this day, and meet to-morrow, each Order in its separate place, to-morrow morning, for each of business. This is the determination of the royal breast, pithy and clear. And herewith king, retinue, noblesse, majority of clergy file out, as if the whole matter were satisfactorily completed.

"These file out through grim-silent seas of people. Only the Commons Deputies file not out, but stand there in gloomy silence, uncertain what they shall do. One man of them is the exception, one man of them discerns and dares. It is now the King Mirabeau starts to the tribune, and lifts up his lion's roar. Verily a word in season, for in such scenes the moment is the mother of ages. Had not Gabriel Honoré been there, we can well fancy how the Commons Deputies, affrighted at the roars which now yawned dim all round them, and waxing paler in each other's paleness, might very naturally one by one have glided off, and the whole course of European history have been different.

"But he is there. List to the brood of that royal forest-voice; how low, low, fast swelling to a roar. Eyes kindle at the gleam of his eye. National Deputies were missioned by a king; they have sworn an oath; they— But, lo! while the lion's voice roars loudest, what apparition is this? The apparition of Mercurius de Brézé, muttering somewhat. "Speak out," cry several. "Messieurs," shrills De Brézé, repeating himself, "you have heard the king's orders." Mirabeau glares on him with fire-flashing face; shakes the lion's mane. "Yes, monsieur, we have heard what the king was advised to say, and you who cannot be the interpreter of his orders to the States-General; you who have no place nor right of speech here; you are not the man to trouble us of it. Go, monsieur; tell those who sent you that we were here by the will of the people, and that nothing but the bayonets shall send us hence." And poor De Brézé stammers forth from the National Assembly—and also (if it be on one faintest glimmer, months later) finally from the page of story.

"The hapless De Brézé; doomed to survive long ages in men's memory in this faint way, with tremulant white rod. He was sent to Etiquette, which was his Faith here below, a martyr to respect of persons. Short woollen cloaks could not kiss Majesty's robes as long velvet ones did. Nay, lately, when the poor Dauphin lay dead, and some ceremonial visitation came, he was not punctual to announce it even to the Dauphin's dead mother. "Monseigneur, a deputation of the States-General."

*lachrymæ rerum.*

The scene as it presented itself to the imagination of CARLYLE differed to some extent from that modelled by DALOU. CARLYLE supposed the arrangements of the hall corresponded with that of the modern *Chambre*

*des Députés*, and he therefore assumed there was a tribune, from which MIRABEAU thundered his reply. But for treatment in relief it is needless to say CARLYLE'S disposition would be unsuitable. Architecture in such a case must submit to limitations, and the number of planes allowable have to be few. Besides, by placing the spokesmen of royalty and of liberty face to face, the conditions of the impending struggle are suggested. DALOU, although an advanced Republican, was an artist. History compelled him to show how vast were the odds against the official who was the embodiment of feudalism. But DREUX-BRÉZÉ is represented as dignified and courageous, performing his difficult rôle as became a French gentleman. It was men of his class who politely solicited the English guardsmen to open the battle by firing first. MIRABEAU was no APOLLO, and the figure in the relief corresponds with the description of him. He was the man for the occasion, for without his presence the other representatives might have obeyed the king's orders and dispersed like mutinous schoolboys at a head-master's command. But the member for Aix had already hazarded many things which other men would consider valuable; the risks attending disobedience were of no consequence to him. As a composition, the relief would have gained if the man carrying the bench had been omitted, for diagonal lines are rarely satisfactory. But in an historical sense the figure was essential, for it is suggestive of the belief among the hangers-on at Versailles that the king's word was omnipotent, that the Third Estate was not of much account, and the sooner the hall was cleared the better for all parties. The man recalls the attendant in the Roman gladiatorial scene, who does not wait for the defeated combatant to receive the *coup de grâce*, but seizes hold of him as if he already encumbered the arena and was an obstacle to the next performance.

As a means of decoration for an historic building, the relief demonstrates the superiority of sculpture. DALOU'S work, with its marvellous variety of individuals, will endure as long as the Palais Bourbon itself. In case of danger it might even excite more interest than the building. A painting produced under circumstances like those we have to endure in England must lose some of its character with every year, and even in Paris, where the atmosphere is more favourable, there is also diminution of effect. That it is not an exact representation of the event which signalled the first exercise of power by the French deputies may be granted; but it is as expressive as the largest painting. For that reason DALOU'S work merits examination by all who wish to associate another art besides architecture with public buildings.

The success of the relief was sufficient to designate DALOU as peculiarly qualified to produce national monuments. He was engaged for several years on the immense *Triumph of the Republic*, which was erected in the Place de la Nation, Paris. Among other works of his was the *Triumph of Silenus*, the great vase in the Luxembourg Gallery, and memorials of ALPHAND, the director-general of the works of Paris, BLANQUI, the political theorist, and in his last days he was engaged on one of GAMBETTA for the city of Bordeaux. DALOU was among those artists who believe that not much is gained by full-length figures of men. We need not go beyond London for evidence of that fact. The physiologists say we are fast becoming like tadpoles, for with prominent men the head obtains development out of proportion to its functions as part of the economy of the animal. Whatever the cause, sculptors like DALOU think it is preferable to give only a bust of a man, and to let it be accompanied by figures which will become suggestive of his qualities or of his deeds. His memorial of EUGÈNE DELACROIX exemplifies this theory. To represent the painter in his habit as he lived would be to produce as strange a figure as Mr. WOOLNER'S *Linnaeus* or M. RODIN'S *Balzac*. We should see a man who was afraid of the air, and who, as he lived in an underground atelier which was as hot as an oven, dared not go out of doors unless he was packed amidst several garments. Instead of an amorphous mass, the painter's bust, to which Time, Glory and APOLLO appear to offer tribute, is to be seen in the Luxembourg Gardens, a memorial which is enough to excite the eloquence of every *rapin* in the Quartier Latin. "The law of all ornament,"



says Madame EMILE DE GIRARDIN, "is to appear light, fine, delicate, coquette, no matter whether it is made of copper or gold, of stone or marble." On that principle JULES DALOU would seem to have worked, thereby gaining a reputation for himself and adding to the beauty of Paris, his birthplace, by figures which will always serve as examples in which the principles of French sculpture are again realised.

### THE GUILDHALL EXHIBITION.

THERE are 151 pictures large and small in the collection which was opened on Monday in the Art Gallery of the Corporation of London. The number may seem limited, but it is the custom to avoid hanging works where they cannot be easily seen, and this year several are of immense size. Thirty-six are examples of English painters of the eighteenth century, and the remainder are by French painters. The latter for many reasons besides courtesy are entitled to be first considered.

The visitor will do well to remember that the majority of the French works not only belong to the eighteenth century, but were produced prior to the Revolution. They are consequently survivals of a state of things which no longer exists, and which they help us to recall. WATTEAU, by whom there are no less than ten works, an unprecedented number for a public exhibition, died in 1721, COYPEL in 1752, NATTIER in 1766, DE TROY in 1752, VAN LOO in 1765, LARGILLIÈRE in 1746, PATER in 1736, LANCRÉT in 1743. With many of those painters the spirit of the seventeenth century was strong. Aristocracy was the prevailing power, and art was one of the many servitors employed for its glorification. It must not, therefore, be expected that subjects which are now generally depicted were then attempted. That delightful painter, CHARDIN, having succeeded with examples of still life, began to represent *genre* subjects. But, to use the phrase of SAINT-SIMON, the "règne de vile bourgeoisie" had not commenced, and his little but true pictures of domesticities were unappreciated, although he lived until 1779, or almost to the eve of the change. Art, in fact, was so one-sided in its ministrations, it is easy to understand how the most strenuous of the precursors of the Revolution, DENYS DIDEROT, became almost hysterical before some of the paintings of GREUZE. If regarded from an ethical standpoint, GREUZE was occasionally more unsatisfactory than BOUCHER or FRAGONARD; but he dealt with plebeian subjects, and in his mawkish sentimentality he was not afraid to suggest a few of the vices which existed among the great and brought calamities to people of another class. *The Two Sisters* in the Guildhall, in which we see an old and aggrieved peasant keeping one of his daughters from the touch of her sister, a demi-mondaine, who has returned richly clad, wearing pearls and able to offer a purse of gold, is a picture which no artist would have dared to produce in the early part of the century. It hinted at a danger which used to be rigorously concealed.

As the patrons of art were the nobles who loved luxury and could indulge in it, the endeavour of the painters was to present life under its most agreeable aspects. If an artist had a turn for the moralities he was instructed to adopt "une moralité douce, aimable, qui plaise en instructif." No one looking at the pictorial scenes could have imagined that in a world which was so full of play there was sorrow to be found anywhere, or that so terrible a destiny was awaiting many of the gallants and their children. We have before us on the walls an ideal world. There are colossal pictures by BOUCHER and FRAGONARD which may be described as magnificent valentines, measuring over 10 feet in length. They are unreal as representations of life and manners, but they were useful to keep up the conventional notions of the time about love and lovers of high degree. At the end of the seventeenth century SAINT-SIMON, who was undoubtedly a man of strong intellect, declared he could not live unless he obtained the eldest daughter of the Duc DE BEAUVILLIER; the young lady was between fourteen and fifteen, and the lover, who believed he was in the last stage of despair, had not once gazed on her. That was tragic extravaganza. Would it not have been less ridiculous to depict the man who was to write such invaluable memoirs as a boy singing, playing, gather-

ing flowers, or boating with other children, including the duke's daughter? The garden parties, vows of love, pastorals, fêtes, masquerades, dances and assemblies were all simply ways of uttering "Vive la bagatelle!" The painters were as charming in their touches as any of the musicians who played on lutes or pipes, or the poets who wrote love songs. If judged by our English standards, nearly everything French in the Guildhall Gallery will seem to be artificial; but if rightly considered, that is, by endeavouring to place ourselves in the position of those who first looked on the pictures, they will be found as suggestive of the thoughts and manners of the time as any photographs or realistic paintings are now.

The first work is the *Concert d'Amour* of C. A. COYPEL. A man and woman, richly clad, are playing, one on a viola and the other on a hurdy-gurdy. Red is the prevailing colour, but it is rendered harmonious by the neighbouring trees and the vigorous treatment of light and shade. We prefer this work to his *Perseus and Andromeda* in the Louvre. *The Two Sisters*, by GREUZE, like so many of the painter's canvases, is in subdued greys and blues. This is the only example of his composition in the collection. The rest are heads of young people, with a portrait of his father, who deserves notice, for he was a master tiler and wished to see his son an architect rather than a painter; and a portrait of MAXIMILIEN ROBESPIERRE, which is more suggestive of the latent cruelty of the Sea-green than corruptible than any of those which are commonly engraved. It is, however, as much out of place amidst so many joyous scenes as HOGARTH'S murderess.

*The Garden Party*, by WATTEAU, shows four peasants and two girls. The figures are on a larger scale than usual with the painter, and it must be acknowledged with sadness that WATTEAU, like MEISSONIER at a later time, failed when he painted a figure exceeding a certain number of inches. The picture looks as if it had been restored, and by a hand that was clumsy. BOUCHER'S *Love Message* is a charming example of decorative work; it measures 136 inches by 73 inches, and is one of a series of four which are in the exhibition, and which alone are sufficient to afford pleasure that will repay several visits. It would seem to be recognised as a rule in such works that the lower part comprising the figures should not occupy much more than a third of the canvas, while the remainder should be devoted to a display of trees and sky. In the *Love Message* a pair of four ladies and a youth in scarlet are seen on the bank of a stream and are engaged in sending off a dove with a letter. The ground has that fertility in producing verdure which was desired by decorators, and to increase the effect an immense vase is introduced on a stand which is filled with flowers. In the second work, *Love Offering*, two barefooted girls are bringing blossoms to adorn the altar of Cupid, which is already surrounded with similar tributes. In the third, *Evening*, a shepherdess of the Dresden china type is asleep while a lover approaches and touches her cheek with a straw. In the last, *The Fortune-Teller*, we see a young girl seated at the base of a statue listening to an elderly dame in a long red robe; above are two amorini, one of whom is about to strike the maid with a dart. An abundance of fruit in this panel supplements the greenery. The panels will no doubt be compared with those by FRAGONARD, which are assumed to be the chief treasures of the exhibition. But in a decorative sense BOUCHER'S works are superior; they are glorifications of youth without any latent meaning or applicability, whilst in the other case the supposition that the children are representative of the matured debauchees DU BARRY and LOU-*Bien Aimé* is enough to make them appear as profanities of which only a degenerated artist would be capable.

NATTIER'S portraits of the Duchess of CHATEAULOU and of the Duchess of FLAVACOURT are sufficiently characteristic to suggest the grounds for the women's notoriety, but they also denote that the reputation of the painter as portraitist was merited. His *Madame Henriette de France* shows the daughter of LOUIS XIV. playing on a viola and clad in a scarlet robe stiff with golden embroidery, which stretches across the canvas and is a triumph of manipulative skill. The picture is reposeful rather than startling by its colour. The *Château de Cartes* was a subject which was pleasing to CHARDIN, for we know that he twice painted Young LE NOIR in seen in profile, wearing his hat and



in a room where there is an easel with a small canvas, suggesting perhaps that the boy was fonder of play than of painting. LOUIS TOCQUÉ was another excellent portraitist. *Madame d'Anger* shows an elderly lady with grey hair, more engaging in appearance than is usual with old ladies in France. CARL VAN LOO's *Marquise de Marigny* presents the relative of the Marquise de Pompadour with a somewhat simpering expression; but the dress adorned with roses, the long row of pearls and the curls form an admirable scheme of colour.

*Pastoral*, by J. B. HUET, would serve as an illustration of THEOCRITUS, for the shepherd is more Sicilian than Arab, and shelters himself from the heat in a classic red robe. *L'Amiable Accord*, by J. F. DE TROY, contains figures as large as life; one girl plays on a flute and another sings. The modelling of the hands is perfect. There is a fine architectural background, and a red curtain helps to the harmonic scale. This big work is one of the masterpieces of the exhibition, and the painter must have constituted a competent director of the Academy at Rome. ANTOINE VALLÉE worked in England during the short reign of GEORGE II., but he fled when the Revolution took place. He is recognised as the portraitist for men in authority, and his *M. De Noermont* is a fine example of a man having a powerful head, and who gracefully wears a crimson robe. His portrait of *Mdme. De Noermont* is less successful, and the dead pheasant in her hand now suggests she was cruel. One of his works is *Madame De Thorigny*, who holds a hand under a fountain, and in which a parrot, dog and negro are introduced. The family group by DROUAIS, a toilet scene by a Peintre du Roi, whose work resembles NATTIER'S. Engravings and photographs of her works have made Mdme. VIGÉE LE BRUN popular, and she lived until the middle of the nineteenth century, and was able to paint a thousand works of various classes. *Madame Rolund* is a life-size figure leaning on a harp, with, no doubt, all FIGARO BEAUMARCHAIS'S improvements, and looking towards the spectator. The face has an expression of reality which is one of the characteristics of the artist's works, although the truthfulness of her likeness has been questioned.

*Serment d'Amour*, by TRINQUESSE, has been, unless we are mistaken, seen before in the gallery. In it the artist has employed contrast with effect, for while one stout but enthusiastic girl effusively makes her vows before Cupid's statue, the other, who is of slighter build, hesitates as if she were afraid of the ordeal. *Le Baiser Gagné*, by FRAGONARD, has easily have been turned into a vulgar scene, but in this is unusual delicacy for the painter. But the most beautiful of all this artist's works in the exhibition is *The Girl at St. Cloud*. A mountebank's booth is introduced; the actors might be like those of PROSPERO, all spirits would melt into air—into thin air. Over the trees and curtains a light is cast which seems to combine a summer's day with evening, and to have the brightness of daylight with the mystery of moonlight. Many of FRAGONARD'S irregularities may be pardoned on account of his *Midsummer Night's Dream*, which is as difficult to make as one of TURNER'S chromatic poems. In MARIET'S *La Servante Justifiée* we have another well-executed little scene with a charming background; the subject is taken from LA FONTAINE, and the poet has inspired also the same painter's *Les Oies du Frère Phillip*. In the year there are seven examples by the artist. PATER'S *Champêtre* from its elegance is sufficient to account for the jealousy of his master, WATTEAU. In it there is no novelty, if we except the introduction of a child; but the disposition of the ladies and gentlemen, and the beautiful scenery in which they play and sing, make the scene like a dream. WATTEAU'S *Italian Comedians* merits attention, and it is not unlikely that players were the realities through which some of his most beautiful works were suggested. One who will compare *The Isle of Cythera* which is in the upper gallery with the version in the Louvre, of which has been published a large reproduction, will at once recognise the difference between reality and imagination in WATTEAU'S work. The small picture has all the elements of the more important one. There are the young people with pilgrim's avails, the amorini with torches, the gorgeous boat and the picturesque background. But we know it must be a scene for a masque, ballet, or other composition for the stage,

and therefore circumscribed in space, whilst in the Louvre picture space ceases to be of any account.

It is much to be regretted that the spirit which inspires so many admirable French works was without any effect on the collection of English works. A Frenchman, when he ascends the stairs and encounters as the first representative of English art PENNY'S ghastly woman dying in a chair, called *The Charms of Virtue*, with the even less attractive *Profligacy Punished*, an old gentleman over whose gouty feet scalding water is poured by a careless servant, cannot help thinking that the English in the eighteenth century, as before and since, took their pleasures sadly. Can such productions be accepted as art? Then we have such an atrocity as *Sarah Malcolm*, the murderess, by HOGARTH, and his hideous *Card Party*, besides PETER'S *Card Sharpers*, all of which are more displeasing from their proximity to the fêtes and idylls of the French painters. In the eighteenth century French critics declared that Englishmen could never become artists, and it must be admitted that there are instances enough in the gallery to justify the conclusion. ROMNEY'S *Lady Hamilton* is becoming a bore; here we have her once more as a Bacchante and as a lady praying. The tremendous equestrian portrait of General HONYWOOD, by GAINSBOROUGH, which measures 10 feet 9 inches by 9 feet 10 inches, might well have been excluded, for the valiant militiaman appears to be looking down from his saddle on the WATTEAU, LANCRÈS, PETERS, CHARDINS, BOUCHERS and FRAGONARDS as if they were invaders whom it was his duty to exterminate. In the collection there is not a single English picture which can afford the same sort of pleasure as is to be obtained by looking at nearly every one of the French works.

It is true there are some worthy examples. ROMNEY'S *Mrs. Yates*, the *Stafford Children* and *Mrs. Trench* are excellent. HOPPNER'S *Earl of Darinley* is a typical English boy. GAINSBOROUGH'S *Lady Bate Dudley* becomes incomparable owing to the contrast between it and the *Lady Hamilton* on one side of it. REYNOLDS'S portraits are always worth study. GAINSBOROUGH'S *Cottage Girl* makes one ask whether the contemporary French peasant children were not equally neglected, barefooted and carriers of broken pitchers. OPIE'S *Schoolmistress* is probably a family group of an old lady and her grandsons, for the boys are too big to be subjected to the punishment which SHENSTONE in his "Schoolmistress" described in such pleasing verse. The dame's head proves that the admiration for REMBRANDT which OPIE expressed in his Academy lectures was not confined to words. RICHARD WILSON'S Italian scenes were at one time beautiful, but years have acted as severely towards him as the picture-dealers and patrons of his day.

A special gallery has been arranged for the series of panels by FRAGONARD belonging to Mr. PIERPONT MORGAN, which were allowed to remain in Grasse for a century unknown to the French people. They were called the Romance of Youthful Love, and it has been said they were painted for Madame DU BARRY in the days when France was ruled by her and brought to ignominy. With works of this class, which differ in size and in character—for the flower panels are little more than paintings in monochrome, and in some panels a different scheme of colour was adopted—it would be desirable to be able to realise the arrangement of the room or gallery for which they were painted, as the lighting must have determined the manner of treatment. There is no certainty either that we have all the works, for as they appear at present they are like a story from which some of the chapters are missing. The titles given to them will suggest the subjects:—The Pursuit, Love Triumphant, The Rendezvous, L'Amour Folie, the Love Letter, Love Pursuing a Dove, Love as a Sentinel, the Lover Crowned, Love the Assassin, and the Abandoned. If it can be assumed that the amours of Madame DU BARRY and LOUIS XV. are symbolised, it is impossible to tell what connection the subjects may have had with the actualities. They are wonderful works, and, although we are without a key to the meaning, it does not debar us from being pleased with the fascinating landscapes, the graceful figures and the beautiful accessories. There is nothing laboured anywhere; the whole of the



works look as if they had come into existence at command and without any of the minute preparations which are necessary for the production of a work of art. Like BOUCHER'S panels, part of their success is owing to the effect of ease they produce in us. The principal panels are over 10 feet in height by about 7 feet in width. All parts are executed with equal felicity. The flower panels are of the same length, but their breadth is generally 16 inches, and yet there is no awkwardness in disposing of the roses, hollyhocks, &c. At present the contrast in colour between them and the larger paintings is too marked to be pleasant, and we suppose recesses were formed in the intended room which did not emphasise the differences. The series is not only a triumph for FRAGONARD but for the principles of French art as practised in his time, when the primary end of art was believed to be imparting pleasure.

In the fourth gallery we have a large number of cabinet pictures. An example by JEURAT portrays a drinking-bout, in which PIRON, who was not even an Academician, and two other poets, of whom no *mot* is recorded, participate, while some compiler of *Anas* enters their conversation in a note-book. BOILLY can only be partially claimed as an eighteenth-century painter. His *Artist's Model* and *Lady at Needlework* would, for their finish and spirit, be welcome in any collection. SAINT-AUBIN'S scene from "Figaro" is unfinished, but it has the promise of becoming a gem. The still-life pieces by CHARDIN are not comparable with those of DESGOFFE, while they suggest his painful attention to detail. A signboard for a perfumer's is remarkable as the work of so delicate an artist, but could not under the best light have been striking to passers-by. More characteristic is *La Fontaine*, a woman drawing water from a vessel. GRAVELOT'S—or D'ANVILLE'S—name is associated with illustrations of the *Spectator*, "Shakespeare" and other English books. He wrote a treatise on perspective in English; he assisted HOGARTH, and GAINSBOROUGH was his pupil. In the Guildhall exhibition he is represented by a small painting of a man reading. According to VERTUE he was constantly employed by artists in London to copy ancient buildings and tombs. One of the amusing pictures is WILLE'S *Dedication of an Epic Poem*, which is a satire on the writers of society verses. The book he reads is entitled "La Bagatelle," and is supposed to be in thirty cantos; one of the manuscripts in his pocket is a poem to Mimy, the little dog of Mdlle. de —.

There are other works we should like to notice, but we have said enough, we hope, to indicate the character of the exhibition. It is more difficult to appreciate pictures that belong to a different age than to criticise them. If, however, the French pictures are tested by the canons of art which prevailed when they were produced, they will be the means of giving much enjoyment, and it will be an advantage if an occasional wish is expressed that some of the spirit which animated the artists might more often find its way into English studios.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. W. Emerson, president, in the chair.

The SECRETARY announced that a statutory examination of candidates for the office of district surveyor in London was held on April 17 and 18. Of the three candidates who attended two passed, viz. Mr. T. H. Bishop, jun., of Leighton Buzzard, and Mr. A. M. Watson, of London. These gentlemen have been granted by the Council certificates of competency to act as district surveyor in London.

Mr. A. N. PATERSON, M.A., read a paper entitled

### Tradition in Architecture: Its Function and Value.

In defining the scope of his paper, the author said that, while guarding against a tendency to give undue prominence to the inheritance and teaching of past times, he sought to carry his audience with him in regard to the vital importance of tradition as an element in all art of permanence and value, in the hope mainly that the far-reaching voice of the Institute—not only within our own shores, but throughout the Britains beyond the seas—might be expressed and asserted to restrain, to counteract, to check the too easily learned and pernicious teachings of the so-called "new art" movement, with certain

cognate developments in English architecture. In using the term "tradition," he wished to disentangle it from another term with which it was apt to be confounded, viz. archaeology. The idea expressed by the word "tradition" in this connection was briefly the influence, both conscious and unconscious, upon us, as workers in art to-day of the methods of seeing and doing, the part of the many generations of workers who have preceded us, and who when in life were engaged in like problems to the which now occupy us. Tradition in this sense as regards architecture was twofold, viz. tradition in construction, tradition in design. Tradition must not be confused with style. Styles have their day and pass. Tradition endures. It must also be clearly differentiated from archaeology. The archaeologist's attitude is that of the scientist, not the artist, much less the architect. Defining the term "art" in relation to architecture, the author said that it was the living creative interest which devoted itself to the design and erection of buildings which will satisfy the requirements and be in accord with the sentiments of the time; that the art in these buildings is a necessary and natural outcome and development of similar work in the past, of which the technique is learned consciously and unconsciously through tradition; and that archaeology (with history in its train) is at best a science by means of which we may arrive at more precise knowledge regarding certain aspects of such work. That we should be able to say that a moulding is early, late or transitional, will not influence our powers of plan and design; its true importance to us is that in gaining exactness of knowledge as to such details we are bound to increase our knowledge of the work itself, of the constructional difficulties and the means by which they were overcome and rendered unexpected points of interest, of the infinite variety, the enveloping harmony and the crowning beauty of the building, which through years, at maybe centuries of growth ultimately reached the complete organic form in which we see it. Only—let such enthusiasms be kept under restraint. Do not let us take it for granted that because a feature looks well in an old building, therefore it will be equally effective if tacked on to a new front.

In the spirit of the old work we admire there are qualities more pre-eminent than directness of aim and honesty of purpose. These two qualities we shall find to be most surely preserved by working after the methods of our more immediate forbears. Architecture, of all the fine arts, is most subject to convention, and that under two main influences, the one immovable, unchangeable, the limitation of that construction through which it must express itself, and which in its turn is subject to the all-pervading law of gravity; the other, as constantly but gradually changing the physical, mental and spiritual requirements of those for whose use buildings are designed, together with the effective range of constructional resources at our disposal wherewith to satisfy these requirements. The accumulation of the tradition of former ages has provided us with certain methods, certain formulæ of construction, from which we cannot escape. On the other hand, it is only from our immediate predecessors, and even contemporaries, that we can gather to what extent the immediate requirements of the day must guide us in our use of these formulæ, and what constructional resources are available for the purpose of extending their scope. The leading contours of mouldings and the principles regulating their use, the right and beautiful proportion—such as these are the traditional data with which architectural design is produced; it is only when new materials intervene, or in a particular situation, that variations even to the extent of discords, are admissible and, in the place, admirable. Be sure, however, of the harmonies before introducing the discords. Only the master can successfully cope with the bizarre, the unexpected. There may indeed be bondage of tradition as of archaeology, but this is impossible when (and this the author took to be an essential and vital principle in the truly traditional attitude) it is accepted in its widest form, when the tradition of yesterday and even of to-day is regarded as of not less but more importance than that of the century of Wren, of the Gothic master builders, or of the Greek and Roman classics, when the tradition of steel girder, plate-glass and electric light is accepted along with that of stone vault and flying buttress.

The author went on to speak of the present position of architecture in this country. For nearly a hundred years England has followed a path all her own in such matters, with results which can scarcely be called successful. The path has led, as it were, through a maze, and we are likely to end, when we emerge, precisely where we entered. Meanwhile, neighbouring continental nations have been quietly pursuing and developing the traditions of earlier times in the light of modern opportunities and requirements, guided therein by a continuous and systematic study of architecture, with the result that, in regards civil architecture in particular, they are far ahead of us in achievement. Few modern English buildings compare with similar work in Paris and other European centres in any of the attributes which constitute architecture a great art; yet English work of earlier date is equal, if not superior, to foreign. The moral is obvious; the fault is not the nation's or the men's



point of view, the methods and, above all, the lack of continuous tradition; while if the doctrines of the "modern" are to prevail among our younger men, the outlook for the future is still worse. The author briefly glanced at the architectural history of England during the nineteenth century to make clear this idea. Within the last few years, however, the love of tradition, modern as well as ancient, has shown a tendency to reassert itself; architecture, along with the crafts which nourish it, has been revived, the true principles of architecture are being taught with organised effort, and but for this "new art" development there was good hope that the architectural history would again assert itself in its natural and characteristic characteristics of dignity and refinement. Of the characteristics of this "new art" or "modern school" there were three manifestations; the one prevailing tenet seemed to be the "copying of styles" is to be avoided as a deadly sin. The author asked the author. It was the first time in the history of architecture that a like position had been taken up, for it is surely an admitted fact that, from Assyria and Egypt to the architects of Greece and of Rome, of the Roman Empire, of the Medieval and Renaissance times, had no other idea in their minds but, in working out constructionally their fulfilment of contemporary requirements, to copy the styles which had preceded them, as they knew them. Did the work thus produced in regard to sympathy with the needs of the times, to its beauty, even to originality thereby?

Is it this taboo of the styles that the characteristics of the new movement are to be traced. The refusal to employ the formula thus provided has its necessary result in the prevailing baldness, the absolute lack of variety and movement. The styles, especially those of the last few centuries, are essentially the product of civilisation; the architecture of modern times is mainly that of the city, but as recent precedents must be ignored and architecture cannot escape from the traditional point, inspiration must be sought in the times before city life existed, with a resultant sham rusticity, an assumed simplicity of living and thinking entirely at variance with the habits and habits of those whose requirements the buildings were supposed to supply, and even, if due investigation were made, with those of the designers themselves.

Another characteristic, the result of the same tendency, is the attempt to return to the conditions of working of those earlier times when the individual worker was—or is now supposed to have been—his own master in the particular portion of the general work to which he devoted himself. The said individual worker is, of course, under present-day conditions, unable to play the part thus allotted to him, but if he is employed, not by a "firm" but by a "guild," all is right, and the utmost title is at once allowed to the producer in matters of furniture and ornament, with a consequent loss of homogeneity and stiffness in the general scheme. The half-trained amateur, too full of art enthusiasm to consent to the drudgery necessary to acquire technical skill in execution—being an artist—must be allowed absolute independence.

To encourage the crafts by all means, give the craftsmen the liberty within their own spheres—the architect will be made and stimulated by their co-operation and help; but his duty is to be the guiding and controlling mind, and his work may, often must be, independent of their aid. Let it not be thought that it is by working only on such lines as those just mentioned upon, as its devotees would have us believe, that one can be earnest, or even original. He was inclined to believe that the love of originality for its own sake was the root of all evil in the pursuit of the fine arts. For indeed that, desirable as it may be, is just one that will not come by "taking thought" for it, and if it be sought after in this fashion the result will be a superficial affectation which is at the opposite pole to those solid and enduring qualities which are of ultimate value in the arts. But if the architect, instead of seeking originality and endeavouring to take it by force of devious and strange revivals, is content to follow the quiet lines of tradition, holding at the same time true to himself and the requirements and opportunities of his day, it will be found to have sought him. Future generations will see in his works the real beauties and qualities of his period just as we to-day see them in those of our predecessors.

Mr. G. H. FELLOWES PRYNNE, who proposed a vote of thanks, said the paper was of great interest, and in the main that of them would agree with the conclusions therein. In his wish to uphold tradition Mr. Paterson seemed to have wandered on the lines of many others, and to have abused those architects who had worked in the past. Architecture had been passing through a revolutionary time, but a vast amount of good had resulted therefrom. Though the Gothic revival was often of revolt from a hard-and-fast style, yet the ultimate result was beneficial to art generally. The deep study of the Gothic and Classic revivalist architects was found to be of service to the men who followed after them.

Mr. W. C. H. WILSON, who seconded the vote, said the work of to-day should be eclectic. It would be hard to classify architecture under any one style, but yet the English

architecture of to-day showed an amount of individuality of thought and of the conditions of the time far exceeding such work in France.

Mr. H. T. HARE, Lieut.-Col. PRENDERGAST and Mr. E. HUDSON also joined in the discussion.

## LEEDS AND YORKSHIRE ARCHITECTS.

THE Leeds and Yorkshire Architectural Society held its last meeting of the session on the 17th inst. at the rooms in Park Street, Leeds. Mr. Butler Wilson, F.R.I.B.A., was elected president for a second year, and Mr. R. Wood and Mr. G. F. Bowman were appointed vice-presidents, the former being re-elected.

It was mentioned by the secretary (Mr. H. S. Chorley) that there had been an increase of twenty-six in the membership of the Society during the year. He added that while professional interests had been carefully watched over—notably in connection with the proposed new building by-laws and the assessorship of the recent public baths competitions—greater attention than previously had been paid to matters of public interest, instancing the steps taken by the Council of the Society in regard to the Queen Victoria memorial.

The President observed that the work of the Society had been consolidated and strengthened during the past year, and that the aim of the Council during the ensuing year would be to give effect to the proposal to provide increased facilities for students, notably in establishing a chair of architecture at the Yorkshire College, similar to that at Liverpool. It was hoped, he said, that the allied societies and independent architects of the county would combine to put the proposed chair upon a sound financial basis.

Subsequently Mr. J. Starkie Gardner, F.S.A., of London, gave a lecture on "Decorative Wrought-iron Work," showing illustrations of work, mostly of the seventeenth and eighteenth centuries, from Italy, Spain, Germany and France, examples of which are being gradually collected and carefully classified at South Kensington. In the sixteenth century the English smiths far outvalued their continental confrères in design of metal-work, not from any advantages of site or materials, but from an innate love of form which continental craftsmen, notwithstanding their culture and civilisation, were unable to equal. The age of wrought metal, said Mr. Gardner, had passed. Royalties and municipalities will not now expend the necessary amount so ungrudgingly and lavishly given in the days of Louis XIV. and XV., who expended many million livres upon this one craft. Cast-iron and rolled steel have hastened this regrettable decline.

In proposing a vote of thanks to the lecturer, Mr. R. P. Oglesby pointed out that some attention is now being given to the artistic treatment of engineering structures, instancing the buildings of the Paris Exhibition.

## CUENCA CATHEDRAL.

THE Madrid correspondent of the *Times* writes under date April 15:—"The catastrophe which befell the cathedral of Cuenca the day before yesterday, will not be without some good result if it stirs the authorities to take a little more interest in the reparation of ancient buildings which lie outside the general track of visitors. Cuenca, some 60 miles east of Aranjuez, though an inconsiderable town itself, possesses a fine Gothic cathedral of the sixteenth century, but little known on account of its distance from the most frequented centres of Spain. It would appear, from a question asked in the Senate yesterday by the Count de San Luis, that the dangerous condition of the cathedral tower was recognised so long ago as 1888, when a grant of 100,000 pesetas was solicited from the Government for its repair. The money was not forthcoming, and no adequate measures have since been taken to insure the safety of the tower. It has now fallen, causing the death of some six or seven people, chiefly children, and threatening the further collapse of a great portion of the cathedral itself. As a matter of fact, the burden of repairs should properly fall upon the municipality, but it is a duty which can hardly be efficiently performed by the *ayuntamientos* of small and impoverished towns, and it would be well, if, in their case, the Government could come to their aid."

Mr. Thomas Sidney Cooper, C.V.O., R.A., who was born on September 26, 1803, and died on February 7 last, left personal estate of the net value of 18,557*l.* *os.* *2d.*, and the gross value of his estate is 40,658*l.* *9s.* *7d.* He bequeathed the picture upon which he should be engaged at the time of his death, and his palette, knife and brushes, just as they were left, to the corporation of the city of Canterbury, with the request that they should be placed in the Sidney Cooper Art Gallery.



## NOTES AND COMMENTS.

THE Chancellor of the Exchequer was asked on Tuesday whether he was prepared to put a heavy registration duty on flags that were to be imported from abroad for the approaching celebration. If they are to correspond with the specimens which have been seen in London shops it would be advisable if duties which would be prohibitive were imposed. What is more, foreign countries, if they valued their reputation, would do well to impose an export duty on flags for England. The colours adopted have to be according to laws which the heralds have long ago formulated, and it is possible to have all varieties of English flags in correct colours which will be bright and pleasing. But the horrible reds and blues which are likely to afflict the sight of Londoners in a couple of months are not sanctioned by heraldry, and should not be permitted by law. Evidently the foreign printers of textiles are assured of the prevalence of colour-blindness in England, and consequently they produce effects which would not be tolerated in any other country. In one case at least it must be admitted that we deserve the treatment we are to receive. The Japanese, with characteristic enterprise, have been early in the market, and what they have sent us will form a melancholy spectacle of the degradation of the artistic sense. The English demand for Japanese goods for several years has been large, and the incompetence of purchasers to distinguish good from bad in forms or colours has encouraged the manufacturers in their downward tendency, of which the extreme has been reached in the Coronation properties. Authorities may declare the necessity of adopting artistic schemes; but so long as coloured cloths which no savage would accept as barter will be allowed to float in all directions of the Metropolis, it does not matter what may be resolved about the necessity for respecting the laws of taste.

THE death of M. EDOUARD-AMÉDÉE DIDRON, at the age of sixty-six, deprives France of an industrious archaeologist, who conducted the "Annales Archéologiques" during several years. He was also esteemed as a glass-painter, and designs by him were often exhibited in the Salon. M. DIDRON was the author of books on some branches of industrial art, and carried out the decoration of numerous churches and other public buildings. He was an influential authority on all subjects relating to the connection of art with archaeology. M. DIDRON was the nephew and adopted son of ADOLPHE NAPOLEON DIDRON, and may be said to have continued his uncle's work. In 1844 the elder DIDRON founded the "Annales Archéologiques," and conducted it until his death in 1867. His "Christian Iconography" was translated into English, and at the time of the Gothic Revival there was no foreigner whose name was more often mentioned in support of statements at the meetings of archaeological societies in this country.

DURING the last twenty years projectors and others have been speculating about the conversion of the Devonshire Meadows between Chiswick and Strand-on-the-Green into building land. A promenade with fine villas along the river was a common feature in all the proposals. A part of the land was utilised for a sewage-farm, but no indications of houses are yet visible. It is now announced that negotiations have taken place with the owner, and there is a likelihood of forming a model town upon the land. A part of the Duke of DEVONSHIRE'S estate has already been turned into building land, and as the start has been made we presume the only obstacle to the utilisation of the remainder is one of finance. On the north side the meadows are bounded by a road known as Burlington Lane, for the estate was once possessed by the BURLINGTON family, and the architectural earl's villa, which was said to be "too little to live in and too large to hang to one's watch," is found in the grounds on the other side of the road. On account of those associations it is proposed to call the new townlet Burlingwick. About 330 acres will be required. There will be sites reserved for churches, and if the Chiswick authorities wish to increase the taxation by erecting workmen's dwellings they can obtain a moiety of the property at a reasonable price. At present the chief drawback is the river, which at times is not a pleasing sight, but

if a suitable embankment is made and one or two locks are introduced the Thames would then be the leading attraction of Burlingwick.

WHEN TURNER died he left his property, which was thought to be worth 140,000*l.*, for the benefit of art and artists. There is no doubt he intended that the whole should be appropriated for the public benefit. Litigation followed owing to the careless manner in which his will was drawn up, and after four years a compromise was arranged. The National Gallery became possessed of his pictures and drawings. Mr. RUSKIN devoted a very long time to the arrangement of the latter; the least sketch was precious in his eyes, but a great many could not have any interest for the public. There is, however, a prevailing belief that the most valuable examples of his art are decaying in cellars at Trafalgar Square. On Friday last one of the members of the House of Commons inquired of the Secretary of the Treasury whether there were numbers of TURNER drawings stowed away in boxes at the National Gallery; and, if so, whether he would take steps to have them distributed amongst other picture galleries. The reply was in the negative; it was stated that, besides the drawings exhibited at the National Gallery and the collections which are lent to galleries in the provinces, there are eleven tin boxes containing rough sketch notes, chiefly in pencil, on leaves of small pocket-books. But the contents of these boxes have been repeatedly sifted, and everything at all fitted for exhibition selected from them. We do not suppose that the answer, although explicit enough, will set doubts on the subject at rest, but with a view to that object it would be well if some member would endeavour to discover the benefit which was derived from the drawings which are in circulation.

THE use of concrete is now so general in the United States, especially in connection with steel beams, that the material becomes a subject for investigation by theorists. Experiments on its expansion have been carried out under the superintendence of Professor W. D. PENCE in the School of Civil Engineering, Purdue University. It has been usually assumed that the co-efficient of concrete is similar to that for the expansion of steel. But it was established by the experiments that the co-efficient of expansion of gravel concrete is 0.000054 per degree Fahr. and of broken stone concrete 0.000055 per degree Fahr. The co-efficient of expansion of steel is generally taken as 0.000065 per degree Fahr. That may appear only a insignificant difference, but it means about 15 per cent. less for concrete than for steel. In the case where steel beams and concrete are combined, the difference must produce stress in both materials. Concrete of course cannot sustain tensile stresses equally with steel, but Professor PENCE holds that the stress per degree during changes of temperature would not exceed a quarter of a pound per square inch, and if there was a very great change of temperature, say 100 degs., the stress would not be more than 25 lbs. per square inch. In Chicago provision is made for expansion in concrete in retaining walls by having a joint at every 50 or 60 feet. But in small walls it is advised that joints should be provided at every 30 feet or thereabouts. Professor PENCE believes that temperature stresses cannot be serious for the following additional reasons:—(1) The chief range of temperature from that which prevailed at the time the concrete first adhered to the surface of the steel is downward, producing a compressional stress in the concrete section, since the steel contracts more rapidly than the concrete. (2) The changes of temperature in the structure will be gradual, owing to the fact that concrete is a poor conductor of heat. (3) Reinforced concrete beams will sustain on the tension side, without rupture, a proportionate distortion of from ten to twenty times that at which the simple concrete beam would fail. (4) Interior stresses are relieved more or less by the slipping of the metal bars in the concrete.

## ILLUSTRATIONS

MIRABEAU REPLYING TO M. DE DREUX-BRÉZÉ.

PARR'S BANK, LIVERPOOL: TELLING ROOM. DETAILS.

WESTOVER, MILFORD-ON-SEA.



# TRURO CATHEDRAL.

following is the report by Sir Thomas Drew, to which we have already referred:—

I have given earnest attention when at Truro, on December 11, 1901 last, and since, to the fractures which have developed in the piers of the cathedral. I have had the fullest and most intelligent information given me as to facts and details of the building by architect, builder and clerk of works.

I have also the fortunate advantage that I was a witness of the building of these piers in September 1900, when I was specially as a visitor to Truro to learn something of the greatest ecclesiastical architect of his time (as I have since, with no reserve, expressed my sincere admiration of the late Mr. Pearson) designed and built his modern cathedral. I have since, with no reserve, expressed my sincere admiration of the modern cathedral design and the honesty of the modern builder's work, and the method of the clerk of works in faithful carrying out of the modern plans and specifications.

I desire to state in the forefront of my report what might be a normal order at its conclusion. While I have no hesitation in giving my opinion as to the cause of the untoward occurrence of fractures—being in fact wise after the event—I have no criticism for the designer of these piers.

I may state here that though well acquainted with the quality of Corsham Down oolite as a weight-bearing material, I want of judgment in the use of this stone did not occur

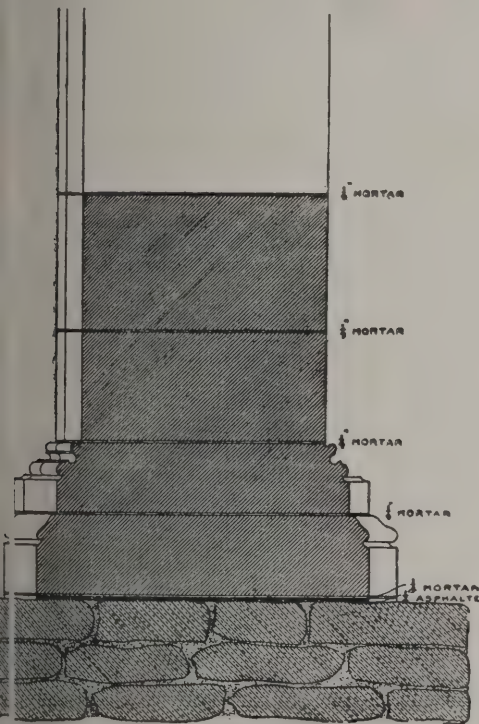
the characteristic distinction of the building of the Mediaeval architect. A feature of the ancient construction was the adaptation of bedding and jointing as a means to an end, that of seating and adjusting stones in weight-bearing piers, so as to distribute pressure through successive courses.

Thirty years ago attention of architects was awakened to the fact that rigidity of construction, adopted from the modern engineer, was not advance in science, where stone-laying survived as a craft, by an alarming disaster in the failure of the granite columns of the Holborn Viaduct at its opening on November 9, 1869, and which created somewhat of a public panic. As it illustrates the far less important occurrence of some fractures at Truro in 1901, it is worth recalling. The first engineering and architectural opinion of the day was called on to investigate the unforeseen occurrence. The indisputable resulting verdict was as follows:—

"Had the hexagonal piers been built in 13-inch courses, no undue stress would have been thrown on the exterior part of a single layer. Whether they had been built in mortar or in lead, the weight would have been fully distributed course after course, instead of being thrown on a few points, under the angles of a monolith. It is not therefore as an eyesore only, but an offence against structural rule, that we must hereafter carefully avoid the juxtaposition of stone courses of very unequal magnitude. The ancient builders were well aware of this important canon of their craft."

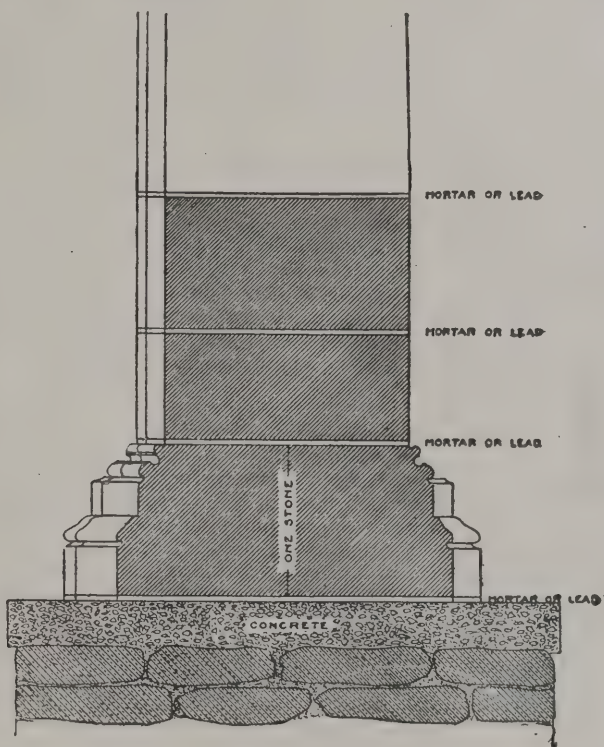
The lesson of that disaster has been forgotten or unremarked

As Built.



3/4 INCH SCALE.

As Restored.



3/4 INCH SCALE.

I knew of the late Mr. Pearson's extensive use of this stone in his churches and in nave piers as proportionately light and strong, and I had too great trust in such a master of design and construction as to entertain a question that I had not perfect experience of the stone he selected to do its work. I have, however, fully investigated this question on its merits and state conclusions for the assurance of the cathedral committee at the end of my report.

I have carefully read the contract and specification as applied to the building of the piers, and the latter is in terms not far from what is generally accepted by modern authority. The building of the piers, and the latter is in terms not far from what is generally accepted by modern authority. The building of the piers, and the latter is in terms not far from what is generally accepted by modern authority. The building of the piers, and the latter is in terms not far from what is generally accepted by modern authority.

It is to be remembered that though many great stone-built churches have sprung up in England in modern times, there is no doubt that so revives the Mediaeval cathedral of the thirteenth century in its design as does Truro Cathedral—in its details of mobile construction restrained by counterweights, of balance, counterpoise and thrusts which were

by modern masons. I am familiar with such failures of monolithic-bearing granite or marble shafts, which are a certain vulgar fashion and offence to structural instinct in churches known to me.

Seeing at my visit in September 1900 that the Truro piers were being built in courses and very carefully laid, it did not occur to me, as an architect, to look for any weak point in the construction, nor did I arrive forthwith at a reason for the development of undoubted weakness on my arrival at Truro on December 11 last.

After prolonged study of the fractures it was plain to me that there was no difference in character of the fractures at Truro Cathedral from those familiar to me elsewhere in monolithic-built piers, where undue stress was isolated on the bases. In this case the fractures started from the bottom of the piers, and not only indicated that they would be consistent only in connection with monolithic-built piers, but moreover pointed to some exceptional bedding in the bottom course.

The cause of disaster, obvious to me, arises from the modern specification as to mortar and bedding, observed with a precision which is quite unusual to my experience of less conscientious builders.

In Mediaeval pier building, which I have had considerable opportunity of studying, the constructive method would have been different, and to the ideas of some modern constructors comparatively rude and barbarous. Beds of piers in old work



are usually laid in comparatively thick swimming beds of mortar, and the mortar is an unscientific mixing of lime and sand by rule-of-thumb, and none too good—not "too good mortar," as an old-fashioned mason would describe mortar suitable for restoration of coursing of bearing piers, which lends itself to a certain elasticity through all beds.

At Truro the mortar, according to modern specification, was to be theoretic perfection as a cohesive cement, using superior hydraulic lime, and with modern grinding, measuring and mixing, producing a scientific cement, such as Mediaeval masons had not. Bed joints, according to our specification, are to be no more than a bare  $\frac{1}{4}$  inch thick of superior cement. The stones are to be bedded in it for their full superficies out to the face of the stone.

The jointing, too, of the piers at Truro is, in modern acceptance, theoretically perfect. The perfectly truly wrought beds of the courses were worked into their seats until a  $\frac{1}{4}$ -inch joint became more like 3-16 inch. The several drums of the columns became so perfectly adhesive (as a glue joint in wood might be) that the pier becomes practically a monolithic one, with the attendant risk of undisturbed pressure all coming in this case on a single bed, and that under the plinth.

The nature of that bed differs essentially from the other beds. It is practically a  $\frac{3}{8}$ -inch bed of asphalt intervening between the surfaces of a rubble masonry foundation pier, more or less irregularly composed and surface-levelled, and the smooth-faced wrought under-bed of the plinth course of the pier.

For some reason at Truro the necessity of the provision of a damp course has been manifested to prevent moisture being drawn from the subsoil. Accordingly, the usual modern specification provision of a layer of liquid-run asphalt comes in as a sort of matter of course. It would not occur to the draughtsman of most modern specifications that there might be cases in which the damp-course layer of asphalt would be better omitted.

It may now be seen that asphalt, a different material in its setting action and hardening from the mortar joints in the rest of the pier, and more or less compressive and defective over any irregularity of surfaces, was an unfortunate insertion at the bedding joint on which stress was concentrated. Under the whole circumstances it can now be seen that the accident is explicable. The tightening of the base stones unequally on their bearing surfaces is manifest, and the fractures starting from the base bed and running up through two superimposed thin layers of inflexible stone,  $11\frac{1}{8}$  inches and  $9\frac{1}{8}$  inches respectively, seem bound to occur.

It is to be noted, further, as perhaps contributory—according to dates furnished me—that these piers were carried up with a certain modern energy and impatience under a certain modern contract, and the weights were perhaps rather soon imposed on the substructure; \* but it impresses me more that the modern mortar was too prompt in its setting quality, and too thin to allow of the automatic adjustment that is afforded by a thick swimming bed of old mortar, permitting the stones to find their seats and distributing stress through successive courses.

A modern method somewhat favoured of bedding wrought stones out to the face and pointing up the joints as the work rises was followed, and it is a practical method in ordinary circumstances with suitable mortar rightly handled. In this case, however, tight bedding under the weak spur-bases contributed to the fractures most manifestly.

The consideration now comes—What is best to be done? It will be advanced by some no doubt with some apparent reason, that there has been no spreading of the first fractures; that the base stones have found their bearing, and are manifestly carrying the weight imposed, and might so remain.

I would not take the responsibility of advising such inaction, and for the following considerations. Truro Cathedral is typically a construction of Gothic ingenuity of forces kept at rest by counterpoises and clever distribution of parts. There are few old cathedrals which do not exhibit some shifting of equilibrium in course of time from settlements, decay of buttresses or counterpoise weights or some structural alterations. In two cathedrals which are my charge there is probably not a thirteenth-century pier standing truly upright. It is not impossible that at some time or another some disturbance might affect true plumb in Truro Cathedral piers, and the least shift of pressure on fractured bases might mean disaster then.

There is also wind pressure to be reckoned with in such structures. An illustrative case is furnished lately within my own observation. A large church had been built to its full height. Its nave piers had monolithic polished shafts, manifestly upright and carrying their superstructure. Here, however, the motive tremor was supplied by an Atlantic hurricane,

\* Capitals of piers were laid four months eleven days after bases were laid. Owing to the casing covering the bases there was no discovery of fractures until June 18, 1891, and no possibility of discovering when they occurred.

beating on the north flank of the nave. At the least tender to a "rocking" pressure on the beds of the capitals and bases, the stones flushed at these points, and the immediate collapse of the whole church, which had cost some thousands of pounds, followed. It was not, in my opinion, required to a catastrophe to an earthquake, as was locally done, but should not be forgotten either that there are recorded cases in very late years of structural disturbances of old churches in England from slight shocks from which our islands are exempt.

With such eventualities, even if remote and improbable in my opinion it is a duty to restore the bases soundly in Truro Cathedral. I cannot think it would be even satisfactory, as a matter of feeling in Truro diocese, if any tradition should obtain of any flaws in its great church.

The work of reparation can be done, and, in my experience of restoration work, the cost involved is not so serious that it should stand against the considerations I have advanced. I should perhaps add for those unfamiliar with such restoration operations, that no comprehensive shoring of the whole nave is involved in effecting local renewals of some stones. The moderate provision of plant required is applicable to one pier or pair of piers at one time and removable to the next.

The staying and upholding of piers and arches while under building was being undertaken in repairs was an operation familiar to ecclesiastical builders of the later Middle Ages. They were called on to exercise it often enough, for the fault of their more tentative and experimental predecessors, as well as their own occasional defaults in materials, gave them frequent opportunities to exercise this art. The ordinary master builder of our time is not usually concerned with such operations, nor can he be expected to command in his service the specialist resourceful workmen who are essential to deal with such restorations. The demands, however, of church restoration for half a century past have called up and kept in existence specialist restoration workmen no less skilful and confident than their Mediaeval predecessors. To such hands only should such a critical work of this kind be entrusted.

It is unnecessary now to enter into details of centreing and strutting, &c., by which a superstructure can be held up while a substructure is under operation, but the procedure of restoration should, I consider, be this.

The fractured stones should be taken out and replaced by sound stones. It involves no question as to Bath stone having been suitable for employment in the first instance if I recommend, for convenience and safety in an insertion, a basalt stone, Portland (Whitbed) or Doulting, and that, for this occasion, the plinth and bases, now in two courses, should be wrought in one stone, 21 inches deep.

The rubble foundation should be lowered to admit of a level "copestone," which in this case might be of strong concrete, 6 inches deep, which would be a seat for the renewed base, and also a damp course in itself.

The above covers in general terms the procedure I would specify, so far as study of the outside of the piers now instructs me. I should withhold opinion, properly, as to what courses above the bases should be disturbed and relaid in differing cases of different piers, and as to the nature and number of the lists to be renewed, and whether in mortar or sheet lead. These are details for consideration from day to day for consultation between the architect and his skilled practical masons, as the interior of the work is opened up and viewed.

My general impression is, that the magnitude of the occurrence of such fractures as these should not be overrated, or should they cause anxiety. Such unlooked-for occurrences are incidents in carrying out many great building contracts which are not heard of, and are of no outside interest, and are right, and are to the builders a vexation not an anxiety.

#### *The Sufficiency of the Stability of the Corsham Down Bath Stone.*

It may surprise some to learn that, in point of fact, the working architect has not any data from which he may go down with professional assurance what weight to the square foot of surface any description of stone ought to bear. Tables of crushings weights there are, experiments on salt cubes of 1-inch,  $1\frac{1}{2}$ -inch, or 2-inch, which can only point to comparative strength as between one stone and another. Conclusions founded on them as to bearing weights on larger masses of stone must be empirical and misleading. Even in these inapplicable tables of the stone books for practical work, these "authorities" differ so widely that it is useless for an architect to consult them. According to one authority in a leading textbook, the safe weight of a superficial foot of Corsham stone should be no more than 4 tons. According to another, based on the same table of crushing weight, it might be  $8\frac{1}{2}$  tons. According to another familiar to most architects for daily guidance, the limit should be 8 tons. When one sees how enormously these limits are exceeded in practical building in everyday work, and when one stands, the value of such authority is discounted. Some stones



stones from Truro for Mr. F. L. Pearson on stones of size are, perhaps, more practical and instructive for than any given before. They have been made by ly, of London, and certified. Even Mr. Pearson's tests, resting table of which I forward, bring out various and results; but I think they might satisfy that good m Down stone may be trusted in piers up to a crushing of 150 tons per superficial foot. Now, following mere ty, which lays down in one case that the safe weight be one-twentieth of the crushing weight, and another, its it as arbitrarily as one-tenth, and adopting the latter time, the safe weight would be 15 tons per foot. But, to the late Mr. Pearson's practice, I have obtained very capable architect of Bournemouth, Mr. Fred. ey, an admirable analysis from actual measurement of ture of Mr. Pearson's fine church of St. Stephen in wn. It shows that Mr. Pearson did not hesitate to tax rs there up to 27 tons 18 cwt. to the superficial foot, and rort is that "there is not the least sign of fracture any-

ve had also an independent computation made of the weight borne at Truro, such as has not been made by a surveyor selected for his experience and intelli- for such inquiry, Mr. W. H. Stephens, of Belfast. His is that the actual estimable weight on the large piers at is 156 tons 13 cwt., and on the smaller piers 130 tons 1 qr. That gives on one greater and one less pier, as pporting a 27-feet 6-inch bay, a weight in aggregate of is 15 cwt. I cannot fairly assign a net working bearing to the pair of piers greater than 13 feet superficial, would be equivalent to 22.4 tons per superficial foot, and be about one-sixth to one-seventh of the crushing weight 150 tons, instead of one-tenth as laid down by arbi- rounouncement of theory.

I confess that my confidence in the sufficiency of the piers ro rests more on my confidence in the constructional and great experience of the late great architect, L. Pearson, than on abstract theories. I am confident ere are reasons enough for occurrence of fractures at without touching any element of inherent weakness in ne used, and they would have occurred all the same, I e, if Portland or Doulton stone had been used.

T data required for any theoretic calculation of the bear- ciency of Corsham Down stone in the piers at Truro, e weight to be borne, are now ascertained and simple. d be interested, if the building committee should think ve to justify confidence by obtaining opinion of more ric experts than I can pretend to give, and on case e for which I can supply the most reliable figures.

## THE PRESERVATION OF ANCIENT BUILDINGS.\*

(Concluded from last week.)

U to pass on to the wider question of structural stability. first of all, see to your foundations. Remarkable although rork was above ground, the Mediaevalists were sorry ns in the matter of foundations, and they seemed to ce no forethought as to the weight they proposed to put em. It follows that underpinning is a frequent neces- but remember that fissures may come from bad bedding a building above ground as well as from bad foundations. ors, bell-ringing is a frequent cause, and if the wall be krom any of these causes, and the underpinning un- ry, you incur much risk and may do much damage by ing it. I have been pressed to underpin the piers of a by my friends the Society because they were an inch or of the upright, when they certainly had never moved ge years, and an examination showed their foundations to ellent. Towards such importunity my advice is to do it but look pleasant. But having satisfied yourself about foundations, the next thing is to repair the cracks and con- the core of the walls. I need hardly mention the tyf liquid grout in this connection, but must warn you tise fresh cement. With a little care and skill grout may eployed so that no evidences of fracture need show. ation by blue bricks is pure faddism. Why, at the same f all time, display our own lack of skill and a building's ? But if you will do so, my advice is not to commemorate tablet.

W have often to deal with leaning walls. The idea that a i dangerous or necessarily going to fall because it leans absolute, if popular, fallacy. The mechanics of the are simple enough. Remove all lateral pressure and

the wall will not fall until the line of the centre of gravity passes outside the base. If the wall be buttressed, there is a still greater angle of safety. Our deductions will therefore be:— (1) Remove lateral roof pressure. (2) Consolidate and if necessary spread your foundations. (3) Spread your buttresses, or add new ones on a homogeneous foundation. (4) Let rebuilding be your last resort.

The disturbance of an ancient work and its architectural features by taking down and rebuilding is almost irreparable. Of course, it is frequently possible to set a wall upright by jacks, but the operation is costly, and demands the greatest care if the windows or other architectural features are dilapidated or fragile. Let us pass to the repair of stonework. We are now upon debateable ground. A beautiful work of art has been erected out of a friable stone, or, perhaps, the pestiferous atmosphere created by modern civilisation has been brought to play upon a stone which would stand quite well in the purer air of barbarism. The decay wrought has very likely added to the beauty of the building by softening its hard edges and giving sometimes that colour, sometimes that romance and glamour which are associated with weatherworn age. The building may, indeed, have reached the acme of its beauty, and yet the point may have been reached when disintegration will be rapid. A few years and the original touch of the mason's chisel will have vanished, together with all record of the contours he created. Is all record of these to be lost for ever to posterity? If the decay is such as to endanger the stability of the structure, is such renewal as may be necessary to take the form of the original, or must such imitative work be rigidly denied to us as a fraudulent proceeding? The panacea for such decay as I have described, advocated by the Protection Society, is whitewash. The panacea of the restorer is, of course, wholesale reconstruction.

Now, a committee of chemical experts and architects has been sitting for a prolonged period in the endeavour to discover some process by which the unfortunate decay in the stonework of Westminster Abbey may be arrested. Where such decay has taken place in stones of which the chief constituent is carbonate of lime, and where the cause is the sulphurous emanations from the modern town atmosphere, which convert carbonate of lime into gypsum, a soluble substance, an arresting remedy has been found in baryta-water (hydrate of baryta). You may see the effect inside the chapter-house, which has been dealt with under Professor Church's able direction. Unfortunately, in other places, where such a remedy was most needed, it proved a disappointment, and it is evident that it can be used only with the greatest circumspection. But the committee's report will be awaited with interest, specially if it determines for us the value of whitewash. If there are any of you who have been bitten by the craze for it, I ask you to hold your hand. To avoid prejudice against it, it is euphemistically dubbed "limewash" by its advocates. It appears to me in this connection that the special glory of an ancient building lies in the colour and in the texture of surface, which time alone confers. Place a fresh surface—a new film over it all—and you may acquire a different beauty—a new beauty—but it is only at the expense of the loss of the old. The texture and with it the sentiment have gone.

The argument is frequently used that as all or most old buildings were limewashed to make a surface for colour painting, to rewash them is legitimate. But surely this becomes restoration in the very sense in which it should be most obnoxious to the anti-restorer. The argument assumes also that a building is in its most-to-be-desired form when in the tentative state of preparation for painting, that the glory which even the greatest builders of old could not give, and which time alone can give to architecture, is as naught to be regarded. The cult of whitewash on old buildings is clearly not to be encouraged, gentlemen, and there is the truth of it. I cling to the fifth principle I have enunciated.

Professor A. H. Church in a communication to me says:—"My present conviction is pretty much as follows. Neither limewashing nor whitewashing is mechanically, chemically or artistically an appropriate treatment for the surface of decayed stonework possessing architectural merit. Some method is required which will involve no tendency to hide, to encrust and, finally, to bring down the rotten superficial layer. The preparation to be used should reconstitute, so far as possible, the cementing material of the original stone without greatly changing its aspect. It should be penetrative, of easy application, and should prevent further decay. Limewash possesses one merit only—so long as it adheres to the surface hostile agencies are thwarted. But it possesses scarcely any penetrative power; it does not appreciably reconstitute the cement of the injured stone, and it does not stop internal mischief."

Dr. Herbert Jackson writes:—"An application of limewash to decaying stonework undoubtedly tends to retard the decay to a certain extent. This is true both of sandstones and limestones which have been affected by sulphuric acid present in the atmosphere of towns. There are, however, reasons why the application of limewash is restricted in usefulness. One is



the difficulty of obtaining an adherent coating, with the result that unsuspected mischief goes on under the limewash, and is not perceived until it has proceeded far enough to cause large pieces of the stonework to become detached, together with the loosely adhering flakes of limewash. This difficulty may to some extent be overcome by using the limewash in the form of a very thin milk of lime and applying it two or three times in this weak state. Another reason why limewash fails to act in a very satisfactory manner is to be found in the properties of the compound formed by the action of sulphuric acid upon the lime. This compound (calcium sulphate) is sufficiently soluble in water to allow of its migration under the influence of drainage, and of its consequent accumulation in parts of the stone which are in a position to receive such drainage. In many cases this action has been proved to have been considerable and to have been the cause of much damage. Notwithstanding the disadvantages connected with the use of limewash, it is probably next to baryta water."

And what of the wholesale restoration? That, to my mind, is equally to be reprehended, and I adhere definitely to my precept No. 1. The stone, decayed though it be, which the builder laid there—be it blackened by soot or glorified by nature's paint-brush—has an intrinsic value and interest which can be given to no new stone which replaces it. I will never be a party to restoration for restoration's sake in the abstract. And yet where structural necessity demands it, the refusal to make the best record which can be made of the ancient work, and the demand that something different which will tell its own story shall be put in its place seems to me foolish and pedantic to a degree. Learn the true spirit of the old work by all the attention and assiduity you can command; respect it; work in it, if so be unfortunately you must; make a record of your copy; date every stone, or insert a recording inscription; but, believe me, you are fortunate—exceptional—if your new work will ever be mistaken for the old, or need recording otherwise than by its own existence.

The restorations which are the really sad ones, as they are also the most numerous, are those in which the keynote seems to have been the desire for newness; an unfeeling travesty of the ancient work has been substituted for it by some mechanic blind to the glory with which time has dressed it, ignorant of the spirit he has to deal with. It follows that he who is to be best trusted to deal with an ancient building is he who is most in sympathy with its spirit. The utter folly of the advocacy of the engineer as restorer, just because he has neither sympathy nor knowledge, stands apparent.

I should always myself advocate the employment of two architects in collaboration on any work of reparation, so that rashness or error or ignorance might be curbed in their effects. One of these should be a man who has proved his fitness, for no monument should be put in the hands of him who has to learn his methods upon it. But in any case I should like to see constituted an authoritative committee to whom the younger man—and his senior, too, for the matter of that—might come for the resolution, free of cost, of his doubts and difficulties. I believe there are many whose sympathies and abilities lie in this direction who would willingly give their time to such a duty. The organisation of the Society for the Protection of Ancient Buildings already exists, and, with my sympathy for its aims and objects, I would like to have suggested that body to fulfil the rôle. But can we urge confidence in a Society which has not restrained itself in the past from fads and fictions, and whose policy and procedure have gained a notorious reputation? I must hark back to attempt an answer to the query as to whether we owe it as a duty to posterity to preserve a record of the ancient detail of a decaying building otherwise than on paper; in other words, shall we let all features decay until all trace of detail is lost? The time may come when the stone decay is such that structural renewal is a necessity. Is posterity then to be unable to recover the form, if not the actuality, of what once existed? Dilapidation may be so advanced and rapid that either destruction or renewal stare us in the face. It may be our regrettable duty to preserve the record in stone of the form at least of some small portion of each variety of work, where necessity demands, even at the expense of the immediate appearance of the rest. But you may of necessity sometimes be called upon to add something new to an ancient edifice to take the place of what was once a part and parcel of its structure. Every remnant of a blocked-up window or doorway may be lost when it is wanted again on practical grounds, or a new buttress, perhaps, may be needed to stay a tottering wall. Then, I say, be reserved, be scholarly, be harmonious in what you design; be individual, but do not let your individuality be insane. I ask you again to observe the fifth principle.

Now the principles I have suggested for stonework apply generally to woodwork. Destruction and decay in woodwork is chiefly due to the original use of sappy timber. It takes between thirty and forty years for sappy oak to disintegrate, and it is well to note that the decay of sapwood is not like dry-rot; it does not injure or extend to the sound wood in imme-

diately contact with itself. Old timbers partially decayed by are not to be abandoned, therefore, for new (often pitch-pine) but to be scarfed by sound oak, and I do not hesitate to say that there are few ancient roofs, I care not how dilapidated, which could not have been repaired thus *in situ*, though without even removing the timbers to the ground, if sufficient skill and knowledge had only been at hand for the process. I show you herewith a view of the beautiful roof of Geddis, Lincolnshire. That roof was in the last stages of decay and dilapidation. The walls were pushed out and cracked in all directions. It was repaired without moving a single timber from its place. I can conceive no greater stigma attaching to an architect than that he finds it necessary to replace an old roof with a new one because the old one is seriously decayed.

Another point often comes before us—the dealing with the interior where modern three-coat plasterwork,  $\frac{3}{4}$  inch to 1 inch thick and more, has smothered the contours of the walls, and overridden or absorbed the quoin stones of the windows and other valuable features. I have even known a case where the not unusual thirteenth-century internal batter of the walls has been straightened out by plaster reaching a thickness of 5 inches at the top and absorbing a stone cornice. This is a come away of course. Obviously the consistent anti-restoration course would be to put in its place something which never existed before—to point up the rubble, for instance. But I am not so the Society in this case, and I heartily agree with you. You must replaster in a thin coat showing the irregularities of the walling. Your coat must not be smoothed down with a straight-edge. My custom is to put it on with a float and to brush it over with a big, stiff, flat brush about ten minutes after it is done. A satisfactory texture is thus secured, and in architecture it cannot be too often repeated, texture is all-important. In your windows recollect the vast importance of the stanchions and saddle-bars, and on no pretext allow the ancient ones which you find to be done away with. The glass-painter with too few exceptions, is the chief sinner in this matter. He has done our old churches inestimable damage, both by the loss of his wares and his application of them. But the old iron work has frequently itself done damage, and care must be used. If it has rusted in the stone it should be temporarily removed, the rust filed away, and while the surface is bright it should be reset in cement. Paint it then with two good coats of black oxide before it has its two final coats of black, and it will not give trouble again, but act as a permanent stay to the mullions and tracery. Stand out as far as you can against the protecting guards to stained-glass windows. Try to convince your clients of the advantage of a few fortuitous leads by a little of repair, after the inroads of an all too infrequently opportunist schoolboy's stone. If we could only get five-sixths of the modern stained-glass windows throughout the world, bested by what a gain it would be to our churches and to our peace of mind. Find that old wire-guards, with their suggestion of carpenter's Gothic, there at least not misplaced, make excellent chicken runs for the parsonage garden. Equally objectionable is the plating of windows with sheets of glass—a system which runs so conspicuously in York Minster, and suggests so forcibly deaconal blindness.

A word further of warning and I have done on this head. If you find cracks in your tower look to your bell-frame. A loose bell-frame is a too frequent source of mischief to a tower, but I do not thereby readily accept the bell-hanger's quite certain statement that an old bell-frame cannot be repaired, but must give way *in toto* to new. There are some remarkable ancient bell-frames in the country which it would be veritable vandalism to destroy, as, for instance, the one at Pitlington, near Durham. Now let us close the consideration of churches by briefly applying these principles to a hypothetical case. You are called upon to "restore" (that is the invariable word used) an ancient church. You will, in the first place, be wise to ascertain the general views of your employers—the incumbent, the warden and probably a restoration committee. You will have to adapt yourself to many diverse circumstances. You may meet genuine ecclesiologists and antiquaries, whose knowledge of the fabric and its history is ample and unique. To work with such is a genuine source of delight. Or you may have to do with enthusiasts in different degrees; those who would make the building conform to the most advanced modern ideas of church planning, careless how the requirements fit in with its past. Or there is the parson, full of enthusiasm and high purpose, who tells us his aims are "Gothic" (which, I warn you, may mean a hankering after some ecclesiastical catalogue). In such case I counsel tactful agreement, with a silent girding on of your armour of steadfastness. Or again, you will too frequently meet those who have a merely perfunctory regard for the beauties and history of the building, and whose only idea is to make it serve at the least possible cost; and finally those—comparable almost with the first I have mentioned—who will loyally do their utmost to second your efforts and adopt your advice. Of these, let me add, there are many, but never enough. In all cases your principles will be constant, but as your tactfulness in pressing them so will vary.



be in attainment. I am reminded of a charming and vicar whose first request to me was to spare him from "dile" about the history of his church. He cared not for all he wanted was to make it stable and useful at the post. I believe I satisfied his demands in every particular. I care to observe the historical demands made upon me or they happened to be the key of the situation, and I told that he now poses as the local archaeologist and reads the history of his church to interested visitors.

I assume, of course, your accurate general knowledge of the building from its earliest days, not only the main which are probably easy enough, but its gradual growth and change. Observe, first of all, the plinths; look carefully at the junctions in internal angles and their respective levels. You may find nave and chancel relatively of the same date, but the plinth junction may tell you which was erected first. Remember always that the doing away with, or the renewal of, the stone in such a position may wipe out for ever the traces of the building's development. Then look carefully at the straight joints in walls, which point with certainty to a plan, and note very exactly any differences of masonry. Then see if the windows are original or subsequent insertions. Our forefathers were skilful, indeed, at these insertions, whether of windows or whole arcades, and your most scrupulous scrutiny will sometimes be wanted. Discover also old floors and of ground. In excavating for the latter you may find any pieces of old leaded glass. I once discovered the link of a curious and interesting traceried window by the discovery of glass of an aperture buried in the earth opposite the window, which had been partially destroyed and built up. There are a few cursory ideas upon what may seem small, but which are sources of great help in the development of a preservation scheme.

A careful examination of roof timbers I have seen the way, without the slightest doubt, of the whole form of an old roof of varying dates, and nearly all its parts, which have been mixed up indiscriminately in an eighteenth-century reconstruction of quite a different form. Be careful of pitfalls. Remember that you may not have been the first called upon to put your will upon the building. There were restorers even in the early centuries, and many a history has been wiped out in endeavouring to make subsequent restorations into original work. I know of two curious columns in a fine church which, separated from the rest of an obvious Norman arcade, are regarded and honoured locally as the last remnant of an Anglo-Saxon fabric. They are clever insertions of the thirteenth century. Difficult elucidation will often be overcome by recognition of subsequent change. Then you have the question to face—what builder are you to employ? Almost certainly your committee will want competition among local architects. Now it is one of the misfortunes of modern methods that an architect cannot spend his whole time upon each of his works. We have to accept that inevitable difficulty. And we are perforce to do his work through the fingers of the local builder.

In the country the local builder builds cottages, the squire's mansion and executes the periodical repairs at the parsonage, and generally does the odd jobs of the district, with some drainage thrown in. I like him and like to employ him in his own line. Where his men gain the intricate knowledge to tackle the preservation of an ancient edifice, where tenderness and knowledge in every touch are essential? There are few, though few and far between, builders who have made it a hobby, and brought up intelligent foremen and apprentices to be experts in it. To such I acknowledge my indebtedness. Your business is to find such, to meet him on his own terms and arrange with him a fair price for the work. The work which has been done—absolutely irreparable—to our eyes by turning on the local builder and undertaker, even the churchwarden, is immense. With the soundest views and endeavours and instructions, the architect cannot overcome the ordinary workman's intrinsic ignorance. Here are the many pitfalls! I pray you take warning and avoid them. Competition in such work is pure madness.

Having completed your difficult undertaking and preserved your fabric in a thoroughly reverent spirit, you are now at liberty to advise as to its furnishings. Let me beg of you to preserve the form of preservation. Preserve it from the garish tile and meretricious brass lectern and all the blatant brasses of the cathedral glass in varied tints, the pitch-pine stalls and, and all those other elements of the taste which have been introduced since the Victorian era, and are the shame of the age. Preserve it also, or do all you can to preserve those in authority to preserve it, from the wiles and suggestions of the church furnisher and the indifferent glass painter, such as he from Munich—and the organ cases of the local builder. Do you not recognise the difficulty of your task? The general tenor of what I have said will apply to the whole class of buildings. I have already referred to the ruin on to use of the ruined Abbey of Dunblane. This was

a very exceptional case, and I cannot say that the result altogether makes one anxious of repeating the process in other possible cases. At the same time I hardly think it can be said that such work is to be deprecated altogether, if it be done with reserve and if it tends to the permanent preservation of the building. The danger comes if there be an inordinate and too likely desire to make all too spick and span, and to replace weatherworn stones, which may still be stable enough, with new, in the desire for neatness. The lovely colour the arcades have gained at Dunblane by exposure gives them a beauty they could never have otherwise acquired, and the architect has shown great judgment in leaving them severely alone.

In the adaptation of old buildings, other than churches, there is generally still greater temptation to interfere with their antiquity in favour of modern comforts. I know an antiquary whose delight it is to preserve ancient and dilapidated cottages from final ruin, and to make them once more serviceable for human needs; and it is surprising how well this can be done, and how simply and inexpensively where the taste is at hand. Such work can, I fear, only be done for love, but I trust none of you will shirk it for love if it comes in your way. This brings me to the third and last class of buildings. Ruins to be preserved as ruins. I have reserved till now the sixth principle—the destruction of ivy. Of course I shall be told that I am advocating the destruction of the picturesque, but it is not so. Quite apart from the destructive qualities of ivy—the entire concealment of architecture by any evergreen growth is merely the rendering of it valueless. It might as well be a rough brick wall, and any beauty such a combination possesses belongs to the ivy and not to the architecture. One is reminded of the seer of Brantwood's words, "The artist who looks to the stem of the ivy instead of the shaft of the pillar is carrying out in more daring freedom the debased sculptor's choice of the hair instead of the countenance." For the artist you may substitute the general lover of the picturesque and of antiquity, who is horrified when the parasitical growth has to give way to the exposure and preservation of its victim.

Of course, in the early days after ivy destruction your building looks bare and unclad, but take heart and counsel. Nature has provided a most happy substitute, which is as harmless as it is beautiful. You may plant *Ampelopsis veitchii* to any extent, the lovely light-hearted and fickle but always tender sister of the stern and solemn ivy. After two or three years of patient tending and watching the growth of a plant which has tested and likes its situation is almost phenomenal. You have the lovely daintiness of the spring leaves, the richness of the summer green and the glory of the autumn sunsets. And when the glory has departed all your architecture is revealed again, with the slender tendrils only adding texture to the walls.

At the highly interesting church of Westwell, near Ashford in Kent, a church where the thirteenth-century groining is done in concrete, this lovely creeper has been permitted to grow over the window glass, which it loves to do. The glass is fortunately transparent. The effect is more beautiful than any modern glass painter has ever conceived, and the contrast between nature's handiwork in glass painting and that of man in the east window, which alone is dim with unhappy saints, is striking indeed. I commend it to you. First, then, in the protection of a ruin, get rid of your ivy. The thick stems should be cut at about 3 feet distances and dressed with corrosive sublimate or any strong destructive chemical. The ivy must not be torn down from the face of the wall until it has lost its power of clinging, and should then be most carefully removed by the aid of scaffolding, and what is still more important, the aid of tender-handed and careful workmen. You will find frequently great ivy stems growing in the very centre of the walls, disturbing the core and pressing out the ashlar. There is no other course but to take out a stone or more, and destroy it by removing all that can be reached and killing the remainder. Again, you will have, perhaps, great dead ivy stems to deal with (for even ivy fulfils in time the course of nature) which have wrapped themselves round the ruin, and can hardly be displaced without disturbance of the stones. I cannot prescribe generally for such cases. They are sometimes most difficult to meet, and I can only recommend the ample use of scaffolding and shoring. I have known cases where the removal of the ivy meant necessarily the destruction of a small feature, such as a pillar. In that case alone the parasite must be allowed to stay and continue to sustain its victim until its life is lived. Posterity must then deal with it as best it may.

Obviously the most important duty is to protect roofless walls from the inroads of rain and frost. The method adopted at Kirkstall was to carry the irregular walls up to more or less the same level and cope with flat stones, slightly weathered. This, no doubt, is practically effectual if the coping-stone is good. But the sacrifice is very great. The building loses its picturesque claim as a ruin, and becomes formal at once. I cannot see that so drastic a treatment is necessary. It is quite possible to remove the soil and vegetation from the rough wall tops and grout them in with cement, leaving their irregular



contour, and it is only necessary to provide for carrying off the rain with fairly even distribution. A careful workman can do this under careful direction. There are those who are fearful of the use of cement in connection with old walls. Its danger consists in its improper use. It must be of the best quality and must be well aired before use, and not used too strong. The grouting in of cracks with cement, and if necessary the pointing with cement, can also be accomplished with no damage to the hoary antiquity of a ruin. In pointing, the generally earthy matter must be well raked out and the cement kept well back from the face. This can be done by means of a stick. Our forefathers were generally alive to the advantages of a sufficiently wide joint to allow of this. We come now to the difficult point of the treatment of reconstructions of an ancient building, necessary for its proper sustenance. Occasions arise where it is absolutely necessary to reconstruct part of an arcade, an arch, or a buttress, or perhaps a vault or some tracery. It appears to be an accepted principle, even by our keenest historic friends, that where old stones exist and their approximate position is known, they may be put back—reused. But the doctrine has been put forward and acted upon that, although you may build part of a feature with its old stones, you may not add to their number by new stones to the same section. A system has been adopted of cutting such added mouldings to an appreciably different section; for instance, at Kirkstall rounds or beads or bowtels are cut into facets. The principles adopted are not easily read. Apparently old square forms may be replaced by new square forms. Large rounds must be replaced by facets or chamfers, but small beads may be sometimes the same as the old, and sometimes cut into facets. Now I do not hold with this system. I protest strongly against it, for I believe it to be false in logic as it is injurious in effect.

The architecture of the building is ruined by the frittering away of its artistic forms in facets. To the uninstructed beholder, when the time has come for the new stone to weather as the old, the difference will mean nothing, but the artist's eye will be always offended. If you are afraid of falsifying history, there are two courses. Either rebuild in rough-hewn masonry, which will tell its tale, or copy the old as nearly as you can, but put a mark or date on each stone if you will leave some imperishable record of your work. It is easy enough. And, believe me, when the time comes—as it will come—that enlightened views on these subjects have prevailed and are general, if you act thus, generations to come will not laugh in their sleeve at you. Kirkstall Abbey furnishes an instance where the preservation of one of the most interesting ruins has been attempted in a thoroughly scientific spirit by an architect and antiquary who holds a foremost place in his own department. The first process was, of course, to clear away all ivy and other parasites, which made the ruin one of the most pictorially beautiful. Following this came the structural support of shaky parts, and the exclusion of water from the walls and groins, where such existed. I do not allude here to the excavations of heaped-up earth, which is a purely antiquarian pursuit, and ought to be undertaken as a matter of course in connection with work of preservation.

The process of protecting the walls from the weather has been, as already said, to carry them up in rough mason's work to a more or less continuous level, and cope them with a flat coping. Where architectural features, such as the external arches of the dorter windows, have been met with in the process, these have been rebuilt with narrow slabs of stone, so as not to be mistaken for ancient work. There is, however, one case where an old arch has been restored in its old form with new stone. I have already spoken of the faceted shafts and arch moulds, where it has been necessary to renew them. The carriage of the southern and part of the eastern side, all that remained of the shaky central tower, was the crux. The north-west tower pier and the nave arcade pier adjoining had fallen, and, of course, the north and west tower arches with them. The south-west tower pier had sunk, and the foundation was evidently insecure. Mr. Micklethwaite completes the disjointed nave, and with it the north tower arch, using faceted forms where old stones are not to hand. To assist the south-west tower pier he builds up the easternmost arch of the south nave arcade and the adjoining aisle arch, and to support the broken end of the tower adopts the bold expedient of erecting a detached pier adjoining the south-west tower pier. This new pier is an oblong block of dressed masonry with chamfered edges, merging in a very architectural manner into the upper portion of the structure.

Now this is thoroughly courageous work, and all courage demands respect. I could wish it had been possible to secure the foundation of the south-west tower pier (as would have been done if the building had been still in use), and thus allow the western tower arch to be thrown across as the northern one has been. Certainly the total result would have been more pleasing and the security greater. I fancy, too, that Mr. Micklethwaite will readily subscribe to my sentiment, "Don't build such a pier if you can help it." I must add my personal

opinion that if such a pier is essential, let it be in rough-hewn masonry. My view also shows the skeleton tracery introduced into the belfry. This, I think, will be an eyesore for all time. I had rather have seen some rough masonry erected to do the work of catching up the overhanging arched fragment, and proper reconstruction of the ancient window—duly recorded as modern, of course. The effect of the method of wall coping is best seen by the view of the east end of the chapter-house. I confess I have my doubts whether so disfiguring a treatment can be justified by any practical or archaeological necessity, avoiding counterfeits. It offends against my fifth principle.

Let me turn now to Bayham Abbey, where a similar but much simpler problem had to be faced. Here the endeavour was to preserve and protect the building as far as could be without altering its form in any way. Bayham is a monastic structure of singularly interesting plan and character. The ruins—and, I may add, the ivy—had reached such a point that great havoc had befallen during the last two or three years, when the owner, Lord Camden, alarmed by the recent collapse of a great part of the last remnant of the interesting choir clerestory, came to the rescue and determined to make the remainder safe. The ivy, of course, was dealt with, as I have already described, but the growth of such that this was no easy affair. Some huge dead branches were ready at any time to bring portions of the structure down. The roots had grown in the very centre of some of the walls and pressed out the ashlar on both faces. One buttress had to be built to sustain the tottering nave. This was done with rough masonry, and rough masonry was similarly to support a large overhanging piece of wall in the south transept. The tops of the walls were grouted in the fissures made good, and the pointing executed as I have described. Lastly, *Ampelopsis* has been planted, and I believe in three or four years only those who actually know what Lord Camden has done will be aware that any hand but nature's has been at work. Nevertheless, I believe the ruin is preserved for centuries.

In passing, let me say, never protect groining found in ruins with a wooden weather roof. Ruins are naturally neglected and such a roof wants attention from time to time. If left alone it decays and becomes an additional weakness instead of a protection. Use always permanent materials.

Gentlemen, the subject I have ventured to bring before you is not less difficult because barely two minds think alike on it, and I can but hope that my views will receive their measure of criticism. But I hope, too, it will be kindly, and will give me the credit of pressing before all else upon the keen resolution the doctrine of "hands off," of recognising an actual as well as a sentimental beauty in time-worn and time-honoured antiquity and of using my utmost endeavours to preserve what cannot be wiped out in an hour, and, like Humpty Dumpty, never picked up again.

But I must draw to a close. You may think that what I have said is elementary, and reminds you only of much that you have, or would have thought out for yourselves. So far as you disagree with the methods I advocate, I hope that you will at least admit that they are logical, and, above all, free from fads. The last man who should be entrusted with the care of the preservation of our ancient monuments is the man of the higher plane, and demands a broader view than lies within the horizon.

Mr. ASTON WEBB, A.R.A., who proposed a vote of thanks to the author for his exhaustive paper, said no one could have dealt with the subject more authoritatively than Mr. Caroe in his experience. No one could have dealt with it so courageously. The paper began by a quotation from John Ruskin, who was the great anti-restorer of his time, as well as a great lover of architecture, especially of old work. One of the greatest distinctions which the Association had received was that Ruskin chose that Society before whom to read his paper on the "Influence of Imagination in Architecture." In all that was said in that paper Ruskin was enunciating the principles dealt with by Mr. Caroe, that anyone who touched an old building must or should entirely efface himself. Though perhaps they had to blame themselves, and much of the criticism of the Society for the Protection of Ancient Buildings was correct, yet in comparison with the wholesale devastation which had taken place in France and Germany and other countries, England had come out of the ordeal of restoration more satisfactorily than those countries. No one in dealing with the subject could avoid referring to the Society for the Protection of Ancient Buildings. All must sympathise with the objects with which the Society was started. Mr. Caroe made an interesting point about the levels of churches and altars; this was often a difficult point, because the level of the altar was often insisted upon, and the lowness of the east end created a problem. The best way to get over the difficulty was to advance the altar and so raise it and the reredos independently of the east window altogether.



THACKERAY TURNER, secretary to the Society for the on of Ancient Buildings, said the paper made two criticisms against the Society, viz. that the Society was able for advocating the use of whitewash, and also that the use of blue bricks in the interior of buildings. e blue, he thought they were justified in trying to pre-building without interfering with the external aspect f the face of a building was touched in repairing there a loss, for they could not touch an ancient building a loss to it, but when repair was necessary they could en the building by taking out portions of the interior work and putting a material in its place which would with the outside face of the wall. It was an evil to do it it was a necessary evil. It did not matter what was used in this work; for it did not show, but blue ere convenient, for where cement was used it adhered firmly. The blue brick was also non-absorbent, and water did not quickly leave the cement used, which had e of setting slowly. As to the use of whitewash, he the reports of Professors Church and Jackson were not urable as to lead them to discard the use of white. He did not want to whitewash every building, and sh need not be used at all; it could be coloured. The considered it a lesser evil to white or colour-wash a than to let it go on decaying. It was the sulphur in atmosphere of towns which destroyed buildings, and if a ome was put on the stonework was protected, and when- essary a fresh coat of limewash could be put on. Professor BERESFORD PITE, who seconded the vote of said he was a little in doubt whether the Association t right body before which such a paper should be read. doubtful whether members of the Association would b likely to have old buildings to deal with, as old build- came fewer and fewer. The restoration of ancient itis seemed to be a highly specialised matter and did not go the work of an architect. The position of an archi- cied in to see an ancient building was anomalous, and difficulty which existed between the antiquarian and the veive elements was a chronic one. The repair and pre- ation of an old building was one thing, and the alteration th addition of new work to it was another, and when both oe done in the same operation and by one and the same e the same employer the difficulty was very great. h CHAIRMAN said the paper was of great interest to all . All took an interest in our old buildings and their rson. The more architects came into contact with the e, the more regret most of them would feel at having to ying to it, and the more carefully they would carry out eir or preservation when the work was necessary.

## ARCHITECTS AND QUANTITIES.

CASE was tried on Friday before Mr. Justice Ridley, in hich the plaintiff, Mr. W. Ralph Low, an architect and ti surveyor, practising at 10 Basinghall Street and e sued Mr. Thomas Tinnelly, a member of the Feltham o Board, to recover damages for slander. The main eci was privilege, and a denial that the words were ed. r Compston appeared for the plaintiff; Dr. Blake Odgers, d Mr. W. Clarke Hall for defendant. e appeared that the plaintiff was employed by the Feltham o Board to prepare plans and specifications and to take u quantities for the erection of a school for them, and accord- o is case, the specifications, as usual, provided that the e of the plaintiff for the preparation of the quantities itographing them should be paid by the contractor. The dit, it was said, on July 16, 1901, convened a meeting at r Board School, Feltham, which he hired for the purpose, at hich he spoke the words complained of. They were e fact that the contractor had to submit to a specifica- d down by Mr. Low, the architect, "by which Mr. Low is fees twice over, and no contractor gets a chance e submits to what I call a downright fraud." Mr. i was also said, got his fees from the Board and the r. These utterances were reported and published in t Middlesex Times, and plaintiff alleged that they con- at he had been guilty of fraudulent and dishonest e. The defence was a denial that the words complained spoken, that the provision of the specification as to the e being paid by the contractor for the preparation of quantities and lithographing was usual. Further, it was ed that the words bore the meaning which the plaintiff e and it was pleaded that they were, if spoken at all, e without malice, in the belief that they were true, and, e addressed to the defendant's constituents and ratepayers eham, were privileged. r Compston, in the course of his opening statement, iced that the defendant had written a letter, in the course hich he imputed that the reporter of the paper had con-

sistently misreported him and had a feeling against him. The learned counsel also said that the plaintiff did not bring the action to obtain money, and if defendant would apologise and withdraw the reflections he had cast upon him, the case might come to an end.

Dr. Blake Odgers said his client never had accused, and did not accuse Mr. Low of any form of dishonest conduct. More than that he could not say.

The plaintiff gave evidence, and a large number of witnesses were called in support of his case to prove the uttering of the words sued upon.

Dr. Blake Odgers, in opening the case for the defence, said there was a difference of opinion among architects as to the practice of members of that profession taking out quantities and being paid by contractors. The Institute of Architects laid it down that, when the work of taking out and supplying to builders quantities upon which the builder acted in executing the designs was undertaken by the architect, he should do so in concurrence with his client, and it was desirable that the work should be paid for by the latter rather than by the builder.

Mr. Justice Ridley said that was only a suggestion. Speaking from his experience as official referee, he did not think the learned counsel could find any explicit rule applying all over the country about it.

Dr. Blake Odgers did not think there was any special rule; he was only putting it as being the opinion of a large number of architects. The defendant did not say the words imputed to him about collaring fees twice over. All he said was that he objected to the architect having his fees paid by two people instead of one.

Mr. T. Tinnelly, the defendant, said he was a railway inspector and a member of the Feltham School Board. He took the view that all the architect's fees should be borne by the Board direct, and that he should have no fees from anybody else.

Mr. Clarke Hall then put to the witness the words complained of, and asked him if he uttered them.

Witness: I absolutely deny it on my oath in toto, or that I used any words which would convey that meaning. I complained that two clauses had been inserted in the specification whereby Mr. Low was to receive part of his fees from the Board and part from the contractor. My objection was to the two part-payments, and I said so. I have no personal feeling against Mr. Low.

Several witnesses were called, who bore out defendant's account of what he said.

Dr. Blake Odgers, at the conclusion of the evidence, submitted that the occasion was privileged.

The learned judge held that that was so, but declined to hold that there was no evidence of malice. There was, he thought, strong evidence if the jury believed that the defendant was not using the privileged occasion as such. If the defendant said that the plaintiff got his fees twice over he thought that was an abuse of the occasion. Therefore, the question came back to whether defendant used the words.

The jury, without leaving the box, said they found the words complained of were used, and that they exceeded the privilege of the occasion—that they were used recklessly rather than out of spite, and they awarded the plaintiff 50*l.* damages.

Judgment accordingly.



*The Editor does not hold himself responsible for opinions expressed by the writers.]*

### The Keystone and Block Style.

SIR,—In former days, when the practice of relieving the walls of buildings by bands of stone of contrasting colour was imported by the late Mr. Street, this feature became so imitated and made, for a time, fashionable, that the system was jocosely called "the streaky bacon style." It had, at least for a time, an attractive appearance, but did not last long.

We have now, in the Renaissance of the Renaissance, a fashion which, I venture to suggest, cannot be considered anything but a disfigurement, and for which I would propose the above title. The unbroken sweep of the semicircular arch, seen from any point of view, is perfect in its grace and dignity; but the practice prevails of interrupting the arch with a central keystone. For this, although to my mind a disfigurement, there is no doubt ample precedent in Roman work, and a moderate and gracefully wrought keystone is comparatively harmless. This in the Renaissance was sometimes enlarged and rendered more obtrusive, and is now exaggerated out of all scale into huge unsculptured blocks, breaking up the arch with their ungainly harshness; then they become triplicated; then



similar unworked blocks stuck on all round the archivolt; then these disfigurements applied to horizontal lintels; vertical mouldings blocked out in a like manner, as if the builder, lacking moulding enough, and without the skill or means to cut more, had put the stones in in block, until now a whole building is marked all over with these deformities.

In your present number is an instance, although not so gross as some, yet sufficiently painful, where a simple but graceful design, as far as the upper storeys are concerned, is disfigured on the first floor by such blocks interrupting the horizontal architrave over the window-head, where it especially calls for the lightness of moulding that is used for the sides; but more gravely over the horizontal heads of the square upper windows, which, owing partly to the treatment of the architrave at the angles, but chiefly to the heavy triple blocks in the centre, really appear in your illustration to be breaking down under the weight of them.

In the revival of a style there is an unhappy tendency to adopt and exaggerate its defects, and in the now fashionable revival of a revival the same defective features are fastened upon, again exaggerated and more unsuitably placed.

In the development of the arch which graced the Byzantine, Romanesque, and other cognate work, the keystone is noticeably absent, with the best results. May we devoutly hope that this disfiguring fashion may speedily pass away, and that the keystone style may go the way of the "streaky bacon style."

I have been a long time hoping that some art critic might fasten upon this point, but architectural criticism appears to be almost lost, and no wonder now that architecture is a matter of evanescent fashion—Your obedient servant, F. WALLÉN.

96 Gower Street, W.C.:

April 18, 1902.

#### The Barbican Fire.

SIR,—The attention of the executive of this committee having been given to the Barbican fire of Monday last, which in many ways is a repetition of the worst features of the Cripplegate conflagration of 1897, we think it only right on this occasion to call the attention of the warehousemen and ground-landlords, as well as the public authorities controlling these areas and the insurance companies, who have considerable influence on building matters, that neglect is being shown even in the better class of warehouse buildings to the protection of the vertical surface occupied by the window openings overlooking thoroughfares, areas and courts, and that it is imperative that such openings in the vertical surfaces should be protected in some form or the other. This protection can be effected by using less flammable materials for window frames, in many cases by using fire-resisting glazing; and, further, by fitting the openings with fire-resisting shutters or blinds or by equipping them with drenchers. It is obvious that in the Metropolis the risk of fire spreading from house to house, across streets even over 40 feet wide (as in the case of the Barbican Fire) should be limited by preventive measures which, although not inexpensive, become absolute necessities in localities where the householder's danger is not a question merely of accident or neglect in his own premises, but where he has to be constantly on his guard against risk from his neighbours.

With more rapid measures—automatic or otherwise—of summoning the fire-fighting forces, and the instant use of first-aid fire-extinguishing appliances, the possibilities of extensive conflagrations would be more remote, and much that this committee must now consider necessary in the form of better building construction might perhaps be modified. But given existing circumstances, the importance of fire-prevention by better construction, and, more particularly, by a reduction of the spread of fire from house to house, is becoming even more essential now that the City population is decreasing, whilst mercantile structures are rapidly taking the place of dwellings.

We take the occasion to emphasise only the one serious question of the protection of vertical openings, although there are many other points which deserve attention, more particularly the protection of all ironwork by suitable covering; the avoidance of building materials which, when heated by fire, are liable to disintegrate on the application of water, improved forms of roof construction and the protection of skylights. But to deal in detail with these would lead too far.

We desire to point out that under the present circumstances of the Metropolis, the prevention of the spread of fire from neighbouring property is of far greater importance than in many other cities, and that means exist by which this risk can be reduced.—We are, dear Sir, yours very truly,

EDWIN O. SACHS, } Chairman.

ELLIS MARSLAND, } Hon. Secretary.

On behalf of the British Fire Prevention Committee.

Mr. Delissa Joseph, F.R.I.B.A., has removed from 17 and 18 Basinghall Street to larger offices in Portland House in the same street.

#### GENERAL.

Mr. P. E. Morris, A.R.A., died on Tuesday in his sixtieth year. Among his works were *The First Communion*, *Sons of the Brave* and *Fête Dieu at Dieppe*. Of late years Mr. Morris rarely exhibited.

M. Emile Bayard has found that a plate of celluloid can be used for the production of designs as a substitute for copper or lithographic stone.

The First Stone of the additions to the Paris Bourse will be laid some time during May. One of the objects to be deposited will be a plan of the building engraved on copper.

The Dover Corporation passed plans for the provision of municipal Turkish baths, involving an expenditure of over 2,000*l*.

Orders for Buildings to the value of over 200,000*l* are on hand in Bloemfontein, but cannot be started before the supply of labour is improved. Of this the Government works amount to 50,000*l*.

Mr. Alexander Grainger Linn, of Liverpool, who died on March 31 last, after making certain bequests, left the residue of his property in trust for the benevolent fund of the Institution of Civil Engineers. The late Mr. Linn's estate has been valued at 16,989*l* 9*s* 4*d* gross, and the legacy to the Institution of Civil Engineers seems likely to amount to 12,000*l* or 13,000*l*.

Mr. R. Norman Shaw, R.A., and Mr. G. F. Bodley, R.A., accepted last week the invitation of the Liverpool Cathedral Committee to act as their architectural advisers in the preliminary selection of architects and in the ultimate selection of a design for the Liverpool Cathedral.

The Bill authorising the laying of an electric tramway along the Embankment from Westminster to Blackfriars has passed the second reading of the House of Commons.

Mr. B. Andrew Little will read a paper on May 27 before the Society of Designers on "Design, its Demand and Supply in English History."

Two Alternative Routes are being surveyed in Kent for the purpose of a double-line electric railway between London and Dover. One route is via Maidstone and the other via Chatham.

The Local Government Board have refused the application of the Parish Councils of Freshwater and Totland to borrow 24,500*l* to carry out the drainage scheme of Messrs. Bennett & Masters. The Board recommends that the plans of Mr. Chatterton, M.I.C.E., be adopted by the Rural District Council.

The Annual General Court of the Incorporated Society for Building Churches will be held at the Church-house, Deans Yard, Westminster Abbey, on May 15, when the Bishop of London has consented to preside.

An Exhibition of black-and-white drawings by members of the *Punch* staff will be opened at the Woodbury Galleries, 37 New Bond Street, W., on May 5, the whole of the proceeds derived from admissions, by the kind consent of the proprietors of the gallery, being devoted to the funds of the Hospital for Sick Children, Great Ormond Street, Bloomsbury, W.C.

Professor Kuno Meyer will deliver to-morrow at Alexandra College, Dublin, the first of three lectures founded as a memorial to the late Miss Margaret Stokes. He will treat of the civilisation of Ireland, Pagan and Christian, from 4000 to 800 A.D.

Mr. Charles Davidson, who was one of the oldest members of the Royal Water-Colour Society, died on Saturday last in his eighty-first year.

M. E. Deshayes has delivered a lecture in the Musée Guimet, Paris, on "Fantastic Animals in Ancient Chinese Art."

The Plumbers' Company will confer the honorary freedom upon Mr. Andrew Carnegie at the Guildhall on May 14, in recognition of his munificent gifts for the promotion of education among all classes of the community. The presentation will be made in the Council Chamber at the Guildhall.

The Chantilly Museum, which was presented to France by the late Duc d'Aumale, will be opened gratuitously on Sunday and Thursday in each week until October 12.

The Bishop of London dedicated on Saturday All Saints mission church, Pentonville. The old church-building was formerly a cowshed. The new building was designed by Mr. R. A. Briggs, F.R.I.B.A., and built by Messrs. Campbell, Smith & Co., Ltd. The crypt is a gymnasium, and still shafts have been used instead of brick or stone columns for the supports of the roof. No expense has been incurred in decoration.

Mr. W. G. Wilson, A.R.I.B.A., announces that, requiring larger offices owing to the extension of his practice involved in his taking over the business of Mr. Edmund M. Bowyer, he has removed from Staples Inn to 24 Hart Street, Bloomsbury, W.C.



















*The Architect*, April 25<sup>th</sup> 1902.



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**PARR'S BANK, LIVERPOOL: TELLING ROOM. DETAILS.**

R. NORMAN SHAW, R.A., and  
Messrs. WILLINK & THICKNESSE, } Architects.



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"WESTOVER," MILFORD-ON-SEA.

ARNOLD B. MITCHELL, F.R.I.B.A., Architect.

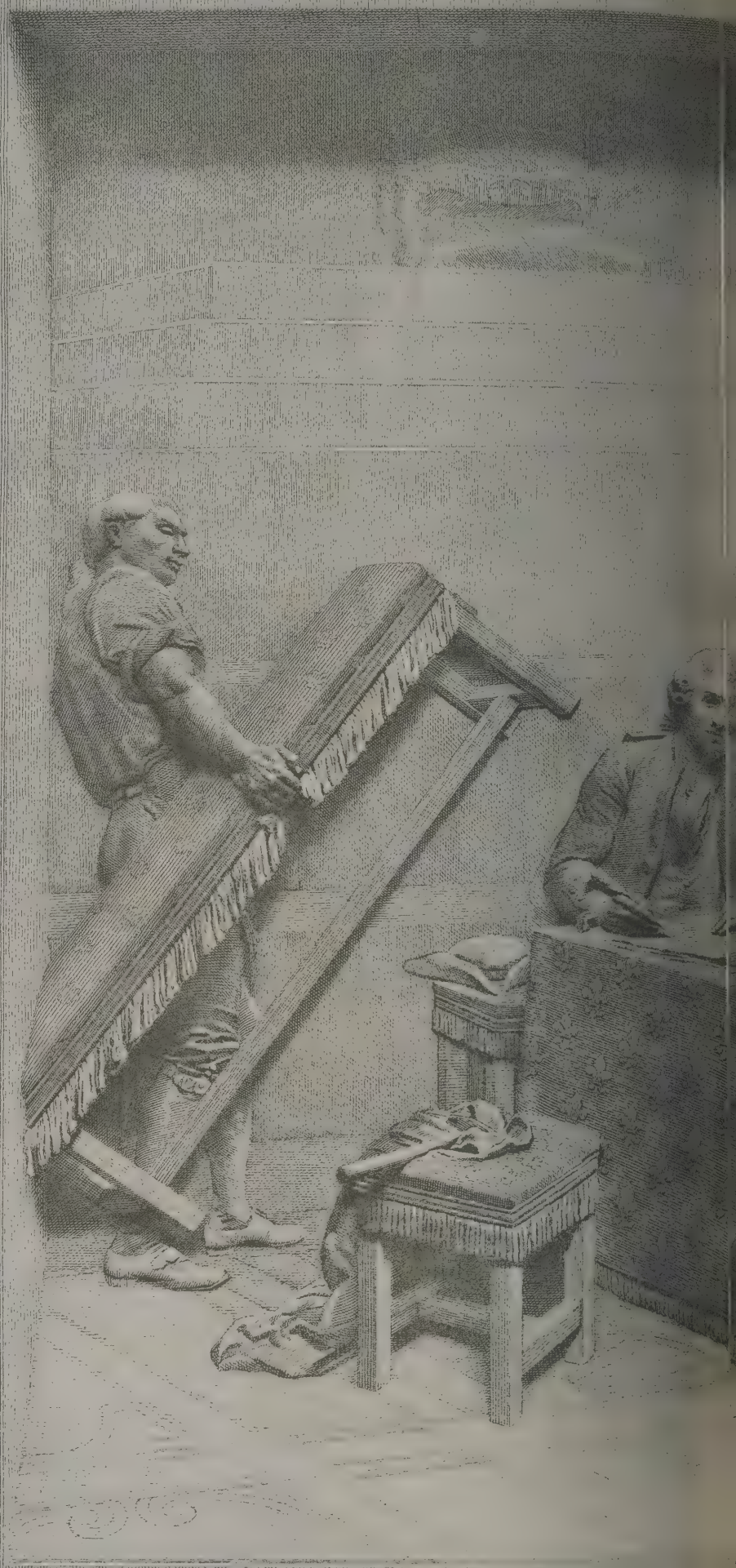


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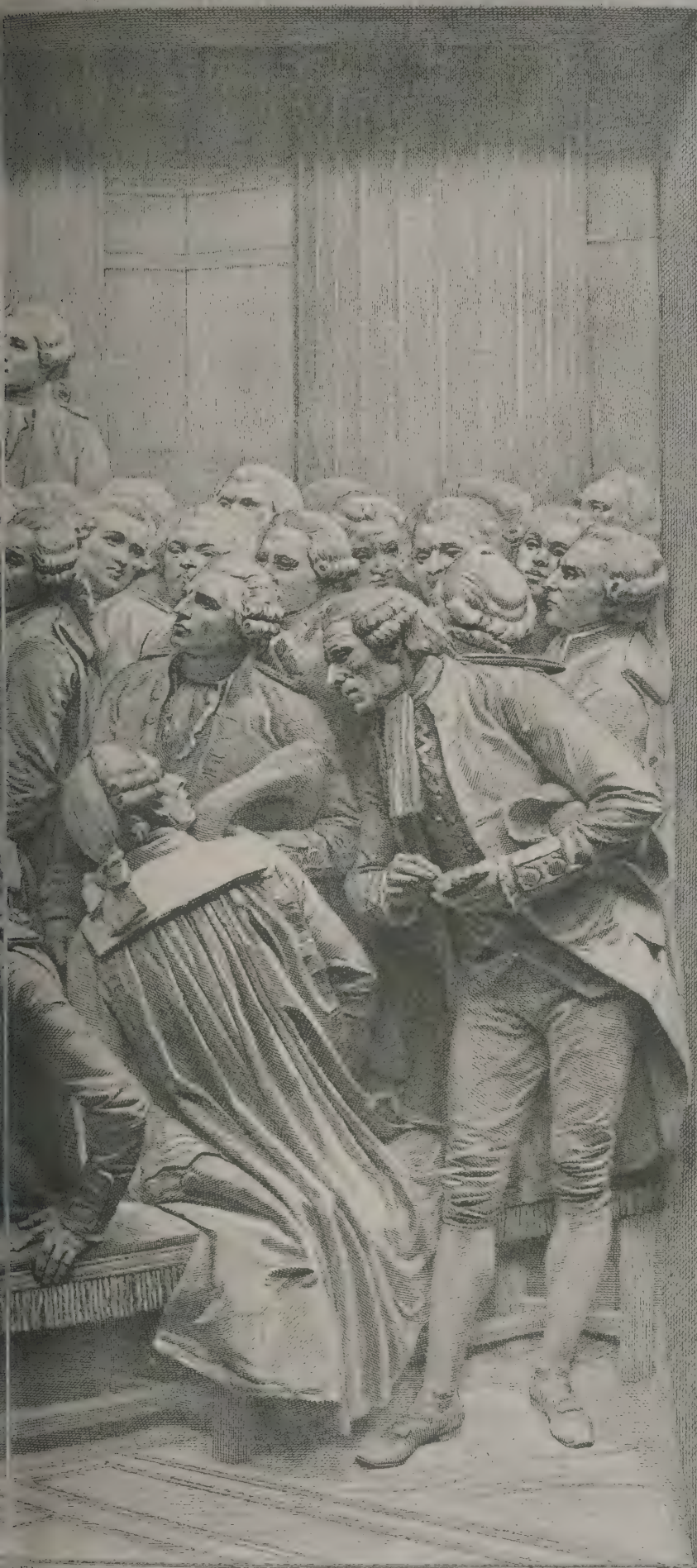


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M. PABEAU REPLYING TO M. DE DREUX-BREZE.  
FROM THE BAS-RELIEF IN THE CHAMBRE DES DÉPUTÉS, PARIS.  
BY THE LATE JULES DALOU.



# THE Architect and Contract Reporter.

## EDITORIAL NOTICES.

*view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*Authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**AUSTRALIA.**—May 1.—Designs are invited from sculptors a memorial statue of Her late Majesty in marble or bronze. Information can be obtained at the office of the Agent-General for the State of Victoria, 15 Victoria Street, West-  
minster.

**COVE.**—Designs are invited by the board of management the L. & S.-W. railway servants' orphanage for a building (double-fronted) to accommodate 150 children (boys and girls). H. G. Warne, secretary, Jeffrey's Road, Clapham, S.W.

**HARROGATE.**—May 14.—Designs required for a new town hall. Premiums, 150*l.*, 100*l.* and 75*l.* Mr. F. Bagshaw, town engineer, Harrogate.

**HARTSHILL.**—June 16.—The committee of the North Staffordshire infirmary and eye hospital, Hartshill, Stoke-upon-Trent, invite designs for a home for nurses at Hartshill, Stoke-Trent. Particulars may be obtained on application to Mr. Herbert E. Boyce, secretary and house governor.

**KNARESBOROUGH.**—June 1.—The Harrogate and Knareborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital at Thistle Hill, Knareborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

**LEEDS.**—Designs are invited for the decoration and illumination of the exterior of the Town Hall, Leeds, to include flags, bunting and all fixtures, for which the cost must not exceed 200*l.* Mr. W. J. Jeeves, town clerk, Town Hall, Leeds.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**MEXBOROUGH.**—May 1.—The committee of the Mexborough Montagu Hospital invite plans for the erection of an accident hospital for both sexes, for the treatment of thirty patients, with the needful nurses and servants' accommodation. Premiums of 25*l.* and 10*l.* are offered, the premium awarded to merge in the commission. Mr. C. Brumpton, secretary, Fern Villa, Mexborough, near Rotherham, Yorkshire.

**SCOTLAND.**—April 30.—Designs are invited for a branch library for the Anderston district, Glasgow. Sir J. D. Marwick, town clerk, Glasgow.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

**YORK.**—May 1.—Designs are invited for a Memorial to the late Queen Victoria to be placed in the Guildhall, York. The design must include a representation of Her Majesty, and be accompanied by an estimate of the cost of the work complete, such cost not to exceed 1,000*l.* A prize of 50*l.* (to merge in the commission) will be given for the accepted design. Mr. W. H. Andrews, town clerk, Guildhall, York.

## CONTRACTS OPEN.

**ASPATRIA.**—May 1.—For erection of two dwelling-houses at Aspatria, Cumberland. Mr. R. Berwick, architect, 35 Lawson Street, Aspatria.

**BARNSELY.**—April 29.—For labour and materials required in wiring and for providing and fixing the necessary electrical fittings to the Kendray hospital, the extent of which will probably be equivalent to 300 sixteen candle-power lights. Mr. J. Henry Taylor, borough surveyor, the Manor House, Barnsley.

**BARNSELY.**—April 30.—For erection of four houses in Sheffield Road, Worsborough. Mr. Arthur Whitaker, architect, Worsborough Bridge.

**BARNSELY.**—April 30.—For laying about 1½ miles of cast-iron socket pipes, 8 inches and 6 inches diameter. Mr. Henry Horsfield, town clerk, Barnsley.

**BEXLEY HEATH.**—April 28.—For the supply of tramway rails and accessories, and the supply and erection of engines, alternators, dynamos, &c. Mr. T. G. Baynes, clerk, Public Hall, Bexley Heath.

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**BLACKBURN.**—April 30.—For erection of premises in Darwen Street, Blackburn, for the Lancashire and Yorkshire Bank, Limited. Messrs. Stones & Stones, architects, 10 Richmond Terrace, Blackburn.

**BRADFORD.**—For erection of a branch bank, offices, &c., at Great Horton. Messrs. Jackson & Priestman, architects, Exchange Buildings, Bradford.

**BRADFORD.**—May 5.—For alterations and additions to the Lorne Street Board school, Wakefield Road, Bradford. Mr. Thos. Garbutt, clerk, School Board office, Manor Row, Bradford.

**BRADFORD.**—April 28.—For erection of litho printing works, Chapel Street and Scoresby Street, Bradford. Mr. Abraham Sharp, architect, Pearl Assurance Buildings, Market Street, Bradford.

**BRADFORD.**—April 29.—For erection of boiler-house and engine-house, with engine bed and boiler settings, &c., at Legrams Mills, Bradford. Messrs. Moore & Crabtree, architects, York Chambers, Keighley.

**BRIDGEND.**—May 2.—For erection of new kitchen, laundry, water-tank, boiler-house, &c., at the workhouse, Bridgend. Mr. P. J. Thomas, architect, Bridgend.

**BRISTOL.**—April 28.—For erection of school premises at Stillhouse Lane, Bedminster. Mr. W. L. Bernard, architect, St. Stephen's Chambers, Baldwin Street, Bristol.

**BURTON-UPON-TRENT.**—May 5.—For the following buildings and works, for the Corporation:—Labourers' dwellings; (contract No. 4) sewerage and making-up street about 150 yards in length; (5) erecting a block of 38 cottages; fire-brigade station and dwellings, new street, highways, &c., dépôt, Park Street, comprising stables for 12 horses, sheds, &c., and dwelling-houses; reconstructing Horninglow Canal bridge (1) brickwork, (2) steelwork. Mr. George T. Lynam, borough surveyor, Burton-on-Trent.

**CALLINGTON.**—May 7.—For erection of a Bible Christian chapel, Callington, Cornwall. Rev. J. Datson, Launceston Road.

**CHADWELL HEATH.**—May 3.—For erection of farm buildings at the Council's asylum, Chadwell Heath, Essex. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

**CHARMINSTER.**—May 22.—For erection of a house for private patients on land adjoining the county asylum, near Charminster, Dorset. Mr. George T. Hine, architect, 35 Parliament Street, S.W.

**CHELMSFORD.**—May 1.—For erection of a pair of cottage near the railway station, Wickford, Essex. Mr. Frank Whitmore, architect, Chelmsford.

**CHELMSFORD.**—April 28.—For repairs, painting, &c., at the union-house, Wood Street. Mr. W. W. Duffield, clerk to the Guardians, 95 High Street, Chelmsford.

**CHESTERFIELD.**—May 8.—For erection of new stores, &c. at West Bars, Chesterfield. Mr. Geo. Haslam & Son, architects, Euclid House, Ilkeston.

**COLCHESTER.**—May 7.—For extension of the boiler and engine houses at the electric-light station, Osborn Street. Mr. Herbert Goodyear, borough engineer, Town Hall, Colchester.

**COVENTRY.**—May 1.—For erection of tables, seats, band stand, &c., in the volunteer drill-hall, Queen Victoria Road, for the dinner to be given to old people on June 26. Mr. J. E. Swindlehurst, St. Mary's Hall, Coventry.

**DERBY.**—April 30.—For erection of Wesleyan Sunday schools, Ashbourne Road, Derby. Mr. F. S. Antliff, architect, Draycott.

**DERBY.**—May 10.—For erection of a detached block for thirty patients at the asylum. Mr. B. S. Jacobs, architect, Lincoln's Inn Buildings, Bowlalley Lane, Hull.

**DONCASTER.**—For execution of a scheme of main sewerage and sewage disposal for the towns of Conisbrough and Denaby. Messrs. D. Balfour & Son, civil engineers, 3 St. Nicholas Buildings, Newcastle-on-Tyne.

**DORCHESTER.**—April 28.—For erection of a farmhouse buildings, cottages, &c., at Dorchester. Tenders to be sent to Mr. Wm. Proudfoot, Duchy of Cornwall office, Shepton Mallet.

**EASINGWOLD.**—May 2.—For erection of detached dwelling house at Uppleby, Easingwold, Yorks. Mr. J. Francis Todd, architect, Uppleby, Easingwold.

**ESH WINNING.**—April 28.—For erection of a branch stor at Esh Winning, near Waterhouses, Durham. Messrs. Wm. & T. R. Millburn, architects, Sunderland.

**ETWALL.**—April 30.—For erection of an isolation hospital at Etwall, Derby. Mr. Arthur Eaton, architect, 6 St. James Street, Derby.

**EXETER.**—May 1.—For rebuilding a portion of the Seaton Beach hotel. Messrs. E. H. Harbottle & Son, architects, County Chambers, Exeter.

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FALMOUTH.—May 3.—For erection of boating cottage at fishing, Falmouth. Mr. Horace W. Collins, architect, Church Street, Falmouth.

FEATHERSTONE (YORKS).—For sewerage works in the tract, including sewer trenching, sanitary pipes, bricks and four, manholes, flushing chambers, &c. Mr. Fredk. B. Thera, engineer and surveyor, District Council Offices, Featherstone.

FERRYHILL.—April 30.—For erection of ninety-six houses Messrs. Bolckow, Vaughan & Co., Ltd., of Middlesbrough, the site of their Dean and Chapter Colliery, Ferryhill, Durham. Messrs. Forster Brown & Rees, Guildhall Chambers, London.

GOOLE.—May 7.—For erection of a block of offices at Goole, for the Goole Steam Shipping Company, Ltd. Mr. George W. Atkinson, architect, 1 Mark Lane, Leeds.

HARRINGTON.—April 28.—For alteration and renovation of the Wesleyan church and Sunday school, Harrington, Cumberland. Messrs. W. G. Scott & Co., architects, Workington.

HARRINGTON.—May 2.—For pulling-down and clearing away the present brick culvert and building a new brick barrel culvert under the Somersby Road, in the parish of Harrington, Cumberland. Mr. G. Beaumont Walker, clerk, Rural District Council, Spilsby.

HARRINGTON.—May 5.—For alterations and additions to dwelling-house at Eller Vale, Harrington, Cumberland. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

HASTINGS.—May 2.—For erection of an iron building at fish market, Hastings. Mr. Ben. F. Meadows, town clerk, 100 High Street, Hastings.

HIGHAM FERRERS.—For erection of two semi-detached houses at Higham Ferrers, Northants. Mr. George Hall, architect, Higham Ferrers.

HUDDERSFIELD.—April 29.—For erection of seven blocks of hospital buildings and boundary walls at Spring Hill, Huddersfield. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

IRELAND.—April 29.—For erection of a rectory at Ballymore, Clondahorkey, co. Donegal. Mr. R. Eccles Buchanan, architect, Castle Street, Londonderry.

IRELAND.—For erection of new premises for Messrs. Snook & Co., Limerick. Mr. R. Fogerty, architect, Limerick.

IRELAND.—April 30.—For erection of two dwelling-houses on Lancaster Quay, Cork. Messrs. W. H. Hill & Son, architects, 28 South Mall.

IRELAND.—April 30.—For erection of fifteen labourers' cottages, with out-offices, piers and gates, and also for fencing thirty-four plots in the rural district, Kinsale. Mr. R. Evans, architect, 53 South Mall, Cork.

IRELAND.—April 30.—For erection of a villa at Drumbo, co. Down. Mr. Henry Seaver, architect, 128 Royal Avenue, Belfast.

IRELAND.—May 10.—For completing the tower and executing other works at Durrow Church, Queen's County. Mr. W. H. Byrne, architect, 20 Suffolk Street, Dublin.

KEIGHLEY.—April 29.—For extension and alterations to Oakworth Road House, Keighley. Messrs. W. H. & A. Sugden, architects, Devonshire Buildings, Keighley.

KEIGHLEY.—April 29.—For outside pointing of the new pavilion at the union infirmary, Keighley. Mr. Geo. E. Spencer, clerk to Guardians, Keighley.

KENDAL.—For alterations and new front to the shop premises, 48 Highgate, Kendal. Mr. John Hutton, architect, Kendal.

LEEDS.—For erection of caretaker's house at Wesleyan chapel, Waterloo Road, Hunslet. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

LEEDS.—For erection of two houses and two shops, Dewsbury. Messrs. T. A. Buttery & S. B. Bird, architects, Albion Walk, Leeds.

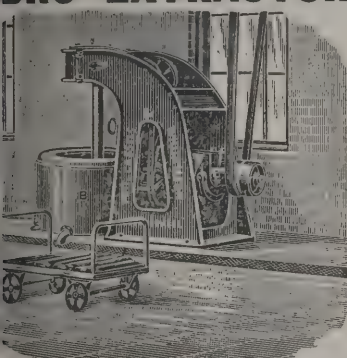
LEEDS.—For erection of Wesleyan Sunday school premises at Apperley Bridge. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

LEEDS.—May 8.—For foundations and side walls for five greenhouses at Roundhay Park. Particulars may be obtained at the city engineer's office, Leeds.

LEEDS.—April 30.—For paving and flagging the following streets:—Delph Lane, Lucas Street, Back Lucas Street, Melville Grove, Golcar Place, Golcar Street, Hawes Place, Hawes Terrace, Hawes Street, Hawes Mount and Back Hawes Mount, in the township of Leeds, in the city of Leeds. Plans and specifications may be seen at the City Engineer's office, Municipal Buildings.

LONDON.—May 8.—For relaying of the whole of the floors of the wards of the workhouse infirmary in St. Dunstan's Road,

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**LONG EATON.**—For erection of waggon-building shop, saw-mill, steel waggon erecting shop, dynamo-room, boiler-house, chimney 120 feet high, messroom, &c., at Manor House Works, Long Eaton. Mr. E. R. Ridgway, architect, Long Eaton, near Nottingham.

**LOW FELL, & C.**—April 30.—For additions and improvements to station buildings at Low Fell, Lamesley and Birtley, for the North-Eastern Railway Company. Mr. William Bell, architect, Central Station, Newcastle-on-Tyne.

**LUTTERWORTH.**—April 26.—For erection of factory and finishing department at Lutterworth. Messrs. Barrowcliff & Allcock, architects, Loughborough.

**MANCHESTER.**—April 28.—For erection of an electricity sub-station at George Leigh Street, Oldham Road, Manchester. Particulars may be obtained at the office of the City Surveyor, Town Hall.

**MANCHESTER.**—April 30.—For erection of an electricity sub-station at Withington, Manchester. Particulars may be obtained at the office of the City Surveyor, Town Hall.

**MARLOW.**—April 29.—For repairs to woodwork, &c., and cleaning down and repainting the whole of painted work on the Marlow suspension bridge. Mr. R. J. Thomas, county surveyor, Marlow, Bucks.

**MIDDLESBROUGH.**—April 30.—For erection of the new grand opera house, Middlesbrough. Messrs. Hope & Maxwell, architects, Trinity Buildings, New Bridge Street, Newcastle-on-Tyne.

**NEWLYN EAST.**—April 30.—For erection of a stable, cattle and root-house and storehouse at Gummow's Shop, Newlyn East, Cornwall. Mr. George Gow, Tregothnan Office, Truro.

**NORWICH.**—May 5.—For retaining wall in brickwork and concrete, and supplying and fixing thereon cast-iron standards and wrought-iron rails at Riverside Road, Norwich, and for the maintenance thereof for six months. Mr. Arthur E. Collins, city engineer, &c, Guildhall, Norwich.

**NOTTINGHAM.**—For erection of factory and offices, Chesterfield Street, Carlton, near Nottingham. Mr. John H. Savidge, architect, Brougham Chambers, Wheeler Gate, Nottingham.

**OTLEY.**—May 2.—For carting, laying and jointing of about seven miles of 10-inch cast-iron pipes, with sluice valves,

scour valves, air valves, &c. Mr. John Waugh, engineer to the Council, Sunbridge Chambers, Bradford.

**PARKSTONE.**—For rebuilding The Beehive, Salterns, Parkstone, Dorset. Messrs. H. E. Hawker & Mitchell, architects, Bournemouth.

**PONTEFRAC.**—April 28.—For erection of two workmen's dwellings at Roall waterworks Mr. A. Oddy, borough surveyor, Municipal Offices, Pontefract.

**PONTYPOOL ROAD.**—May 13.—For construction of a new transfer shed at Pontypool Road, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

**POPLAR.**—April 30.—For erection of a shelter, conveniences, &c., at Island Gardens. Particulars can be obtained at the General Section, Architect's Department, County Hall, Spring Gardens, S.W.

**RIPON.**—May 1.—For erection of a Masonic lodge, &c., in Skellgate. Mr. Wm. Steel, secretary to building committee, Blossomgate, Ripon.

**SALFORD.**—April 28.—For alterations to the Royal Technical Institute. Mr. H. Lord, architect, Deansgate, Manchester.

**ST. AGNES.**—May 3.—For erection of a residence at St. Agnes, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

**ST. PANCRAS.**—May 8.—For erection of a receiving home for children within the parish. Mr. A. E. Pridmore, 2 Broad Street Buildings, E.C.

**ST. STEPHEN'S-BY-SALTASH.**—May 5.—For plastering the New inn, St. Stephen's, Cornwall. Mr. H. Bowden, builder, Cross Park, St. Stephen's-by-Saltash.

**SCOTLAND.**—April 28.—For erection of a villa for patients at Sunnyside, near Montrose, in connection with the Montrose Royal Asylum. Mr. John Sim, architect, 160 High Street, Montrose.

**SCOTLAND.**—April 28.—For erection of a Gothenburg public-house, shops and dwelling-houses at Lumphinnans. Mr. William Birrell, architect, 200 High Street, Kirkcaldy.

**SCOTLAND.**—April 28.—For supply to the city of Edinburgh of electricity meters for twelve months from May 15. Mr. Thomas Hunter, town clerk, City Chambers, Edinburgh.

**SCOTLAND.**—April 29.—For warehouse at Glendullan-Glenlivet Distillery, Dufftown. Mr. Charles C. Doig, architect, Elgin.

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SCOTLAND.—April 30.—For extension and renovation of parish church of Glass, Aberdeenshire. Mr. John Robertson, architect, Inverness.

SCOTLAND.—May 2.—For alterations and additions to the elling-houses at Newlands and North Bog, Fintray. Messrs. Alex. Stronach, jun., & Son, advocates, 20 Belmont Street, Aberdeen.

SCOTLAND.—May 7.—For construction of three buttresses cement concrete, pitching, stairs, &c., at the sea-wall at the foot of Craighall Road, Leith. Mr. T. B. Laing, town clerk, Leith.

SCOTLAND.—May 7.—For supply and erection of a 20-ton electrically-driven overhead crane, with the necessary supporting columns and girders, at the Dee village electricity works, Aberdeen. Mr. J. Alex Bell, city electrical engineer, Cotton Street, Aberdeen.

SHEFFIELD.—For erection of a Congregational church at Sheffield. Messrs. Moulds & Porritt, architects, 77 King Street, Manchester.

SOUTHMOLTON.—May 1.—For erection of a dwelling-house North Street, Southmolton, Devon. Mr. J. E. Densem, architect, King Street, Southmolton.

TADCASTER.—May 3.—For works connected with the water-supply of Tadcaster East and West, consisting of about 100 lineal yards of 7-inch and 3,000 yards of 3-inch cast-iron pipe, valves, hydrants and pumping-station house, &c. Messrs. Thorman & Thorman, engineers, Tadcaster.

TROWBRIDGE.—May 6.—For erection of a machine bakery Court Street, Trowbridge. Mr. Walter W. Snailum, architect, Church Street, Trowbridge.

UTTOXETER.—May 3.—For erection of wood or canvas and iron fencing (as may be determined), shedding, with loose-boards or partitions for stock and implements, and a grandstand, &c., in the showyard at Uttoxeter, Staffs, for the Staffordshire Agricultural Society's Exhibition. Mr. J. P. Jones, secretary, Newcastle, Staffs.

UXBRIDGE.—May 10.—For erection of Sunday schools and other buildings. Messrs. Heron & Bellairs and Wm. L. Eves, architects, 54 High Street, Uxbridge.

VENNTONLEAGUE.—May 3.—For proposed enlargement and renovation of the United Methodist Free church and erection of Sunday school at Venntonleague, near Hayle, Cornwall. Mr. Sampson Hill, architect, Green Lane, Redruth.

WALES.—April 28.—For erection of 20 cottages near Coombs Cross, Garndiffaith. Mr. C. H. Wilcox, secretary, Co-operative Society, Garndiffaith.

WALES.—April 28.—For erection of a mixed and infant's school to accommodate about 368 children, with caretaker's house and other works, at Fleur-de-Lis, in the county of Monmouth. Mr. R. L. Roberts, The Firs, Abercarn, Mon.

WALES.—April 29.—For erection of Board school buildings at Cwmystwyth, Llanfihangel-y-Croyddin. Mr. J. A. Jones, architect, 7 Queen's Terrace, Aberystwyth.

WALES.—April 29.—For erection of twenty-two cottages at Aberbeeg. Mr. Geo. C. Hillard, architect, Market Chambers, Abertillery.

WALES.—May 1.—For erection of twenty-two double cottages on the Gelli Crug Estate, Abertillery. Mr. Geo. C. Hillard, architect, Market Chambers, Abertillery.

WALES.—May 2.—For erection of offices, agent's residence, &c., in Bradley Road, Wrexham. Messrs. Davies & Moss, architects, 2 Temple Row, Wrexham.

WALES.—May 2.—For erection of a residence on the Fairwater Road, Llandaff. Mr. G. E. Halliday, architect, Cardiff.

WALES.—May 3.—For erection of a large residence, with stabling, potting-sheds, &c., also the formation of carriage-drive, footpaths, and garden and boundary walls at Sully, near Cardiff. Messrs. Veall & Sant, architects, Cardiff.

WALES.—May 5.—For erection of a dwelling-house and outbuildings at Dyffryn Mill, near Aberporth. Mr. D. Morris, land surveyor, Cardigan.

WALES.—May 5.—For additions to the Duffryn Co-operative Stores, Commercial Street, Mountain Ash. Messrs. Morgan & Elford, architects, 1 Jeffrey Street, Mountain Ash.

WALES.—May 13.—For erection of a school at Mynydd-cerrig, Llanddarog. Mr. David Jenkins, architect, Llandilo.

WALLINGTON.—May 5.—For erection of seven shops and houses at Wallington, Surrey. Messrs. Warran & Stupart, architects, 385 Green Lanes, Harringay, N.

WALSALL.—May 12.—For alterations and additions to present schools, Bath Street, Walsall. Messrs. Bailey & McConnal, architects, Bridge Street, Walsall.

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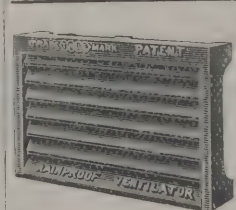
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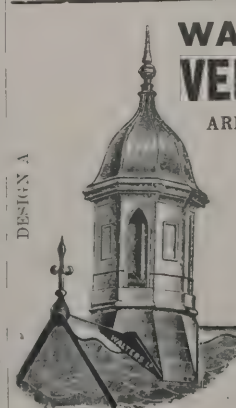
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**WESTON-SUPER-MARE.**—May 6.—For erection of an additional ward, &c., at the fever hospital, Uphill Drove Road, Weston-super-Mare. Mr. Hugh Nettleton, surveyor, Town Hall, Weston-super-Mare.

**WHITLEY BAY.**—April 30.—For rebuilding premises in Whitley Road and Esplanade, Whitley Bay, Northumberland. Mr. F. R. N. Haswell, 77 Tyne Street, North Shields.

**WINDHILL.**—April 28.—For erection of six terrace houses at Park Terrace, Windhill, Yorks. Mr. Wm. Wilcock, architect, 9 Leeds Road, Bradford.

**WORTLEY.**—May 1.—For laying 2,147 yards of 12-inch and 9-inch stoneware pipe sewers, with usual manholes, &c., and also the laying-out of about 2¼ acres of land as a sewage farm, the construction of settling and sludge tanks, fencing, road making, store sheds, &c. Mr. William Dransfield, clerk to the Rural District Council.

AN interesting discovery has been made at the island of Capri consisting of, it is supposed, an underground vault in which the Emperor Tiberius used to confine the victims of his displeasure prior to their being thrown into the sea. The walls are covered with inscriptions, some of which go to show that among those immured subsequently in the prison were the sister and wife of the Emperor Commodus.

A NEW Church house was opened at Wokingham, Berks, on the 9th inst. The new building is situated in the East Hampstead Road, not far from All Saints Church, and is a commodious structure, built from the designs of Messrs. Joseph Morris & Son, architects, Reading, by Mr. E. C. Hughes (the present mayor of Wokingham), in the most thorough and substantial style. The block contains as its principal feature a central hall about 45 feet by 30 feet, which has a dado of specially glazed and coloured bricks, an open hammer-beam roof and pitch-pine wood-block floor. The heating is with hot water by means of radiators, and there are also fireplaces for open fires, lined with salt-glazed brick on the Teale principle. All the woodwork and joinery is stained and varnished. Other accommodation comprises a committee-room, a tea-making room with stores, and lavatories and other conveniences. A covered porch leads to the offices, &c., and the main entrance to the body of the hall, for meetings, &c., is by an oaken porch. A caretaker's cottage and workmen's refreshment room are to be erected on an adjacent site which has been presented by the rector.

## TENDERS.

### AMBLE.

For erection of a club at Amble. Mr. GEORGE REAVELL, jun architect, Alnwick.

R. CARSE & SON, Amble, Acklington, Northumberland (*accepted*) . . . . . £1,710 6

### BELFORD.

For the laying of a 7 in. sewer at Sea Houses, Belford, Northumberland. Mr. J. ROMANS LAKE, surveyor.

J. Shannon . . . . . £96 17

J. DAVIDSON, Sea Houses (*accepted*) . . . . . 86 2

G. McLaren . . . . . 79 6

### BISHOP AUCKLAND.

For ventilating certain sewers in Witton-le-Wear, and taking up, deepening and relaying the existing sewers at Coundon Grange. Mr. C. JOHNSON, surveyor.

#### Ventilation of sewers at Witton-le-Wear.

Walton Bros. . . . . £76 10

G. H. Bell . . . . . 62 2

P. Frater . . . . . 56 9

G. Hetherington . . . . . 52 18

#### Extension of sewer at Coundon Grange.

Walton Bros. . . . . 170 0

G. H. Bell . . . . . 128 17

G. Hetherington . . . . . 118 15

P. Frater . . . . . 114 3

### BRADFORD.

For construction of a road, 26 feet wide and about six miles in length, with its cuttings, embankments, culverts, drains, boundary fences, gates, &c., and the erection of three masonry bridges to carry the road over the river Nidd, Limley Gill and Foggyshaw Gill.

HOLME & KING, Liverpool (*accepted*) . . . . . £20,451 8 2

### BRAITHWAITE.

For laying a cast-iron water-main at Braithwaite, near Keswick. Mr. J. B. WILSON, surveyor.

J. Welling . . . . . £78 10

Fisher & Co. . . . . 57 10

J. H. Dunbobbin . . . . . 48 0

J. B. Banks & Co. . . . . 40 16

J. J. BOUSTEAD, Braithwaite (*accepted*) . . . . . 39 0

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erection of a Bible Christian chapel at Brea, Camborne, Cornwall.			
Skewes . . . . .	£175	6	0
engilly . . . . .	175	5	6
MOYLE, Chacewater, near Truro ( <i>accepted</i> ) . . . . .	170	0	0
Willoughby . . . . .	155	0	0

**BRIGHTON.**

enlargement of the Ditchling Road school. Messrs. THOMAS SIMPSON & SON, surveyors, 16 and 17 Ship Street, Brighton.			
R. Lockyer . . . . .	£2,059	0	0
neral Builders, Ltd. . . . .	1,986	0	0
Barnes . . . . .	1,919	0	0
Taylor . . . . .	1,870	0	0
tin & Evershed . . . . .	1,809	0	0
OLLOWAY BROS., A, Dyke Road Drive, Brighton ( <i>accepted</i> ) . . . . .	1,791	4	9

**BROMLEY.**

ewage works in Waldo Road.			
H. Wheeler . . . . .	£350	0	0
eeter Bros. . . . .	348	7	0
wrence & Thacker . . . . .	260	8	6
C. Soan . . . . .	250	12	4
Woodham & Sons . . . . .	228	19	6
we's Patent Sanitary Pipe Joint Syndicate . . . . .	214	0	0
lson, Border & Co. . . . .	209	15	0
G. PAGE, 19 Lyndon Road, Belvedere ( <i>accepted</i> ) . . . . .	161	9	6
street works in Freeland's Road.			
wrence & Thacker . . . . .	£297	4	6
MOWLEM & CO., Grosvenor Wharf, Westminster, S.W. ( <i>accepted</i> ) . . . . .	286	6	6
surface-water drainage works in Burnt Ash Lane.			
H. Wheeler . . . . .	£180	12	6
eeter Bros. . . . .	177	3	6
C. Soan . . . . .	172	17	6
Woodham & Sons . . . . .	153	4	6
wrence & Thacker . . . . .	138	9	0
lson, Border & Co. . . . .	137	11	6
G. PAGE, 19 Lyndon Road, Belvedere, Kent ( <i>accepted</i> ) . . . . .	122	10	0

**CHIPPING NORTON.**

For construction and erection of a galvanised iron roof to the large open reservoir at the water-tanks in the borough.			
St. Pancras Ironworks . . . . .	£663	0	0
Allen & Co. . . . .	633	0	0
Humphreys, Ltd. . . . .	623	0	0
Bruce & Still, Ltd. . . . .	519	0	0
W. Hayward & Sons, Ltd. . . . .	480	0	0
Lightfoot & Ireland . . . . .	475	0	0
B. Higham . . . . .	469	0	0
F. Braby & Co. . . . .	462	0	0
W. Jones & Sons . . . . .	457	0	0
G. P. Banbury . . . . .	449	10	0
E. G. Raybould & Co. . . . .	430	0	0
J. Burden . . . . .	429	12	0
E. C. & J. Keay, Ltd. . . . .	428	0	0
Hill & Smith . . . . .	420	0	0
Steavenson & Co. . . . .	410	0	0
Brownley & Murray, Ltd. . . . .	404	0	0
W. Bain & Co. . . . .	400	0	0
J. O. Brettell . . . . .	398	11	6
E. F. Blakeley & Co. . . . .	392	0	0
Davis Bros. & Co. . . . .	374	0	0
A. G. Ellis . . . . .	372	6	0
Clyde Side Ironworks . . . . .	372	0	0
Norton Bros. & Co. . . . .	352	10	0
Rowell & Sons . . . . .	350	0	0
Cross & Cross . . . . .	333	0	0
WALKER BROS., LTD., Walsall ( <i>accepted</i> ) . . . . .	322	0	0

**CLAYTON.**

For erection of a warehouse at Oak Mills, Clayton, Yorks. Messrs. MILNES & FRANCE, architects, 99 Swan Arcade, Bradford.

*Accepted tenders.*

I. Rushworth, Clayton, mason.  
T. Ackroyd, Buttershaw, joiner.  
H. Barrett & Sons, Bradford, ironfounder.  
A. & J. Walton, Clayton, plumber.  
J. Smithies, Great Horton, slater.  
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## CLUTTON.

For erection of school buildings for 340 children and a teacher's residence, Clutton, Somerset. Mr. W. F. BIRD, architect, Midsomer Norton.

S. Dodimead	£5,790	0	0
T. Foster	5,434	0	0
Orchard & Sons	5,177	0	0
Chancellor & Sons	4,980	0	0
Hayes & Son	4,949	0	0
W. Tovey	4,819	10	0
J. Flower	4,071	0	0
Wills & Son	4,000	0	0
E. WALTERS, Bristol ( <i>provisionally accepted</i> )	3,830	0	0

## COCKERMOUTH

For laying of a cast-iron water main at Tallantire. Mr. J. B. WILSON, surveyor.

J. Welling	£277	13	6
Fisher & Co.	277	0	0
J. B. BANKS & Co, Cockermouth ( <i>accepted</i> )	165	14	0

## DRONFIELD.

For making-up Victoria Street and sewerage West Street, Dronfield, Yorks. Mr. T. H. ATKINSON, surveyor, Dronfield.

## Victoria Street.

R. Davinson & Son	£270	0	0
T. Margerrison & Son	243	0	0
F. Margerrison	218	0	0
R. Holmes & Son	215	0	0
R. BINGHAM, Dronfield ( <i>accepted</i> )	210	0	0
J. Glithro	200	0	0

## West Street.

F. Margerrison	31	0	0
R. Holmes & Son	31	0	0
R. Davinson & Son	31	0	0
T. Margerrison & Son	29	0	0
R. BINGHAM ( <i>accepted</i> )	28	0	0
J. Glithro	24	0	0

## GOSPORT.

For putting-in smallpox hospital foundations. Mr. H. FROST, surveyor.

Lane	£63	0	0
Lear	61	10	0
Crood	56	0	0
Dugan	55	0	0
Lowe	39	15	0
C. M. DASH, Gosport ( <i>accepted</i> )	33	9	0

For erection of a toolhouse, &c., at the cemetery.

Middleton & Co.	£30	0	0
C. M. DASH, Gosport ( <i>accepted</i> )	26	12	0

For supply and fixing of about 700 yards of 1 in. wrought-iron unclimbable railing, 5 ft. high. Mr. H. FROST, surveyor.

E. J. RAYBOULD, Workington, 11s. 9½d. per yard, fixing 11d. (*accepted*).

For erection of a fire-station. Mr. H. FROST, surveyor.

Lane Bros.	£1,670	0	0
Dash	1,659	0	0
Dugan	1,650	0	0
Lear & Son	1,639	0	0
J. HUNT, Gosport ( <i>accepted</i> )	1,595	0	0

## HULL.

For erection of a new workhouse infirmary at Patrington. Messrs. RUNTON & BARRY, architects, Savile Chambers, Hull.

Kirkwood	£2,293	0	0
Foley	2,272	0	0
C. Bullock	2,248	0	0
T. Goates	2,227	17	0
G. H. Scorrer	2,097	10	0
J. Kirkwood	2,052	2	0
J. Wilkinson	2,049	12	0
T. Ullathorne	2,030	12	0
J. T. Levitt	2,030	0	0
J. R. Woods	1,985	4	0
H. SERGEANT, Withernsea, East Yorks ( <i>accepted</i> )	1,986	0	0

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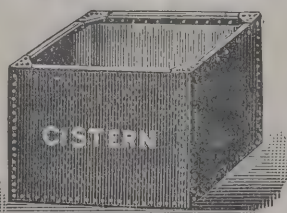
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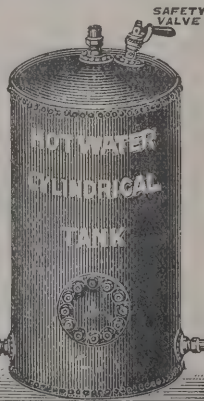
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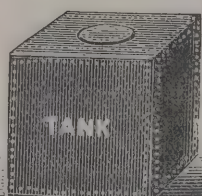


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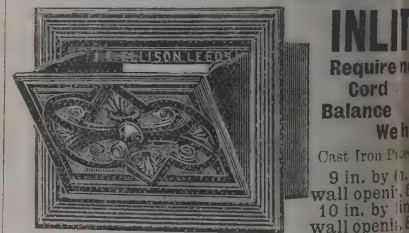
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erection of a junior mixed school for 500 children, with latrines, playsheds, caretaker's house, &c., on the Loxford Hall estate. Mr. C. J. DAWSON, architect, 7 Bank Buildings, Ilford.  
aring & Son . . . . . £9,690 0 0  
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E. Nightingale . . . . . 8,689 0 0  
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For construction of a lean-to shed on the west side of the goods shed on Donegall Quay, Belfast.  
CLYDE STRUCTURAL IRON CO., LTD., Clydesdale Iron-works, Scotstoun, Glasgow (accepted).

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For supplying and fixing in position two Lancashire steam-boilers and work in connection therewith. Mr. E. BUCKHAM, borough engineer.  
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A. T. CATLEY, Lloyd Square, W.C. (accepted).

For reconstruction of portions of combined drainage, Fulham. J. SHIRLEY, 67 Dalling Road, Hammersmith (accepted).

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National Electric Wiring Co., Ltd.	544	10	0
Eastlakes, Ltd.	522	0	0
Rashleigh Phipps & Co.	420	0	0
BUCHANAN & CURWEN, 68 Victoria Street, S.W. (accepted)	380	0	0

For erection of gate porter's lodge and additions to steward's house at the Northern Hospital.

J. Stewart	£765	0	0
B. E. Nightingale	627	0	0
W. Wade	597	0	0
J. Chessum & Sons	530	0	0
Gardner & Hazell	472	0	0
B. Pavay & Son	459	10	0
F. Dupont & Co.	425	0	0
E. H. CRIPPS, Kennington Road, S.E. (accepted)	380	0	0

## LOUGHBOROUGH.

For erection of a house, Herrick Road, Loughborough, Leics. Mr. A. E. KING, architect, Baxter Gate, Loughborough.

W. F. Harding	£1,140	0	0
C. Wheatley & Son	1,114	0	0
A. Faulks	1,065	0	0
J. Hutchinson & Son	1,060	0	0
E. Orton	1,027	0	0

## ROCHDALE.

For sewerage and drainingwork in Bury Road, Castleton Moor, Rochdale. Mr. S. S. PLATT, borough surveyor. R. & T. HOWARTH, Royds Street (accepted).

## NEW BARNET.

For alterations and enlargement of Church of England school. Potter's Road, New Barnet. Mr. F. CHILD, architect, 65-66 Chancery Lane, W.C.

For completing scheme.

J. Stewart	£1,126	0	0
Voller & Goodfellow	1,075	0	0
Wells & Son	975	0	0
Patman & Sons	925	0	0
J. Porter	860	0	0

For new portion.

J. Stewart	845	0	0
Voller & Goodfellow	760	0	0
Patman & Sons	645	0	0
Wells & Son	612	0	0
J. Porter	537	0	0

## SCOTLAND.

For construction of a retort bench, chimney, &c., in connection with new gasworks, Friarton, Perth. FRASER & MORTON, Perth (accepted).

For construction of a storage reservoir and contingent works. Messrs. KYLE & FREW, engineers, 140 West George Street, Glasgow.

J. BAXTER, Kilsyth (accepted).

R. Laidlaw & Son, Ltd., Glasgow (pipes).

For further strengthening west quay wall of West Dock wharf, tie-rods, &c., Burntisland Harbour. Mr. ROBERT HENDERSON, harbour engineer.

D. Pithethly

A. CAMERON, Cockburn Bank, Bonnington Grove, Edinburgh (accepted).

For rebuilding and extension of piers and relative works at Cellardyke Harbour. Mr. W. A. BAIRD LAING, engineer, 13 George Street, Edinburgh.

D. & G. Stratton

A. Cameron

J. Martin

R. C. Brebner & Co.

J. ADAMS & CO, 404 Pollokshaws Road, Glasgow (accepted).

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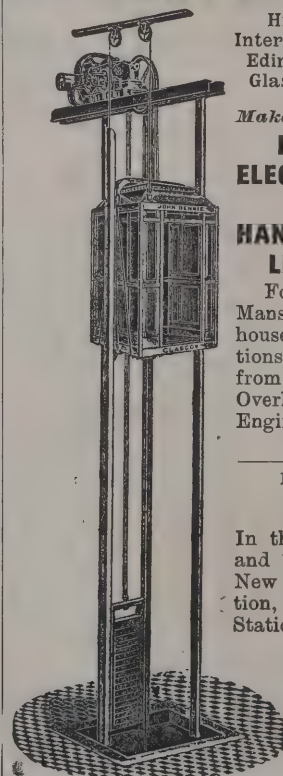
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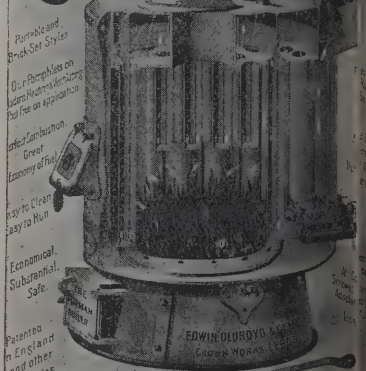
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SCOTLAND—continued.

forming granolithic footways in parts of Pitkerro Road, Dundee. Mr. WM. MACKISON, burgh engineer.			
art's Paving Co.	£202	15	0
Lawless . . . . .	195	5	0
Dgilvie . . . . .	189	16	3
ch & Kilgour . . . . .	177	7	6
McRitchie . . . . .	165	18	9
aburn . . . . .	154	2	11
s & Dand . . . . .	150	0	0
brand . . . . .	145	1	8
McBAIN & SON, Raglan Street, Dundee (accepted)	143	14	0

STOCKTON-ON-TEES

terations and additions at the workhouse. Accepted tenders.			
C. Atkinson, Stockton-on-Tees, Section 1	£1,562	14	4
Brown, The Square, Stockton, Section 2	1,244	0	0

SUNDERLAND.

onstruction of timber quays and concrete retaining walls at Pallion shipyard.			
HUDSON & SONS, St. Mark's Crescent (accepted)	£6,563	0	0

TROWBRIDGE.

restoration of the Baptist chapel, Church Street Mr. WALTER W. SNAILUM, architect, Church Street, Trowbridge.			
Ash . . . . .	£2,573	0	0
yward & Wooster . . . . .	1,995	0	0
Moore . . . . .	1,985	0	0
Linzey . . . . .	1,892	0	0
Colborne . . . . .	1,463	1	0
LONG & SONS, Railway Road, Bath (accepted).	1,838	0	0

WALS.

rection of schools and classrooms, and works connected with same, at the Bethlehem Welsh Congregational chapel, Rhosllanerchrugog.			
Moss . . . . .	£2,500	0	0
Jones . . . . .	2,379	5	0
Roberts . . . . .	2,350	0	0
L. DAVIES, School Street, Rhosllanerchrugog (accepted)	2,347	0	0

WALES—continued.

For alterations to 8 Queen Street, Cardiff. Mr. E. H. BRUTON, architect, Cardiff.			
J. Williams . . . . .	£625	0	0
Price Bros. . . . .	567	0	0
G. COUZENS & Co., Riverside, Cardiff (accepted)	542	15	0

For construction of new cattle markets and appurtenant works, Carmarthen. Mr. F. J. FINGLAH, borough surveyor.			
R. Davies . . . . .	£3,970	0	0
E. Powell . . . . .	3,374	0	0
DAVIES & GRIFFITHS, Pembroke (accepted)	2,777	0	0

For supply of two Babcock & Wilcox water-tube boilers and necessary steam exhaust pipes			
BABCOCK & WILCOX, LTD, Oriol House, Farringdon Street (accepted)	£1,951	10	0

For erection of a Forward Movement hall at Barry. Mr. GEORGE THOMAS, architect, Queen's Chambers, Cardiff.			
Lloyd & Tape . . . . .	£3,057	0	0
J. Allen & Sons . . . . .	2,970	0	0
T. W. Davies . . . . .	2,940	0	0
E. R. Evans Bros. . . . .	2,896	19	4
A. Richards . . . . .	2,875	0	0
W. Briton . . . . .	2,851	0	0
E. B. Smith-Jones . . . . .	2,750	0	0
J. Prout . . . . .	2,725	0	0
H. S. RENDELL, Court Road, Barry (accepted)	2,632	2	6

WELLINGBOROUGH.

For outside painting of sewage farmhouse (Irthlingborough Grange), Spike Island Cottage, and seven other cottages on the sewage farm. Mr. EDWARD SHARMAN, surveyor.			
M. & H. Barber . . . . .	£30	10	0
C. W. Abbott . . . . .	24	10	0
H. Beeby . . . . .	23	0	0
W. H. Bellamy . . . . .	21	10	0
Popham . . . . .	20	7	6
E. C. Smeathers . . . . .	12	10	0
H. R. Gent . . . . .	12	0	0
W. B. Curtis . . . . .	11	10	0
W. M. Crisp . . . . .	11	10	0

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## WOKING.

For street works in Stanley Road, Grove Road, King's Road, Vale Farm Road (part of), Mount Hermon Road (part of), Boundary Road (part of) and Coley Avenue. Mr. G. J. WOOLDRIDGE, surveyor.

*Accepted tenders.*

T. Free & Co., Bristol—King's Road, £155 6s., Stanley Road, £192 os 2d. Kavanagh & Co., Surbiton Hill—Grove Road, £215 14s. 9d., Vale Farm Road, £284 11s 2d. C. Mott, Staines—Boundary Road, £531, Coley Avenue, £420, Mount Hermon Road, £454.

## ELECTRIC NOTES.

THE Earl of Jersey, G.C.B., presided at an inquiry by the Light Railway Commissioners with reference to an application by Sir William Crundall, Sir John Jackson, Sir Weetman Pearson and other influential gentlemen to extend the Dover electric tramways into the country in the direction of Kearsney Abbey, and also along the East Cliffe towards the holiday resort of St. Margaret's. Mr. Dickens, K.C., counsel for the promoters, declared that with the construction of these tramways and the completion of the great national and commercial harbours Dover would develop enormously, and become not only one of the most important, but also the most attractive town along the coast. Sir John Jackson, one of the promoters, considered that with the inauguration of the scheme and the erection of high-class residential houses along the cliffs the sea-front would equal, if not excel, the Folkestone Leas. Other witnesses endorsed the opinion, it being emphasised that the view from these cliffs was unparalleled. From it the cliffs at Calais were discernible. It was announced that the scheme would cost over 60,000£, and it was supported by practically all the public bodies in the town and district. After a lengthy hearing, the Commissioners announced their intention to recommend the Board of Trade to sanction the schemes almost in their entirety.

COLONEL DURNFORD, R.E., Local Government Board inspector, held an inquiry at the Stretford District Council offices in regard to the application of the District Council for leave to borrow 54,000£, in order to provide the district with an electrical supply for lighting and traction. Mr. T. Johnston, chairman of the electric-lighting committee, stated that he con-

sidered there was a great demand in the township for electricity. Mr. Abraham, clerk to the Council, said there were 6,900 houses in the district, of which 670 were rented at 10s. and upwards. Five years ago the population was 30,436, and the rateable value in 1897 amounted to 143,156£, and to-day the total was almost double, being 280,445£. The development of the district had been general. Industrial development had taken place to a great extent in Trafford Park. There were 8½ miles of tramway, and the trams were at present worked by the Manchester Carriage and Tramways Company. The Council had given notice to the company to purchase the tramways. The arbitration on the purchase price was held some months ago, and they were now waiting the award. C. H. Wordingham, electrical engineer, said there was a great demand for the supply of electricity in the district. After considerable opposition the inquiry closed, the inspector intimating that he would report to the Local Government Board, where a decision would be received in due course.

THE North-Eastern Railway Company are about to utilize the well-known "Coopkarnal" waterfall of the river Easington, which passes under the railway from Darlington at a point close to the Kirkby Stephen station, for the working of a turbine and dynamo to supply an extensive electrical installation at the railway station and mineral sidings at Kirkby Stephen. The current will be conveyed overhead to a large battery in the station buildings, and will be distributed to the various lights, motors, &c., through armoured underground cables. It is intended to supply the station offices, workshop, locomotive sheds, signal cabins and signal posts with the electric light, whilst the cattle mounts, points and turntable will be lit by means of arc lamps on iron poles. An electric luggage lift is also to be fixed, and an electric motor will replace the present steam-engine for driving the machinery in the workshop, a motor being so arranged that it can be driven as a dynamo from the old steam plant, and so keep the accumulators charged should the water supply fail.

FOR some time negotiations have been in progress between the tramways and the electricity committees of the Corporation of Glasgow with a view to the latter taking from the former a surplus supply of electric power produced by them. An agreement has now been come to under which the electricity committee agree to take a maximum of 50,000 Board of Trade units per annum, while the maximum demand is not to exceed 1,800 kilowatts, and not to be less than 1,500 kilowatts for the

# The "ONE" Range.

PATENT 1331/01.

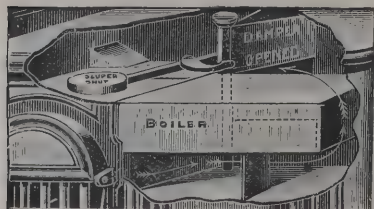
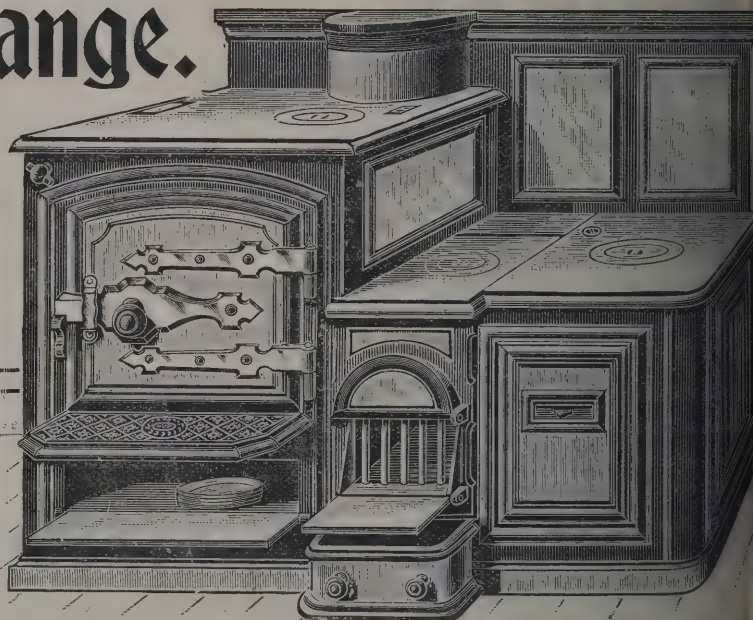
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Agents for Liverpool:—

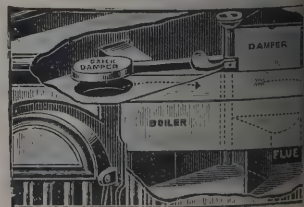
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The above shows the heat concentrated under the boiler and the waste heat passing under the hot plate.

This Independent Range is fitted with hot water circulating boiler, as shown in the sections, and the heat of the fire passes direct under the bottom of the oven.

A Fire Brick Dome and damper is fitted over the fire, which enables the heat to be concentrated at pleasure on the hot plate or boiler, the waste heat of either passing under the other, thereby utilising what is usually lost.



The above shows the heat of the fire concentrated on the hot plate and the waste heat passing under the boiler.

The casing and oven door are lined with slag wool and a third oven can be arranged if required.



## ILLUSTRATIONS.

MIRABEAU REPLYING TO M. DE DREUX-BRÉZÉ.

THE BANK, LIVERPOOL: TELLING ROOM. DETAILS.

WESTOVER, MILFORD-ON-SEA.

The plant is at work, it being understood that it will only be used for the heavy peak load of the winter afternoons, running over a period of from a half-hour to 2½ hours. The power is to be taken from the Coplawhill sub-station into the Electric Works. The Tramway Department is to charge 1½d per unit plus 5 per cent. per annum for the capital expenditure necessary for the transference of power, which may amount to 1,800l. The total annual cost is estimated at 1,023l., while the electricity committee expect their net saving at 20,000l. The agreement is for 25 years from the 31st prox., and thereafter to be terminable on 12 months' notice being given by either committee. It may be noted that the Tramways Department have no expectation of being able to utilise for at least 10 years the power which is being sold to the Electricity Department.

## TRADE NOTES.

The Pancras Ironwork Co., Ltd., have just completed the erection of the new iron and glass covered way at the Theatre, in connection with the alteration of the levels at the Savoy Hotel and the Strand.

The Chipping Hill School, Witham, Essex, is being heated and ventilated by means of Shorland's patent Man- grates, supplied by Messrs. E. H. Shorland & Brother, Manchester.

The ventilation of Westfield public school, Westfield, Wiltshire, has been carried out by means of Mackay's direct-acting ventilators, supplied by the sole makers, Cousland & Mackay, ventilating engineers, Glasgow and Manchester.

The Fireproof Partition Syndicate, Ltd., of 10 York Buildings, London, E.C.4, the makers of the dovetail corrugated metal- ing partitions, have lately erected under Messrs. Thos.

Aldwinckle & Sons (architects), the fireproof partitions at the Gore Farm Small-pox Hospital, Dartford. The partitions were put up in an amazingly short space of time, surprising architects and builders alike. The firm are also, under the same architects, erecting partitions at other small-pox hospitals.

THE "Cyclo" machine for whitewashing and painting large surfaces, such as the walls and roofs of factories and warehouses, has recently been introduced by Messrs. Thomas Harrison, Ltd., Thornton Road, Bradford. It consists of a strong barrel or drum on wheels, an air pump and a length of small hose with a special nozzle, which delivers the whitewash or paint in the form of a fine spray. It is claimed that one machine will cover as much surface in the same time as could be done by ten men using brushes, and the fine spray being directed to and entering every nook and crevice insures the work being better done. The machine is complete in itself, carries its own paint and is very portable.

## BUILDING AND BUILDERS.

AT a meeting of Dumfries School Board on Tuesday estimates were accepted for alterations at St. Michael's Street school, involving an expenditure of slightly over 3,000l.

THE Bridlington Town Council have decided, by ten votes to seven, to apply to the Local Government Board for permission to borrow 37,000l. for sea-front improvements, including the extension of the Prince's Parade.

THE foundation-stone of the new mission church of the Good Shepherd, Small Heath, Birmingham, was laid on Tuesday. The new church, which will be erected in the English style of architecture of the fourteenth century, is estimated to cost 8,000l.

THE engineering department of the North British Railway Company are engaged at present erecting a new station at Camelon, which is intended to serve the inhabitants in the west end of Falkirk. It is expected that the new station will be ready for opening in the course of the next few weeks.

AT a meeting of the Doncaster Rural Council on Tuesday, Messrs. D. Balfour & Son, C.E., were instructed to complete the schemes for the disposal of the sewage of Askern, Bawtry and Bentley, with estimates, and to apply to the Local Government Board for their sanction to loans for carrying out the works.

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THE foundation-stones were laid on Saturday afternoon at Bradford of a new Primitive Methodist chapel, which is being erected at the top of Smith Lane, Daisy Hill. It is estimated that the new structure, which is designed in the Gothic style of architecture, and is to seat over 500 persons, will cost about 2,000*l*.

AT the annual meeting of the Guardians at Stratford-on-Avon tenders for the erection of a new infirmary in connection with the workhouse were opened. Altogether twenty-two tenders had been sent in, and ultimately, on the proposition of the chairman, that of Mr. George Whateley, of Stratford, was accepted, the amount being 3,540*l*.

THE Bill confirming a provisional order of the Local Government Board, which extends for three years the period allowed for the construction of the marine drive and promenade along the North Bay, Scarborough, has passed through committee, and was ordered to be reported, without amendments, to the House.

THE Building Act Committee of the London County Council has been directed to report as to an amendment of the Building Acts with reference especially to (a) the constitution of the tribunal of appeal; and (b) the powers at present possessed by landowners under certain circumstances to cover open spaces to the public detriment.

THE Edinburgh Town Council have resolved to acquire the Synod Hall premises at a cost of 30,000*l*. for the erection of a city hall, for which the late Mr. Andrew Usher bequeathed 100,000*l*. Mr. J. A. Williamson, Deputy-Superintendent of Public Works, prepared a series of draft plans to assist the Council in arriving at a decision.

THE foundation-stones have been laid of a new Wesleyan chapel at Bradley to replace that which was destroyed by lightning some eighteen months since. The estimated cost of the new edifice is 4,600*l*. The building, which is in the Gothic style of architecture, will accommodate when finished 620 persons—about the same number as its predecessor. The architect is Mr. C. W. D. Joynson (Wednesbury), and the builder Mr. W. T. Lees (Darlaston).

LAST May, Leigh, Atherton and Tyldesley plasterers, numbering about forty, went on strike because the masters refused to advance their wages from 9*d*. to 10*d*. an hour. Some months later the men offered to resume work for an immediate advance of 3*d*. per hour and another 3*d*. in six months. This also was refused. Representatives of masters

and men met on Tuesday at Court's Hotel, Leigh, and the agreed to immediately resume work at the old rate of wages and work with the men imported from elsewhere. Masters agreed to reconsider the wages question in November. Work has now been resumed.

THE Dundee authorities have approved of plans for erection of a bridge over the Caledonian Railway line at west end of Dundee to connect the extended esplanade Perth Road at Ninewells, and these are now awaiting formal assent of the railway authorities, with whom the negotiations have been satisfactorily carried through. The bridge will be sufficient to carry vehicular traffic, and where it is built a most convenient outlet from the west end of Esplanade will have been provided, and the traffic from west end to the centre of the city, which at present passes Perth Road, will be better distributed.

AT the annual meeting of the Colwyn Bay District Council held on the 17th inst., the chairman reported that a committee of the Council had secured a splendid site on the Con Road, in the centre of the town, one acre in extent, for purposes of municipal buildings, and he suggested that designs be invited from the "best architects in the kingdom" for buildings, premiums of 60*l*., 40*l*. and 20*l*. respectively be offered for the three best designs. It was unanimously decided to apply for the sanction of the Local Government Board to carry out the scheme and to raise loans for the purpose, purchase to be completed by November 1.

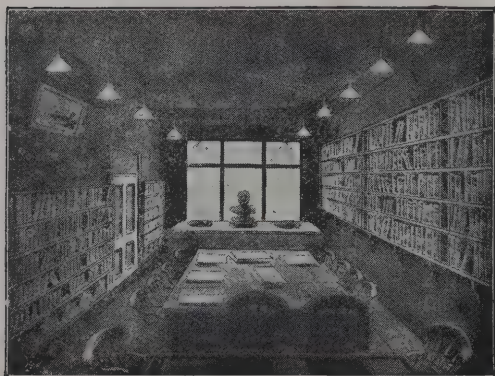
THE new schemes of the North-Eastern Railway Company for the improvement of the Hartlepool dock accommodation include the removal of the present quay between the harbour and the Victoria Dock, affording at high-water spring tides the uniform depth of 24 feet. Fish quay accommodation will be provided on the east and south sides, and the staiths will be supplanted by new ones on a scale capable of lifting 40 tons at once, suitable provision being made for smaller vessels. A new dock will be constructed near the Central Dock, so that quay room may be added as required. The south quay will be 1,550 feet long and 150 feet wide, and the west quay 350 feet long. The east end of the dock will have equal depth with the Central Dock, and be devoted to use of the timber trade.

THE town clerk of Harrogate has received the draft provisional order of the proposed sewerage scheme which forms the subject of a Government inquiry at Harrogate a short time

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ESTABLISHED 181



Originally the Corporation decided to go in for a comprehensive scheme and treat the whole of the sewage of the town at disposal works at Ribston, six or seven miles away. On receipt of the report of Mr. Fox Strangways on the state of the district, the big scheme was dropped, and it was decided to take a portion of the sewage to the north side of the town and the remainder to Ribston. For this purpose works have been scheduled in the parish of Killinghall, and in the borough of Harrogate, and half an acre in all, at a total of 86½ on the north side. On the south side works are scheduled—83 in the parish of Spofforth and Little Ribston.

New municipal offices are shortly to be erected in Dorking. They are to comprise a post office, a suite of rooms and a chamber, of which the Urban Council will become the owner, and a pair of shops. An attractive block of buildings has been designed by Mr. W. J. Shearburn, architect, of Dorking, and the structural portion of the work has been entrusted to Messrs. A. J. Thompson & Co., of London, at a cost between 7,000*l.* and 8,000*l.* The post office will have a frontage, one to South Street and the other to Junction Road, the entrance to the public department being at the latter. On the ground floor are provided postmen's rooms, and messengers' offices, &c., with a sorting-room 42 feet long, with lantern light along the top. At the lower end is a van entrance in Junction Road, communicating with a sorting-room. In the basement are the battery-rooms, &c., the instrument-room being located on the first floor. The council offices are situated over the post office, and comprise a committee-room, clerk's department, surveyor's office, &c., together with a council chamber, 38 feet by 28 feet, this suite of rooms a separate entrance will be obtained from South Street. A pair of double-fronted shops form the frontage of the scheme, and over these will be constructed the residences, consisting of dining-room, drawing-room, kitchen, scullery, pantry, &c., five bedrooms and bathrooms, and cold water.

Mr. H. H. LAW, C.E., held an inquiry on the 22nd inst. on behalf of the Local Government Board at the Town Hall, Dorking, on-Trent, into the application of the Town Council to the Local Government Board for works of sewerage at Stapenhill and Dorking, 1750*l.* for a machine stoker at the pumping station, 1750*l.* for provender machinery at the sewage farm. Mr. J. Gregory (barrister) appeared for the Corporation,

and Professor Dewar, together with the officials, was also present for the local authority. Stapenhill and Winhill are portions of the borough on the east bank of the Trent, with a population of 10,000, but the locality is unprovided with any proper system of sewerage. The present scheme has been in hand for many years, but has been held in abeyance on account of strenuous opposition. It was anticipated that much opposition would be shown at the present inquiry, but only Councillor Croad appeared as opponent, and explained that he was so present at the request of ratepayers. It was explained that the scheme for which the money was required would provide for 25,000 people—the estimated population in 1941. The sewage would be taken under the river Trent and discharged on to the farm at Egginton, six miles away. After some remarks from Councillor Croad, the inspector said he was bound to inform the latter that the Corporation had an area, containing at least 5,000 people, which was quite unsewered, and the sewage passed through the watercourses and so into the Trent. That was altogether illegal, and the Corporation were bound to alter such a state of affairs. Having intimated his intention of visiting the site of the proposed sewerage works and the farm, the inspector declared the inquiry closed.

### VARIETIES.

THE Capital and Counties Banking Co. are erecting a new bank at Chelmsford. The architects are Messrs. Clare & Ross, of West Street, Finsbury.

FOR the new school which is about to be built at Muswell Hill for the Hornsey School Board, Mr. J. Farrer, of Coleman Street, London, has been appointed architect.

THE annual meeting of the Norfolk and Norwich Archaeological Society was held at the Guildhall, Norwich, on Friday last, General W. E. G. Bulwer, C.B., presiding over a large number of members.

MR. C. HARSTON, F.R.I.B.A., of Bexley Heath (and of Messrs. A. & C. Harston, architects, Leadenhall Street, E.C.), was at the Easter sessions at Maidstone sworn in as a Justice of the Peace for the county of Kent.

THE new Wesleyan school at Hallroyd, Shipley, which has been built from the designs of Messrs. Danby & Simpson, of Leeds, is now open. The building, which has cost 3,200*l.*, will

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be used also as a chapel until the completion of the big scheme, which is estimated to cost 14,000/.

AT Tuesday's meeting of the Paddington Borough Council, Mr. Arthur W. J. Russell, assistant town clerk, was promoted to the office of town clerk at a commencing salary of 700/ per annum, in succession to Mr. Frank Dethridge, who retires at Christmas next.

AN inquiry has been held in Dublin relating to an application of the Dublin Corporation for a loan of 10,000/ to enable them to make advances to borrowers under the Small Dwellings Acquisition Act, and a loan of 25,000/ for the erection of a central fire-station at the corner of Tara Street and Great Brunswick Street.

THE chancel of the church of St. Luke the Evangelist, Burton Lane, York, was consecrated on Saturday afternoon by His Grace the Archbishop of York. This portion of the church has been erected at a cost of close upon 3,000/, and will seat 300 worshippers. When the whole scheme is completed and the nave erected there will be seating accommodation for 800 people, and the total cost has been estimated at 8,000/.

THE Bishop of Gibraltar consecrated on the 5th inst. the church of St. John the Evangelist at Smyrna. The Consular church was a few years ago pulled down, and after the chaplaincy had ceased to be a Consular one the British community built a new church near the Aidin railway station. The honorary architect was Mr. S. Watkins, engineer of the Ottoman Railway Company. The church is in the Early English style, consisting of a chancel and nave without aisles.

THE South parish church, Greenock, after having been closed for several months to allow of extensive alterations being carried out, has now been reopened. Most of the improvements have been carried out at the eastern portion of the building, and these include a new chancel, with a stone traceried window to be fitted with stained glass, a new oak pulpit, a transit exit staircase from the church, two large classrooms, vestry, &c. The scheme has cost about 2,000/, and an increased accommodation of 200 has been given.

THE King's reconstructed private apartments at the Epsom grand stand were on Tuesday, the 22nd inst., used by His Majesty for the first time, together with the new electric passenger lift, which will henceforward probably prove to be the most favoured approach. This is the first occasion on

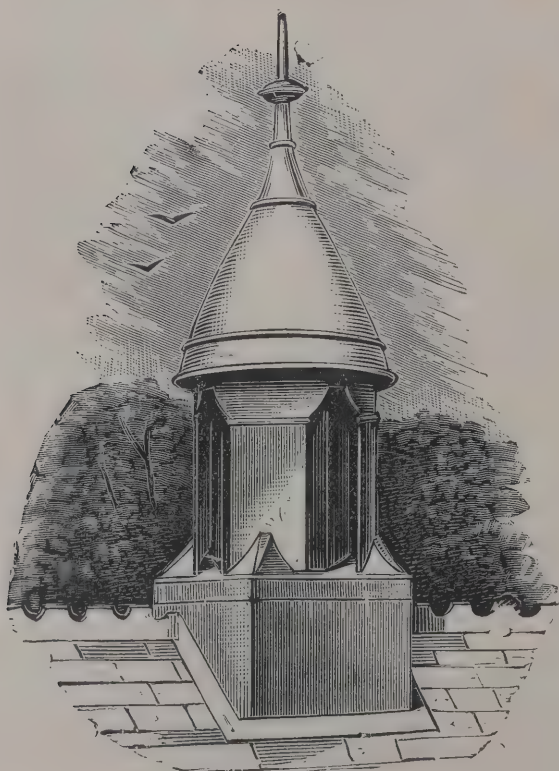
which a modern luxury of this character has been provided such a situation, and it is noteworthy that the machine benefits its purpose, is entirely of British design and manufacture. Its construction was entrusted to Messrs. A. Smith & Sons of London, and the lift was under the personal charge of Messrs. Major and P. H. Stevens on behalf of the manufacturers.

THE 1902 issue of the "Advertisers' Ready Reckoner" (C. J. Walker, 24 Coleman Street, E.C.) contains a number of new features, amongst them being:—The country section, showing the prices charged for advertisements in the leading country weekly newspapers. Specimen types, with their names, &c. A measuring scale showing the number of lines to the inch set close from bourgeois pearl. An industrial map of England and Wales showing where English and Welsh industries are carried on. Population statistics of the United Kingdom. An article on "How to Achieve Success in Advertising." Hints on "Ad Writing." A ready reckoner showing total cost for a series of advertisements of from 6 to 312 insertions at prices varying from 6 10s. per insertion, &c.

WHILE some building operations were going on at the Royal Hotel, Temple Row, a portion of a brick arch fell in, revealing an ancient well. A man who was working at 6 inches from the spot had a narrow escape. The well proved to be about 103 feet deep, and it is splendidly built, well served and remarkably clean. It is lined with bricks such as were used 300 years ago, and are not made now. Only 14 feet away is another excavation, which appears to have been used for depositing refuse, and indicates a curious idea of sanitation that once prevailed. Another discovery of interest to antiquarians was the unearthing of portions of pebble paving a few inches below the floor of the scullery, which is supposed to have been a courtyard in the old coaching days, when the Royal was an important house of call.

A NEW fire-station was formally opened at Stockport on the 10th inst. It occupies a very central position in Market Square, from which point main roads radiate to all parts of the town. It is the centre of the electric tramway system, and car-sheds are in the rear of the new building, and central tramway offices are to be erected with frontage in line and harmony with the fire-station. A conspicuous feature of the new structure is a drying tower, rising to a height of 100 feet. The style of the main building is Gothic, faced with Accrington stock bricks, with Scotch redstone dressing; the main entrance

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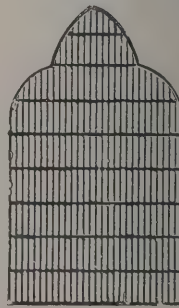
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of stone, carved with the arms of Stockport and other emblems. The building is divided into four blocks, engine-house, stables, firemen's dwellings and work. The cost has been about 12,000/.

the 12th inst. Inchinnan parish church, near Renfrew, being completely renovated, was reopened for worship. The renovation is being carried out at the expense of Lord Rowand, and it will cost over 15,000/. Dr. Rowand, Edinburgh, was entrusted with the work of renovating the style of architecture chosen is fifteenth-century Gothic. The portion of the building opened on consists of a choir 22 feet in length, a central tower square internally, with north and south transepts and a choir organ chamber above. The nave is to occupy the site of the old church, and its reconstruction will be completed immediately.

A new branch library, erected from designs by Mr. Percy W. Wainwright, Leeds, at the corner of Stock's Hill and Wesley Street, Armley, Yorks, was opened on the 17th inst. The new building is surmounted by a clock tower of bold design. The reading-room is 60 feet 9 inches by 76 feet, and is lighted by windows on either side, and a double range of ornamental lights in the curved and panelled ceiling. All the fittings and furniture here have been specially designed by the architect. Under the main reading-room is a reading-room 22 feet 9 inches by 36 feet, for the use of boys and girls. The building is equipped with some 8,000 volumes, is a fine feature of the new building, with its glass dome and its designed bookshelves and galleries. There are also comfortable ladies' reading-room and a librarian's room.

On the 13th inst. the Senior Prebendary of Durham, Canon Tristram, D.D., dedicated a very handsome altar presented to St. Cuthbert's Church, Durham, by Mr. A. H. Shiel, of Snipeley Hall, as a memorial to his two sons, Mr. J. H. A. Shiel. The design is by Mr. C. H. Fowler, eminent ecclesiastical architect of this city, and the work was carried out by Mr. Milburn, of York. Bath stone was used for the foundation of the reredos, cream alabaster the frame, whilst the panels are of Dumfries pink stone. The inscription on the reredos is as follows:—"To the glory of God in loving memory of Hugh Angus Shiel, born 31st March 1882, and died on October 26, 1900; and of John Angus Shiel, his brother, departed this life at Snipeley Hall, in his 4th year, on November 5, 1894."

THE new nurses' home which has been erected at Gravelly Hill, Birmingham, in connection with the Aston union workhouse is now open. The building has been constructed to plans prepared by Messrs. C. Whitwell & Son, of Birmingham, by Mr. T. Johnson, builder, of Great Brook Street, at a cost of 9,900/. It occupies a position facing Feltham Road, to the south of the infirmary buildings. Accommodation is provided for upwards of forty nurses. On the ground floor the eastern end is given over to the rooms that will be occupied by the medical officer and steward, and to the west of the entrance hall there is the superintendent nurse's room, and the rooms of the other nurses and probationers, with the usual rooms for meals, kitchens, &c. On the first floor there is the sleeping accommodation for the medical officer and steward, and bedrooms for forty-two nurses are on the top floor. The heating is by hot-water radiators.

THE monthly meeting of Glasgow Archaeological Society was held on the 17th inst. in the rooms of the Society, 207 Bath Street, Principal Street, presiding. A paper by Professor Medley on "Wayfaring Life in the Middle Ages" was read by Mr. W. G. Black, hon. secretary of the Society. The paper described the roads that were in Britain in the Middle Ages, and afterwards passed on to tell of royal journeyings, caravans, the character of the different classes of travellers, the jugglers, minstrels, robbers, hermits, friars, pardoners and other types of people who spent a large part of their time on the road. Afterwards Mr. Charles E. Whitelaw read a paper on "The Origin and Development of the Highland Dirk," in the course of which he described in detail, and with the help of illustrations and specimens, the many different kinds of dirks which have existed and which now exist.

THE accounts of the London and Lancashire Fire Insurance Company for the past year, to be presented to the shareholders at the annual general meeting to be held on the 30th inst., have just been issued. The net fire premiums amounted to 1,134,214/., and the net accident premiums to 39,550/. The underwriting surplus on the working of the two departments amounted to 164,462/. Interest on investments yielded the sum of 44,539/., and the total credit balance, therefore, on the entire operations of the company for the year is 209,001/. This amount, after adding the balance of 451,772/., brought forward from the previous account, but deducting (a) 85,253/., being outlay consequent upon the purchase of the Equitable Fire and Accident Office, Limited; and (b) the

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interim dividend of 17,831*l.* paid in November last, makes an available total of 557,689*l.* The directors propose:—(1) To open an accident fund, and to credit it with the sum of 20,000*l.* (2) To pay, on May 7, a dividend of 9*s.* per share (against 8*s.* per share last year) free of income tax, making, with the interim dividend already paid, a total distribution for the year of 57,951*l.*, or 13*s.* per share; and (3) to carry forward the remaining balance of 497,569*l.* to the next account. The financial position of the company will then stand as follows:—Capital paid up, 222,887*l.* 10*s.*; reserve fund, 750,000*l.*; accident fund, 20,000*l.*; balance carried forward, 497,569*l.* 6*s.* 9*d.*; funds, 1,490,456*l.* 16*s.* 9*d.*; capital subscribed, but uncalled, 2,005,987*l.* 10*s.*; total security, 3,496,444*l.* 6*s.* 9*d.* It is the present intention of the directors to increase the interim dividend for 1902, next November, by a further 1*s.* per share, making a total annual distribution of 14*s.* per share, free of income tax.

### AUCTION NOTES.

MR. ALFRED RICHARDS will sell on June 9, at the Mart, a building estate of nearly 600 acres in the neighbourhood of Winchmore Hill, and comprising "Grovelands"; the Winchmore Hill woods and Old Park; the Lodge estate, Palmer's Green; the "Hermitage" and "Cannon Hill," two charming residences in the Old Southgate village; the Home Farm estate of about 62 acres at Winchmore Hill and the Waterfall estate of about 24½ acres at New Southgate; also the old wayside hostel, the Fox, in the Green Lanes, Palmer's Green. The sale may well be alluded to as one of the most important sales of building estates that have taken place for many years past, as it is very seldom so large an area of land within such a short distance from town comes into the market.

MESSRS. BAXTER, PAYNE & LEPPER announce the sale on Tuesday next of the first portion of the Eden Park Estate, consisting of fifty-four plots of valuable freehold building land at Beckenham, Kent, situated in a picturesque, rural and healthy locality, near the Beckenham polo ground and golf links, and a few minutes' walk from Beckenham and Elmers End railway stations. The estate is suitable for the erection of detached or semi-detached residences and a few shops.

### BUILDING IN MEXICO.

IN a recent consular report, Consul-General Barlow, stationed at Mexico, says the great cost of building in Mexico is due not only to the high cost of building materials, but also to the exceedingly inefficient character of those who have to be employed in the work of construction. He states that it is about twice as much, on a gold basis, to build a house in the city of Mexico as it would be to do the same work in most of the cities of the United States. This, we say, is partly due to the higher cost of materials. Bricks cost from 14 to 16 dollars a thousand; and lumber of a somewhat inferior quality from 60 dollars per thousand feet. But one of the great obstacles to cheap construction is the inefficiency of the labour, which, while apparently cheap, is, according to our consul-general, fully three times as expensive as in the United States. American contractors engaged in the building business in Mexico state that from their personal experience they know that one American mason, whom they have to pay 8 dollars a day in Mexican silver, which would be equivalent to about 4 dollars per day in gold, will do as much work in bricklaying as twenty Mexicans, who can be hired at 1.25 dollars a day in Mexican silver. Mexican carpenters are paid from 1.25 dollars in silver per day, and one of them considers that he has done an extraordinary day's work if during that time he has been able to hang one door. There is one class of work in which the Mexicans excel, and that is stone-cutting, and apparently, a Mexican stonecutter who earns 1.25 dollars in silver in a day can do as much work and as good work as an American stonecutter who has to be paid about eight times that sum.

### NEW WORKHOUSE INFIRMARY FOR SOUTHAMPTON.

THE new infirmary building which has been erected in Shirley Warren for the Southampton Corporation was formally opened on the 15th inst, amid weather conditions which left much to be desired. The site occupied by the new building is on the high ground lying between Shirley and Bassett, its altitude being about 140 feet above sea-level at its highest part. Its area is about 36 acres, and it has the advantage of being always in a ring fence, having good public roads on three of its boundaries. The new infirmary buildings have been placed on its highest ground, and consist of the following group of

## C. & A. MUSKER LIMITED. LIVERPOOL.

## HYDRAULIC AND ELECTRIC LIFTS

For Passengers and Goods.

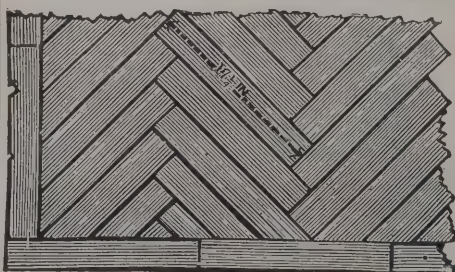
## HYDRAULIC AND ELECTRIC CRANES.

## STEAM AND HAND POWER LIFTS, DINNER LIFTS, ETC.

## THE HELLIWELL "PERFECTION SYSTEM" PATENT GLAZING

WORKS: BRIGHOUSE, YORKS.  
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## FLOORING BLOCKS.



Out of 17½" x 3" x 3" best yellow deal, planed all round, 12*s.* 11*d.* per 100; 17½" x 3" x 2" ditto, 8*s.* 11*d.* per 100; 17½" x 3" x 1½" ditto, 6*s.* 10*d.* per 100.

Also in Pitch Pine. Prices on application.



Figured Wainscot Flooring with above special joint to conceal nails at following very low prices:—

1½ x 4½" Wainscot Oak	at 5 <i>s.</i> 0 <i>d.</i> per square.
1 x 4½" ditto	at 4 <i>s.</i> 6 <i>d.</i> "
1½ x 4½" Pitch Pine	at 2 <i>s.</i> 0 <i>d.</i> "
1 x 4½" ditto	at 1 <i>s.</i> 6 <i>d.</i> "

These prices do not include desiccation.

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LOW-PRESSURE HOT WATER  
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RECENT SQUARE, GRAY'S INN ROAD



Entrance lodge, nurses' home, observation block, male cases, the administrative blocks, maternity female sick pavilions, three male sick pavilions, engineer and steward, and the laundry, boiler-house, tuary and workshop group. The sick pavilions are to the administrative blocks with covered ways. number of beds provided for is 300, about sixty to on, but should circumstances require it (such as the f the added areas within the Southampton Poor-law number can easily be added to by the erection of more pavilions, the administrative portions of the being built on a scale to admit to this. Each a two-storey building, and the whole five contain varying sizes, from twenty-four beds to three beds mit of the proper classification of the inmates as aracter, age and complaints. Each pavilion is pro- two staircases to minimise fire risk, and wide for convalescents' use, from which some of the best he neighbourhood can be obtained over the river New Forest, Lordswood and the town. All the re placed with their long sides facing approximately est, by which arrangement the wards will always full benefit of all sunshine. On the floor of each ices have been provided as follows:—Ward kitchen, range, larder, &c., bathroom, lavatory, with station wheels for patients unable to use bathroom, linen-oom for convalescents, slop-sink room and the usual commodation, the latter being in detached sanitary roached from main buildings by means of enclosed he pavilion halls are provided with lifts for food, coal, ey and the corridors are heated by hot-water coils, rds with central down-draught hot-air ventilating large open fires. Every ward is well ventilated, ards throughout finished with adamant plastering e colours being a soft green to the upper part with do and dark line to the lower part, all doors being hogany colour varnished, and all other woodwork ur, the general effect being bright and cheerful. s of rooms, ceilings and floors are rounded. The block has provision for eight beds on one floor, with ore wall space for each bed than in the other he finish, however, being similar to that described. istrative department contains accommodation for tee of management, the medical superintendent om only, as he does not live on the place), the

assistant medical officer, the matron, chaplain, porter and ser- vants generally, kitchen department, with larders, mess-rooms, &c., steward's department, with large general store (two storey), nurses' dining and cloak-rooms, matron's office, store and sewing-room, dispensary, anæsthetic operating-rooms, recep- tion wards and clothes stores for male and female patients, &c.

The nurses' home is a detached three-storey building and gives accommodation for about thirty nurses, probationers, &c.; it provides a small bedroom for each nurse, and contains, in addition, a general sitting-room, lecture-room, assistant matron's bed and sitting-room, small kitchen, bathrooms, &c. The home is not intended to provide dining accommodation, as all meals will be taken in the dining-rooms provided adjacent to the kitchen of main buildings.

The grounds have been tastefully laid out with roads, plantations, &c., levelled and planted in accordance with a scheme submitted to the Guardians by Mr. Rogers, of Red Lodge, and advantage has been taken of the large amount of surplus soil from the building excavations to level up the ground in front of the nurses' home to form a tennis court, and this, with a few of the smaller areas near the buildings has been turfed, the larger areas being trenched and sown for grass. The general contractor for the whole of the work, exclusive of electric lighting and the laying out of the grounds, but inclusive of the engineering and laundrywork, was Mr. H. Cawte, of Shirley. The architects were Messrs. Mitchell & Gutteridge, of Portland Street, from whose designs and under whose personal superintendence the whole has been executed. A brass tablet has been placed near the entrance of the administrative block recording the names of the Guardians and various officers, as well as the architects and contractor.

### NORFOLK COTTAGES.

THE sanitary committee of the St. Faith's District Council have been inquiring into the housing accommodation of Great Witchingham. The condition of the village can be judged by the following extracts from the report:—

In view of the complaint of the medical officer of health as to the scarcity and the insanitary condition of the cottage accommodation in Great Witchingham, the committee visited this parish on March 3, and made a general inspection. So serious was the state of things revealed by even a cursory examination that the committee felt that a full and detailed

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WATER CLOSETS, WATER PIPES, ANTI-SYPHON PIPES, &c.

VED BY ALL SANITARY AUTHORITIES.

been invented with a view to enable anyone fixing closets overcoming the difficulty of the required for the various makes, also to avoid the necessity of having joints inside the walls, which not allowed by County Councils, Borough Engineers, Architects, &c. The 4 inch Junction can size from 4 inch downwards. Any plumber will see at a glance the great convenience of this quires one junction for the many shapes and sizes. No Brass Thimbles or Calking required. Watertight Joint can be made in a few minutes by any ordinary Plumber. In fixing this Joint, is to cut the Lead Pipe to the required angle, place on the loose Iron Flange, then flange back all round, coat the face of Flange with a little Red Lead Putty, bring the two Faces together he Bolts, screwing up each Bolt a little at a time until they are all tight, then the Joint is made test. Another great convenience is:—In case of any alterations or renewal of Soil Pipes, all re this Junction is used is to unbolt the same, and the Closet and Pipe leading to it are left her Junctions it is necessary to take down the W.C., break open the wall, damaging the Pro- ther inconvenience.

nt view of Junction and loose flange; the inlet being elongated, allows the lead pipe to be cut required angle.

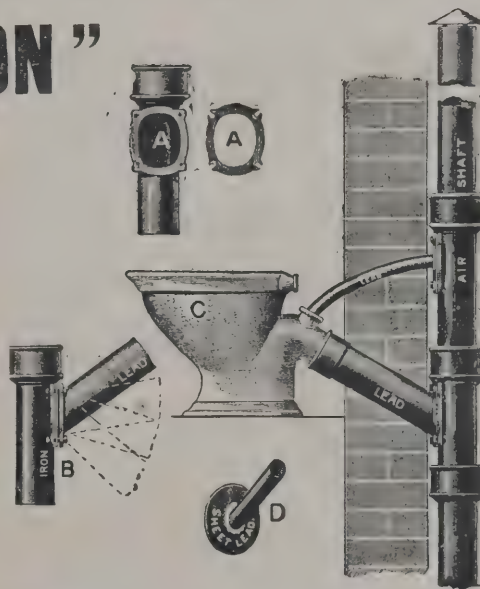
Joint fixed and ready for tightening up, and also a few of the angles which can be got. one size which can be adapted for 4 in. Soil Pipe, and a 4 in. x 1½ in. Invert Junction for Anti- Pipes, &c.

w to arrange for a small sized branch.

ree Strengths—Ordinary Rain Water, ½ and ¼ Metal.

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statement of the facts of the case was necessary, and they decided to extend their inquiry so as to cover all the cottages in the parish. In all, seventy cottages have been visited and examined. We have taken into account only such dwellings as are rented at 6s. and under.

Six cottages grouped together have a shallow surface well, sunk a few yards from the edge of a stagnant pool behind a mill from which it is fed. A pair of thatched cottages under one roof have outer walls cracked and dilapidated, and the building in bad condition generally; upstairs one room 6 feet high. Two new houses, each having two rooms downstairs and two bedrooms, eight occupants in one of the dwellings—man, wife, daughters of 27, 15 and 3, and sons of 17, 12 and 6. The other house four occupants—man, wife, girl of 17, boy of 15. Another group of five thatched cottages: bedroom accommodation very poor; in four of the dwellings the roofs slope down to the floor, making part of the floor space unavailable, and the windows very small and recessed into the thatch. Water from shallow well, not properly covered. In another dwelling the drainage goes into a dead well just outside living room, door broken, causing chronic overflow of filthy liquid refuse.

Yet another group of three houses form three sides of a tiny square in which storm water drains towards houses and floods up to the doorways, mixing with overflow from a defective dead well. Three other houses in this group were referred to in the report of the medical officer of health. As to the water supply, the committee found that there were two shallow surface wells, one for each set of three houses. The water on analysis showed that both wells are saturated with sewage, old and new. The water from one of these wells is used at the bake-house (for which purpose one of the group is used) in mixing the bread for the neighbourhood.

In one dwelling of a group of eight, each of which has two rooms up and two rooms down, there were seven occupants—four adults, a boy of fifteen and two girls, while there were also seven occupants in the old parish workhouse, which is yet parish property—with an attic as one of the two bedrooms. The only deep well in the parish serves a group of six outlying cottages, all of which have rooms on each floor.

Two cottages are described as built on a tongue of land between a narrow stream on one side and a ditch on the other, and as being practically on the water level. Here is the description of the premises:—"The bedrooms are 13 feet by 7 feet by 7 feet high and 9 feet by 12 feet by 7 feet, the stair

hole taking up much of the floor space in one. The so dilapidated that one can stand in the bedrooms and outside through the great jagged cracks. The privy is out over the stream, and has no receptacle, but a plank board which shoots out all excreta and refuse through a hole in the wall into the water. A few yards from this a plank has been let down to the stream, and a plank put across the stream to the occupiers to dip up water, this being their only supply. Besides the dilapidation of the outer walls, the roofs are so broken that they are patched over with mud to prevent the occupants of one seeing through into the of the other. Smoke passes freely."

Two other cottages afford this parallel picture:—In one the accommodation the worst visited. Bedroom merely a hole in roof. No staircase, but steep ladder over a door. Old sacks and quilts hung up and stuffed over the door to prevent decayed rubble from falling on bed. Two long by 7 feet wide floor-space, with roof sloping direct floor up to a peak; floor-space diminished by the stairs. Downstairs, sacks laid by door to keep weather out. The whole in a very rotten state, directly against the small boxed-off room used as pantry.

Another cottage is described as having a living room downstairs built against churchyard, and under ground 4 feet. Churchyard drains towards the cottage, and the water soaks through wall, which is in a rotten and stinking condition.

A pair of cottages owned by New College, Oxford, each one room up and one down, "Rubble walls cracked and bulged. Bedroom floor dragged out of gable by displacement of walls, and highly dangerous. Four and three occupants respectively."

In one of another pair of cottages, which have two rooms up and two down, there are nine occupants, a mixed lot of boys and girls. Steep ladder staircase, gables bulging and dangerous, floor parted from walls; privy accommodation bad and dilapidated. In the other cottage what is supposed to be a second bedroom is a dark end of the room, unventilated, without ventilation or light, except for a small glass let into the partition into the main room. Small room downstairs (brick floor) used as bedroom (11 feet by 6 feet 7 feet high). Floor so damp that fragments of mattress down are rotten and mildewed, and occupier complains that damp rots the mattress on the bed. No water supply, but water by permission from well that supplies the New College.

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PRICES & ESTIMATES FREE  
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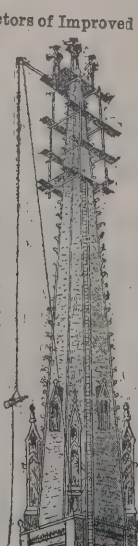
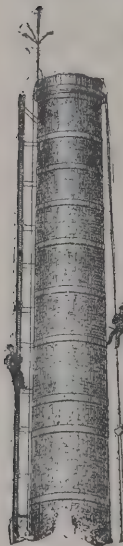
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others have one bedroom each. There is a well across the lane for these cottages, but it has been for some time, and the only supply is from a well in the garden, into which a spring runs. The report concludes as follows:—

Most of the houses are clustered together in the main street. The houses here are so oddly stuck down at all angles so cramped and crowded in together, as to appear an urban slum than a rural village. Few of them have back ways, and refuse is dumped down into odd little patches of ground to such an extent, as analysis at Nos. 26-31 shows, that the soil is saturated to some depth. All the wells sunk in these odd patches of ground are shallow surface wells. A further general complaint against almost all the cottages is the brick pavement of the front rooms. These bricks are generally cracked and broken. With low ceilings and under-thatched roofs, it strikes one to enter these rooms, which are damp and dark, and when washed retain the wet for days.

Now, we point out that of the seventy cottages in the street, only two bedrooms, fourteen have only one, and six have three. Four of these six, however, have only one room downstairs for all purposes, and the alleged third room is generally a small and dark partitioned-off space in the main room. So that in reality there are not more than one or two rooms in the parish suitable for the accommodation of a family of boys and girls, for which a minimum of two rooms is essential for health and decency. There are many cases of overcrowding, and several others in which the overcrowding limit may not be passed, the want of sleeping accommodation for big boys and girls is And in addition to these there are eighteen cases of existing houses ought to be absolutely condemned for human habitation for structural and sanitary reasons. These are the cases numbered 1, 2, 26, 27, 28, 29, 30, 35, 59, 60, 64, 65, 66, 67 and 68 in our detailed report. These are only the very worst cases, in which action is imperative.

The difficulty of dealing with them is that there is no accommodation at present available for the displaced people. The Council put its full powers into force in all these cases and simply turn a large number of people houseless upon the street. The law now throws upon the District Council, in such conditions, the duty of providing accommodation as this. The need for accommodation is obvious

and urgent; and in view of all the circumstances of the case we recommend:—

“That the District Council do apply to the Norfolk County Council for permission to adopt Part 3 of the Housing of the Working Classes Act.”

### THE STORY OF A COTSWOLD CHURCH.

FOR many years past, writes a correspondent of the *Birmingham Daily Post*, the ruinous condition of the fabric of Guiting Church has been a matter of notoriety in the Cotswolds, and now that another effort is being made to raise a fund for its restoration the grievances which wrecked former endeavours in that direction are being again stirred up. As far back as 1890 the diocesan architect (Mr Walker) was engaged to make an inspection and report on the church, and he prepared plans and estimates showing that a sum of 1,000*l.* at least was required to be expended upon the edifice so as to insure comfort and decency for the worshippers, some 700*l.* of this being necessary to put the main building in order, and the other 300*l.* for repairs to the chancel. From that time to this practically nothing has been done either to the church or to the chancel, and only the other day the local inspector of nuisances had occasion to make complaint to the Winchcombe Rural District Council of the condition of the building.

The present appearance of the chancel, both internally and externally, is little short of disgraceful. Externally, there is a big hole in the roof through which the rain pours, and this portion of the building requires complete overhauling. Internally, the condition of the chancel is left to the imagination, a boarded screen hiding it from view, though a closer inspection would reveal amid general ruin the scaffolding which once gave hope of a speedy restoration. The chancel is the most dilapidated part of the edifice, but the same causes, time and weather, which have operated to bring about its decay, have also had their effect upon the nave and other portions of the building, and if twelve years ago the architect found it necessary to prescribe repairs involving a total outlay of 1,000*l.*, it may be reasonably inferred that an even larger sum might now be required.

As to the circumstances leading to the present deadlock, the responsibility for the repair of the chancel rests, it is stated, with two lay rectors, and, rightly or wrongly, the failure of the rectors to carry out this obligation is said to be the reason why the necessary funds for the restoration of the body of the church

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are not forthcoming. When the architect prepared his plans and estimate in 1890, showing that about 300*l.* would be required to put the chancel alone in order, the restoration committee approached the lay rectors with this proposition, that instead of paying the whole of the sum which might properly be asked of them, they should pay 100*l.* each and forego the right of sitting in the chancel and of entering by the priest's door, and that they should also agree to the chancel being repaired at the same time as the main portion of the church. Both rectors appear to have at first agreed to these conditions, and one of them, Mr. Walker, paid over his 100*l.*; but the other, Mr. Ashwin, subsequently wrote intimating that, after consulting with Mr. Walker, they had "thought it best to undertake the repairs to the chancel themselves," while they also made it plain that they had no intention of giving up the privilege of sitting in the chancel after it had been restored. The difficulty resulting from this changed attitude has never yet been overcome. The Bishop of the diocese was asked to intervene to compel the lay rectors to do their duty by the chancel, but without effect. The Bishop's secretary (Mr. Bonnor) wrote:—"I have done all I could in the matter short of taking legal proceedings against the lay rectors, and without the Bishop's express orders I cannot plunge his lordship into litigation, the result of which may be that he will, if unsuccessful, have to pay the costs." What makes the matter all the more deplorable is that there was, according to the treasurer (Mr. John Waddingham, whose father had offered 500*l.* to the restoration fund), sufficient money available for the complete restoration of the church, yet apparently through this difficulty with regard to the lay rectors' seats in the chancel, nothing beyond the sticking up of scaffold-poles inside and outside the church has been done in the course of twelve years. When the late squire of Guiting died, Mr. John Waddingham, his son, wrote to the Bishop offering to subscribe 500*l.*, as his father had offered before his death, on condition that the lay rectors were compelled to carry out their obligations; but the Bishop again declined to resort to legal proceedings, and, the chancel having been then boarded off from the nave, Mr. Waddingham, at his own cost, put the other portion of the church in such a condition that Divine service in the building was possible, and so things have remained till now. The present curate-in-charge (Rev. G. B. Sharpe) naturally wishes to see the original scheme of Mr. Walker carried into effect, and has issued an appeal for funds, in which he says:—"The state of the chancel is in no way attributable to the present patrons. It came to them thus upon

the decease of the late patrons. But, as farmers suffer depression in agriculture, and in other ways, they are to do their utmost, as also the people of the village. Waddingham has published a statement showing the events according to his view twelve years ago, and intending subscribers before giving their money to pay to the church and see it for themselves.

### A CONTRACTOR'S WILL.

SIR THOMAS LUCAS, first Baronet, of 12A Kensington Gardens and Heatherwood, Ascot, for many years a partner in the firms of Lucas Brothers and Lucas & Aird, died on March 6 in his eightieth year, leaving personal property valued at 594,306*l.* 10*s.* 10*d.*, and the whole of the residue of his estate, valued at 775,984*l.* 5*s.* 9*d.*, and his will, dated June 27, 1901, codicil of February 20, 1902, has been proved by Dame Amelia Lucas, the widow; Sir Arthur Charles Lucas, first Baronet, of 30 Wilton Crescent, and Reginald Jaffray, of Queen Anne's Mansions, Westminster, the sons; Sir Rahere Paget, Bart., of 4 Paper Buildings, Temple; William Trotter, of King's Beeches, Sunningdale, five executors.

He bequeathed to the Albany Memorial Chapel at Ascot 500*l.* for the endowment fund, or for building a parsonage house, or for such other purposes as His Majesty may select; to the Lowestoft Hospital 250*l.*, to the Lowestoft Convalescent Home 250*l.*, and to his wife 3,000*l.* for family pictures, plate, linen, china and jewels, and for life or widowhood of Heatherwood, with the furniture, &c., therein, and other household effects at Kensington Palace Gardens, of the value of 1,500*l.*, the income from 175,000*l.*, or an annuity of 2,000*l.* in event of her again marrying, these benefits for Lady Lucas be in addition to the provisions made for her by her previous settlement. Sir Thomas further bequeathed 150,000*l.* for his son, Sir A. Charles; 25,000*l.* in trust for his daughter, Kate Golder Maudslay; 10,000*l.* in trust for each of his daughters, Constance Mary Penn, Amy Florence Mary Alice Fryer; the advowson of the rectory of Ascot and a life policy for 10,000*l.* to his son, the Rev. Francis Lewis Lucas; 200*l.* each to Sir John R. Paget and William Trotter; 500*l.* each to Amy Dorothy Penn and Constance Penn; 500*l.* to Mrs. Mary Saffery; 250*l.* to Gerald

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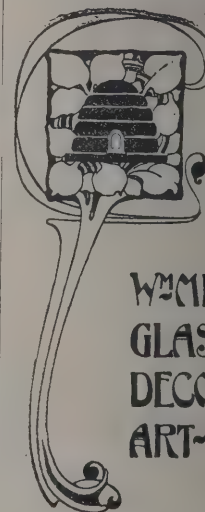
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2,000l. in trust for Constance Julia Barclay; 1,000l. to John Middleton, and other legacies. to the interest of Lady Lucas in the sum of 50,000l., part thereof, in trust for his son, Charles, and the remainder to his sons, Reginald Edward Lingard, Ernest Murray, Francis Granville Evelyn Penn. All other his estate and effects he left for his sons, Reginald Jaffray, Edward Lingard, Ernest Murray, Francis Granville Lewis and Evelyn Penn, but sums already given or advanced to all his sons are left into hotchpot.

### ELECTRIC TRACTION.

A lecture was delivered last week before the members of the Institution of Mechanical Engineers upon the above subject by Mr. Philip Dawson, M.I.E.E. The lecturer showed, says the *Manchester Chronicle*, how much slower the United Kingdom had been in the adoption of electric traction than the Continent; but great strides had been made in the last ten years, and were now being made. The most successful tramway was probably that which had been installed at Bristol, which commenced running in 1896, but there were now over eighty lines in the country while some twenty-five more were under construction and would shortly be open. There were 1,252 miles of electric traction in operation, 846 in course of construction, and 4,500 motor cars either in operation in the country. The total invested in electric traction at the end of the year was 51,000,000l., and the capital invested in power distribution was about 20,000,000l. The Metropolitan Electric Railway itself put in nearly a quarter of a million horse-power at its power-station plant, equipped a thousand miles of track and put nearly 3,000 cars into operation. The Chiswick Electric Railway, now under construction to work the Metropolitan and other allied lines, would operate nearly 200 electric cars, probably an average of 150 tons each, over a track of 15 miles of double track, averaging from fifteen to twenty miles an hour. The capital already involved for this scheme was about 16,000,000l. and that amount would be very largely increased. Dealing with the methods of applying electricity to traction, he said they were three, viz. the overhead, the conduit and the third rail. The third it was not necessary to deal with.

Only one scheme beyond an experimental stage had been carried out under it in Paris, and that was now being taken up, while the conduit system, which under the best conditions was many times the cost overhead, could for that reason only be used in very populous areas, and was not suitable for general use. Among the points dwelt upon was the need of excellence of workmanship and stability in the permanent way of equipment, but he said that every part of electric tramway work had now been so carefully considered that there was in the present day absolutely nothing experimental about the whole subject. A very large amount of experience had been gained, and everything had been standardised, so that there need be no hesitation as to the results which would be obtained through the installation of the ordinary direct current system. In concluding his lecture, the speaker said that until it could be satisfactorily proved that electric traction would reduce the work and expense, it was certain that none of the large railway companies would adopt it for long-distance travelling. He did not think himself that any of the high-speed railways at present proposed could be made financially successful for long-distance travel. It was expense rather than time which would be the determining factor. They were by no means near the limit of speed of steam locomotives in this country, and he contrasted the speeds attained here with those, for instance, on the Pennsylvania Railway and on the Northern Railway of France. Long-distance electric traction was no doubt a fascinating subject, but should not be at the present moment considered practical. They were entirely unprepared at the present moment to undertake the electrification of main lines. It had not been shown it would pay if it were done, and they really did not know how to do it. On urban and suburban lines the case was entirely different. There the traffic was ready made, awaiting greater facilities which electricity alone could furnish. Here, as with tramways, there was knowledge and experience to point the way in which the work should be carried out.

The Mayor, in speaking of the pleasure with which he had listened to Mr. Dawson's lecture, said they regretted the present attitude of Cheltenham in regard to the Gloucester scheme for laying down a system of electric light railway. They seemed to be somewhat in opposition to Gloucester, although he might say they regarded that opposition on the part of Cheltenham perhaps more in sorrow than in anger. Notwithstanding opposition, he hoped to be able to carry out their scheme in due time, and add their little quota to the fifty millions of capital invested in these great undertakings.

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All stones used for masonry shall be sound, durable, well seasoned from sources approved by the engineer, and shall be laid on their natural beds.

Mortar for laying up stone masonry, unless otherwise expressly stated, shall consist as follows:—Either one part by volume measured loose of approved Portland cement to three parts of good, sharp sand, or one part of approved natural cement to two parts good, sharp sand, all to be very carefully measured and mixed, and to be used within one hour after mixing, and always before it shall have commenced to set.

Mortar for pointing shall consist of one part Portland cement to one or two parts of sand.

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*First-class Masonry.*—First-class masonry will be laid in Portland cement mortar, in regular courses, each stone being carefully cleaned and dampened, if desirable, before setting. The face stones shall be rock-faced, with edges pitched to a straight line, and no projections exceeding 3 inches. A draft line, 2 inches wide, shall be cut at each angle in the masonry. The beds throughout and the joints for 12 inches back from the face shall be dressed to lay to  $\frac{1}{2}$ -inch joints. No course shall be less than 12 nor more than 30 inches in thickness except the coping, and the thickness of any course shall not exceed the course below it. Stretchers shall not be less than 3 feet long, and not less than 18 inches wide, nor less in average width than  $1\frac{1}{4}$  times their height, and at no single place less in width than height.

Headers must not be less than 4 feet long, where the wall is of sufficient thickness, and the majority shall exceed that length. Where the wall is not over 5 feet thick, they shall extend entirely through the wall. Headers will extend at least 20 inches beyond the width of the adjacent stretchers. The usual arrangement shall consist of headers and stretchers, alternately arranged, so as to thoroughly bond together the face stones and the backing; for rare exceptions, two stretchers will be allowed to one header, by special permission, to cover

each such case. The stones of each course of the face shall break joints at least one foot with those of the course below. No hammering will be allowed on any stone after it is set. Each stone must be set upon a full bed of fresh mortar, laid broadest bed down, and brought to a firm and level surface without spalls or pinners.

*Backing.*—The backing shall consist of large-sized stones laid in full mortar beds, and breaking joints as to thoroughly bond the work together. The spaces between the larger stones shall not be over 6 inches in width, and shall be thoroughly filled with small stones and spalls laid in full mortar. All spaces flushed full with mortar or good cement grout. Courses shall correspond with the face stone, but may be laid up in part by two thicknesses, providing no stone less than 8 inches thick be used. In cases approved by the engineer, satisfactory Portland cement concrete with large aggregate embedded in the concrete may be used for backing.

*Second-Class Masonry.*—Second-class masonry shall be laid in cement mortar. The face stones shall be rock-faced, no projections over 3 inches, edges pitched to a straight line, shall have parallel beds and rectangular joints. The beds shall be dressed to lay to  $\frac{1}{2}$ -inch joints for 8 inches back from face shall be dressed to lay to  $\frac{3}{8}$ -inch joint. The stones need not be laid up in regular courses, but shall be laid level on their natural beds, well bonded, having at least one header 3 feet 6 inches long, every three stretchers with joints well broken; no stone shall be less than 8 inches thick, and no stone shall measure less than 12 inches in least horizontal dimensions less than 12 inches, nor less than its thickness.

*Backing.*—The backing shall consist of well-shaped stones, not less than 6 inches thick, and of which at least one-third shall measure 3 cubic feet, to be laid in full mortar bed, joints well broken, well bonded together and with the face stone. All spaces to be thoroughly filled with small stones and cement mortar.

*Third-class Masonry.*—Third-class masonry shall be laid in dry or in mortar according to the direction of the engineer. It shall consist of good quarry stone laid upon the natural beds, and roughly squared on joints, beds and faces, the breaking joints at least 6 inches; the walls shall be bonded together by headers, occupying one-fifth of the area of the wall front and rear, and extending through walls, or less in thickness; no stone shall be used in the face of the wall less than 6 inches thick or less than 12 inches on the least horizontal dimensions.

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# The Architect.

## THE WEEK.

ct of the catastrophe in Ibrox Park is that the es of Glasgow have become anxious about the of similar stands where crowds gather. The Master accordingly arranged for an examination of several s. The reports are not reassuring. It was found er was decayed, that supports were out of repair, and stand was too weak, that terracing needed and reconstruction—indeed, it would appear that the existing structures would sustain the fatal test o Ibrox Park. In England it may not always be to make a similar examination of stands in fields orts take place, but, wherever it can be done, us parts should be carefully scrutinised. The be erected in London to enable people to view nation ceremony will, we hope, have stability, but wise to thrust the responsibility on the borough They are not long enough in existence to have a staff of scientific officials for such a purpose. ict surveyors claim that the control remains with heretofore, and has not been altered in any y the recent decision of the Law Courts. A case prepared, and will be submitted to the High soon as possible, so that this important question sible authority in these matters may be decided elay. For the sake of the public we hope the veyors will be successful.

NE has now its "Musée Bonnat," which has ted and furnished with works of art by the great who is a native of the city. The building is in Bassano and was designed by M. PLANKAERT. er is also a collector, and some of his pictures n seen in the winter exhibitions of the Royal Among the works presented to Bayonne are by REYNOLDS, HOPNER and LAWRENCE. The ortant of the Italian works is a Virgin and Child o LIPPI. There is also a figure of CHRIST by LA FRANCESCA. Designs by the principal masters and Germany form part of the collection. There atuettes, Etruscan vases, ivories, &c. French art ed under several aspects. There are numerous y INGRES, and others by his rival DELACROIX. onzes by BARYE, FREMIET and DAVID d'ANGERS e collection. M. BONNAT has contributed some and etchings by himself. The Musée will always emorial of an artist who in portraiture has not ased in modern times, and whose figure-pieces s remarkable.

ave already expressed an opinion about the of the Amesbury Parish Council to have all removed from the different tracks over Salisbury h the public were accustomed to use when visit- enge. It would be well if the ancient stones and around were national property, but by law ivate possessions, and therefore must be respected oclosed demesne. The Amesbury Council invoked f the Wilts County Council. The Marquis of Hon. PERCY WYNDHAM and Mr. FULLER, M.P., onsequence deputed to make inquiries. Their e now completed. Mr. WYNDHAM states that in ent the public who visit Stonehenge do so as in the same way as many places of interest or visited on land in private ownership, without its intended or supposed that a public right has lished by their so doing. He is therefore against y council's taking action, but expresses no opinion her or not it is advisable that Stonehenge, under condition of its surroundings, should be enclosed. es the hope already expressed by the county at Stonehenge should become the property of the ord BATH says that he is of opinion that the hich their attention was called were in the nature ass, to which perhaps no importance had been owing to the slight traffic and inconvenience

caused. He is strongly of opinion that, even if it be decided that the tracks are rights of way and that the enclosure blocks them, it would be extremely undesirable for the county council to take over the powers and duties of the Amesbury Rural District Council. Mr. FULLER states that in his opinion immemorial and unchallenged usage has established a public right upon all the tracks in question, and that presumption of dedication may be held to exist, and that the present fence, in so far as the tracks in question are concerned, is an illegal obstruction and ought to be removed. He does not think, however, that the county council would be justified, without a further and fuller inquiry, in taking any action in the matter. The roads and bridges committee, to whom the reports were given, will consider the subject before making any recommendation to the county council.

THE art of the wood-engraver has not so generally succumbed to reproduction by photography in Paris as in London. There are still masters who are encouraged by amateurs, but their plates are *objets de luxe*. The interest which continues to be taken in xylography has made it necessary to hold an exhibition of the art in the Ecole des Beaux-Arts, which is to be opened to-morrow. It will be more comprehensive than any others relating to wood-engraving which have been organised. We hope English work will be adequately represented. There was a time when Frenchmen were not afraid to acknowledge their envy of the success of the English engravers on wood, but although they could not imitate the peculiar neatness of the English blocks they were able to show more force, owing mainly to the co-operation of draughtsmen who were painters. Wood-engraving was at its best when used for the illustration of books, and the French publishers favoured the art because it was an obstacle to the counterfeiting of books in Belgium. As there was no means of reproducing cuts except by copying them, the printers in Brussels had not the courage to undertake the expense, and French works of a costly kind were not driven out of the market by pirated editions.

ONE of the streets in Paris which branch from the Rue St.-Antoine is the Rue Beautreilles. It joins at one end the Rue des Lions, which leads into the Rue St.-Paul. They are all near the Lycée Charlemagne. There is now no church dedicated to St. PAUL in Paris, but the Jesuit church in the Rue St.-Antoine is known as St.-Louis St.-Paul. The old church was named St.-Paul des Champes, because at that time it was in the country outside Paris. Then it served for the Hôtel de St.-Paul and the Palais des Tournelles. Attached to it was a cemetery, and among those who were buried in it or beneath the floor of the church were RABELAIS, FRANÇOIS and JULES MANSARD, as well as several of the prisoners in the Bastille. It is recorded that on November 20, 1703, the "Man in the Iron Mask" was interred there under the name of MACHIALLI. The church was demolished in 1800. The neighbouring Rue Beautreilles was so called from the trelliswork of the hotel, which is stated to have been the old Hôtel St.-Paul. That palace was erected by CHARLES V. in 1364, and resembled a large farm with residences for the king, the princes, the dignitaries of the State and the principal officers of the Court. From the buildings there were underground passages leading in various directions. No. 17 in the Rue Beautreilles is now in course of demolition, and a more remarkable building is not easily discovered. Human remains appear to be met with whenever the ground is turned up. The operations have revived an interest in the legend of the "Man with the Iron Mask." It is suggested by people that the coffin or some other indication would be met with if a systematic examination of the place were made. It is not to be expected that the mysterious prisoner carried with him to the grave any clue to his identification, but if from the remains it could be ascertained whether MACHIALLI or MATHIOLI was a man of about forty in 1703, then he could not be the twin brother of LOUIS XIV., and one of the interpretations of the mystery would be set aside as baseless. The inquiry would have a more personal interest than any other undertaken of late years.



## ARCHITECTURE AT THE ROYAL ACADEMY.

THE painters and sculptors were supposed to be reserving their forces for Coronation year. It is possible that in consequence some people may anticipate wonderful pictures and statues, and will be disappointed when they see the present exhibition at the Royal Academy. The work of architects is produced under different conditions, and is rarely speculative. The few amateurs who will visit the architectural room during the season must not on that account be too exigent. They should remember that the character of a year's architecture depends on the commissions which have been received. During the last year they have not been remarkable. The exhibition in consequence does not contain examples which demanded exceptional skill in design.

In considering the contents of the architectural room, it is always well to begin with the drawings which have been submitted by Academicians and Associates. Mr. NORMAN SHAW and Mr. WATERHOUSE are not among the exhibitors. Mr. AITCHISON is represented by a drawing of City offices in a Neo-Grec style, but it is so simple there would be no chance of its admission if it bore the name of an outsider. Mr. JACKSON contributes a design for an organ-loft and screen, with two stall ends which flank the entrance and have a novel effect in the room. Mr. BOPLEY has a drawing of a new church at Kensington which is only interesting for its windows, and a small drawing of the monument to the late Duke of WESTMINSTER. Mr. BELCHER enjoys the advantage of having his five drawings hung together—an arrangement which it would be well to adopt with other exhibitors. They consist of a country house, business premises, a board-room and two gardens. Mr. ASTON WEBB (with Mr. INGRESS BELL) shows the general scheme of the new buildings for the University of Birmingham, but the drawing must be regarded as serving only as a diagram or slight indication of what is contemplated.

There are 233 drawings and models exhibited. It will be quickly perceived that they can be formed into a very few classes. About one-half of them are dwelling-houses; there are several churches, some business premises and schools. Designs which may be looked on as relating to public works never occupied so little of the walls. Municipal buildings are also rare. In fact, if the churches and the houses were excluded there would not be many designs left to suggest the tendency of architecture at the present time. Whether the rejected drawings were as restricted in their nature cannot be determined, but it might easily be assumed that the exhibition acquired its peculiar unambitious character in order to correspond with some prearranged scheme. Indeed, in some cases it would not be difficult to imagine that representatives of a ratepayers' association were allowed to have a voice in the selection. There are school buildings, for instance, to be seen which can be carried out on most economical terms, for they are wanting in the qualities which are usually held to belong to architecture.

From the general correspondence between so many of the drawings the characteristics of the buildings are not easily described, for the terms which serve in one case are applicable to many others. Country houses, for example, have now assumed so generic a form that without the aid of drawings and plans it is almost impossible to discriminate between them or to explain to what extent ingenuity is apparent. It would seem as if almost every exhibitor accepted definite limitations, and put a check upon invention in order to insure acceptance.

The "Shoreditch Town Hall," by Mr. W. G. HUNT, is of that type of Italian which finds favour with public bodies, the chief consideration being a tall tower. Mr. GUY DAWBER has two views of "Westhope Manor, Shropshire," a large country house partly half-timbered and having several gables. The "Golf Club House, Halifax," by Messrs. WALSH & NICHOLAS, is somewhat indefinitely drawn, and there is nothing unusual in its appearance. The "New Police Station in Hyde Park," by Mr. J. D. BUTLER, is an official drawing of a long plain building with a verandah. Mr. A. N. PRENTICE shows a house in Bedford which is unpretentious, but unlike some others is not suggestive of being readily blown away. Messrs. ERNEST GEORGE & YEATES contribute two drawings of

new works at Welbeck Abbey. "The Duchess's Bedchamber," by Mr. J. D. BUTLER, shows a coffered ceiling elaborately decorated. The chimney piece is a fine design, and the door seems to be carved in the wall. The appearance of the room is charming. The dining-room has an arched roof; at the end is a buffet with a gallery. If the style can be considered as Elizabethan, the treatment is especially the ornamentation, has more of the freedom and delicacy than was usually introduced into England during the sixteenth century. By the same architect is "Foxcome, Oxford," the additions consisting of a low tower, an immense hall with large windows, a morning-room. "The Public Library, Holbeck," by Mr. BAKEWELL, is effective from the contrast between the red brick and terra-cotta dressings, and the arched square windows. "The New Gaiety Theatre and Restaurant," by Messrs. ERNEST RÜNTZ & Co., has the advantage of a corner site; the end is rounded, and the building assumes a definite architectural character which is free from the irrelevancies which of late are thought essential for a theatre. Gloom would appear to be the quality which was sought after by several architects last year. The new Banking Premises, Sunderland, by Mr. W. H. BRIERLEY, has the lower storey in stone, almost black, while above is a light yellowish sandstone. The contrast possibly is less violent in the building. Among the houses which will be found here is one at Oxfordshire, by Mr. C. M. PEARCE; a block of four in Hampstead of a gaunt character, by Mr. H. FIELD; a house in Wimbledon, with a very large ornamental form over the window on the first floor, by Mr. W. T. WALKER; a timbered house at Ardingly by Messrs. WHISTLER & CASTLE; and one at Wrotham, Kent, with windows which seem almost continuous across the front, by Messrs. NIVEN & WIGGLESWORTH. "The Cottage Home for Poor Law Children," by Mr. C. M. SHINER, has the appearance of the workhouse about them. A restaurant at York, decorated in dull green and white, is by Mr. A. J. BAKER. The "Font and Decoration," by Mr. G. J. LACY, shows marble columns beneath the font. The roof and walls are painted, and the whole composition suggests a satisfactory baptistery. Mr. E. M. HICKS's "Design for a Sunday School Church" recalls the work of the late J. D. SEDGEMAN. There is much tracery, which in parts becomes almost boyant in character. Mr. JACKSON's design for an organ-loft and screen at St. Mary's, Oxford, has arches below rather long cusps; figures and ornament are introduced into the spandrels and the organ-case is elaborately carved.

Messrs. BRIGGS & WOLSTENHOLME's "Offices for John Dempster & Co., Liverpool," is a stately building which befits merchant princes. The style is Italian, and there are broad distinctions which suggest different uses in the upper and lower parts. The monumental slab over the entrance to the minster Abbey, which is a memorial of the late Mr. J. PEARSON, R.A., is by Mr. W. D. CAROE; it is inlaid with brass cross with borders of fine ornament. In Mr. J. D. WOOD's "Offices, Oldham," colour is employed to suggest "The City Offices," by Mr. G. AITCHISON, cannot be accepted as worthy of a professor of architecture; the treatment especially is very feeble, indeed almost chaotic. "The Royal Villa, Le Coq-sur-Mer, Ostend," by Mr. A. MITCHELL; it is of English country-house type, and is free from the extravagances which are found in villas in the district. The openings in the wall were, no doubt, dictated by local circumstances. W. M. BRUTTON's "32 and 33 High Street, Marylebone," is a pleasing effort to deal with a narrow frontage. The shops below do not give the impression that the building supported on panes of glass, and the entrance at the first floor deserve to be noticed as elegant in treatment. In this drawing are houses by Mr. CECIL BROOKS, Mr. A. CORBETT, Messrs. FARQUHARSON & EVIL, Mr. P. R. & Co. Mr. L. STOKES's Ascot Priory is modernised but there is a clock-tower, day-room, cells, and a large corner with figures above it. "The Shannon Factory, District," by Mr. E. O. SACHS, is rather foreign in treatment, but there is an honest endeavour to overcome the monotony of similar buildings in England without much increase in expense or interference with requirements. E. B. WETENHALL shows three fantastic porches for country houses. The additions to Alexis Street, Southwark, by Mr. T. J. BAILEY, becomes from



the bricks more sombre than is usual with London schools, which is saying much. Messrs. FREEMAN & CO. have employed timber instead of stone in the roof of a new church in Essex. "Christ Church," by Professor BERESFORD PITE, is interesting from the way in which it is expressed in it, the lines of the semi-circular windows leading on to a central dome. In the "St. Clapham Church," by the same architect, three bays are divided exteriorly by pilasters, and panels are introduced over the windows. "The British Hospitaller Church, Constantinople," by Mr. H. PERCY ADAMS, is inspired by local spirit, for if compared with an English building of the same class the parts would appear to have been composed by chance. Everything, however, seems bright. There is a large house at Leamington by Mr. H. O. CRESSWELL, arranged on a convenient plan. The "South Drawing Room, Mantle-piece in a House near Piccadilly," by Mr. J. COOPER, is remarkable from the size of the two windows, which perhaps were meant to symbolise seal; it is rare that sculpture is shown so well in a drawing or etching. "A Suggested Treatment of the Mall," by Mr. F. INIGO THOMAS, might have been prepared for the general competition for the Queen VICTORIA Memorial, if one were allowed. The arrangement of the drawing of the roads looks more formal on the drawing than would be if realised. There is an architectural screen in front of the Palace, from which rises in the centre a statue of the QUEEN. Such a memorial would be far less expensive than any of those which were entered in the competition. The chancel screen for St. Peter's, Potter's Bar, by Mr. R. W. PAUL, is so light, it could not be objected to as an obstruction; in the frieze roses and other emblems are introduced; a rood is introduced at the top of it. Mr. J. C. HIDE's "Design for a Public Building," obtained the Academy gold medal in 1899; a drawing is included in the group, and the drawing is vigorous. There are two admirable church interiors by Mr. FELLOWES. In both, red brick and light stone are employed. In St. John's, Sidcup, the roof is coloured a soft green; there is a screen, and the angles near it have several small storeys. In Christ Church, Sydenham, the screen is carried to the roof, the lower part having only two thin piers, above there is rich tracery. The two form a strong contrast if compared with the "Interior of a Small Priory," by Mr. C. H. M. MILEHAM. It is Romanesque; there are several altars and galleries with curtains, and the altars are presumably are connected with a convent.

(To be continued.)

## THE CORONATION STONE.

It is often difficult to account for the reverence which is paid to single unhewn stones in remote ages. We can well imagine how simple people would consider stones which fell from the clouds as having mysterious powers, and they would preserve them and carry them about with them as if they were celestial communications, of various interpretations might be offered. But many of these stones which were respected could not be classed as such, and we must therefore endeavour to explain the reverence attached to them on a different basis. The stone in the Coronation Abbey, which is placed under the seat of the Coronation chair, is one of the puzzles, and it will be considered inopportune if we now refer to its history.

It is stated that the stone was deposited in Westminster Abbey. The entry in the Leland Collection relating to it runs as follows:—"Edwardus cathedram regalem Scotie in Westmonasterium transtulit ut illic esset sedes missarum celebrandarum." The stone, it will be observed, is not actually deposited, but only a chair or seat which was to be used after celebrating mass at the shrine of the Virgin Mary. But in the same year there is reference to the inventory of the Crown jewels which were kept in the Tower of London. It is described as a large stone upon which the kings of Scotland were crowned, "una petra super quam Reges Scotie solebant coronari." The regalia had been acquired by EDWARD I. when the

luckless BALIOL was stripped of his royal robes in a most ignominious manner. Sir WALTER SCOTT says:—"It cannot be doubted that the English king retained possession of these royal insignia, since he was at the pains to transport to London the celebrated marble stone used at the Coronation of the Scottish kings—an emblem of his victorious usurpation neither so valuable nor so portable." HUME in his "History" says there was an ancient tradition among the Scots that wherever the stone was placed their nation should always govern, and on that account it was carefully preserved at Scone as "the true palladium of their monarchy, and their ultimate resource amidst all misfortunes." At the present time it is not easy to understand the state of mind which could connect the safety of a whole kingdom with a piece of sandstone; but it must be granted that the Scots were not unique in the superstition. The part performed by the stone in primitive Coronation ceremonies cannot better be described than in the words of Sir WALTER SCOTT:—

It happens that the Scottish writers, seldom very full in recording matters of mere ceremonial, have left us no particular account respecting the rites of coronation. One remarkable part of the ceremonial, as practised in the early monarchy, seems to have derived its origin from the ancient Celtic ceremony of placing the new chief, or thane, upon a stone or rock when assuming for the first time the command of his tribe. Indeed, the stone itself, termed in the Gaelic Lia Fail (the fated grey-stone), is said to have been originally brought from Ireland by Fergus, and (according to the Book of Howth) was vocal in heathen times like the pulpit of Mahomet or statue of Memnon, and emitted a sound when the lawful heir of the crown first was placed upon it. The priests, with the art which they so frequently practised, seem to have adopted, and, after their own manner, sanctified this custom; and hence the usage of placing the new-made monarch of Scotland upon the fated stone, which now altered its character without losing its sanctity, and was credulously believed to have been the pillow of the Patriarch Jacob when he beheld his vision in the field of Bethel. This part of the ceremonial, the only one very peculiar to Scotland, was abolished by the transference of the fatal stone to Westminster, it being of course impossible to find any substitute for so venerable a relic. This loss was sustained several years before any part of the present regalia had an existence, and the sight of the Scottish palladium in the Abbey of Westminster is still an affliction to the eyes of the more zealous Scotsman.

The first question that arises is, Whence did the stone come to Scone? JOHN of Fordun, in his Chronicle, relates:—"There came over from Ireland a certain king, bringing with him into Scotia the regal chair carved out of marble, and in it he was there crowned their first king by the Scots. All subsequent kings who succeeded to the throne followed his example, and duly assumed the crown in that same chair. This was the chair which SIMON BREC first brought to Ireland." KENNETH McALPIN is by some authorities believed to have installed the stone in the church at Scone about A.D. 850. This tradition was adopted by HOLLINGSHEAD. In his "History of Scotland" he records how "King KENNETH having thus destroyed the Pictish kingdom together with almost the whole nation, caused the marvellous stone (which SYMON BRAKE sometime brought out of Spain into Ireland, and the first FERDUS out of Ireland into Albion, as before related) to be brought now forth of Argile where till that time it had been diligently kept into Gourie, which region before appertained to the Picts, there to remain from thenceforth as a sacred token for the establishment of the Scottish kingdom in that countrie: he placed it at Scone upon a raised plot of ground there because the last battle he had with the Picts was fought near unto that place." It would appear to be probable that the stone was placed within the abbey for safety, but on occasions when it was required it was brought outside to a mound or mote-hill. There is little doubt that in Scotland and Ireland the open air was preferred to the enclosure of a building whenever great events had to be transacted.

It is not related how the stone was acquired in Ireland. An interesting paper on "The Coronation Stone at Westminster and the Lia Fail at Tara" was read before the Royal Society of Antiquaries of Ireland on March 25, 1902, by Mr. P. J. O'REILLY. But in it there is nothing to show whether the stone is to be considered as a trophy which



was won in an invasion, or whether it belonged to one of the Irish clans that emigrated to Scotland and brought the stone with them. In Ireland, where there were a great many small kingdoms and principalities, each was likely to have its special Coronation stone. That is suggested from the account by SPENSER, the poet, of the institution of a chief:—"They use to place him that shall be their captain upon a stone always reserved for that purpose, and placed commonly upon a hill, in some of which I have seen formed and engraven a foot, which they say was the measure of their first captain's foot, wherein hee standing, receives an oath to preserve all the auncient former customes of the countrie." There is a fine ballad by THOMAS DAVIN entitled "A True Irish King," in which he chants the accepting of office in ELIZABETH'S reign by one of the O'NEILLS. Mr. O'REILLY tells us that the chair used on that occasion survived until a comparatively recent period. "The chieftain of Tir Eoghain was inaugurated by his hereditary brehon, the O'HAGAN, placing a gold sandal on his foot, while he was seated in an inauguration chair upon the Hill of Tullahogue; and FYNES MORYSON tells us that Lord MOUNTJOY, who spent five days at Tullahogue in A.D. 1602, 'broke down the chair whereon the O'NEILLS were wont to be created,' it being a rude seat of stone placed in the open field."

It is well to remember that in theory at least the right to chief power was conferred by election. Less regard was given to primogeniture in Ireland than in most other places. The candidates would necessarily belong to the same family as the late chief, but the circle of those who were eligible was wide. As jealousy prevailed in families, and contests between neighbouring districts were constant, the election of a chief was not a rare occurrence. MOORE asserts that among the supreme kings of Ireland prior to the introduction of Christianity, not one-seventh died a natural death, the remainder were slain in battle or murdered. In the principalities, septs, or clans the chief power was equally uncertain in its duration. It was, therefore, advisable to have something permanent, if only a big stone, to serve as a throne or hallowed spot, and one would be used by so many chiefs in the course of a century, an immense number of associations would quickly gather about the stone and impart a peculiar character to the rough mass. As the head of a sept on his election could divide the whole of the lands at his discretion, the Coronation stone would be a symbol of his power over the earth's surface, and one, too, that was not inapt, for at the present moment it will be found that boulders which are relics of the Glacial Period encumber many parts of the island.

Every three years it is supposed there was a general convention of the princes or chiefs at Tara. Sometimes, however, there were intervals of a century or more between the gatherings. The Lia Fail or Stone of Destiny stood there. That stone was reported to have been carried to Scotland by FERGUS, the son of ERC, when he founded the colony now known as Argyle. It is difficult to believe that a stone to which so much virtue was said to be attached could be removed at an early period. It is more likely that the stone which is now in Westminster Abbey was not derived from Tara, but from some other part of Ireland. The mysterious properties for which the stone was valued beyond its use in rites, such as roaring under the feet of a true king, cannot have been more than jugglery. The tradition that the Lia Fail once served as JACOB'S pillow, and was carried in the migrations of some of the tribes of Israel, is not supported by any Irish legends. Nor is the legend about its possession by a Greek who found his way to Spain, Ireland and Scotland more credible. MOORE says the parallel to the Lia Fail is to be found in the atioze, or silvery stone of the Persians, to which a similar charm, in the choice of their kings, used to be attributed by the Magi.

There is probability for the version which supposes that the stone was prized in Scone because it had been used as a pillow by St. COLUMBILLE. There is a boulder in Iona which is described as Columbcille's pillow, but, as Mr. O'REILLY says, "It is, however, exceedingly doubtful that the latter would have been left upon the island when his relics were removed from it to Ireland and the mainland of Scotland in the early part of the ninth century, to secure them from the Norsemen, who then frequently

attacked and plundered Iona." Dean STANLEY considers the theory of the saint's connection with the stone reasonable, "and if so," he adds, "it belongs to the mass of the first authentic Western consecration of a Christian prince—that of the Scottish chief AIDAN."

As archæology has failed to throw light on the origin of the stone the aid of science has been invoked. In 1851 Dr. MACCULLOCH, the geologist, described the stone as a calcareous sandstone, exactly resembling that which forms the doorway of Dunstaffnage Castle. Professor R. S. S. says the stone is "a dull reddish or purplish sandstone containing a few embedded pebbles." Sir A. GEIKIE is of opinion that while stone of the kind exists in the Scottish coast of Argyle, and the stone is almost certainly of Scotch origin, and quarried out of some of the sandstone districts between the coast of Argyle and the mouths of the rivers Tays and Forth, there is no geological evidence to show that the stone not have been taken from the neighbourhood of Dunstaffnage itself, though it closely resembles the reddish-purplish sandstone of Dunstaffnage. There is red sandstone in Ireland, but it is met with mainly in Munster, and is not within many miles of Tara. There are some who believe in the North of Ireland, the part which would be nearest Scotland, but they do not crop out, and would therefore be available for men who were ignorant of geology. The question whether the sandstone is of English or Irish formation is therefore hard to determine, but a geologist finds little difficulty in concluding, while the late Director of the Geological Survey, that the stone was derived from somewhere near Scone. The scientific evidence should, however, explode the belief that the stone was used as a pillow by JACOB. The conclusion which Mr. O'REILLY comes to is practically a compromise, and follows:—

I would suggest that when Aidan, the first Christian monarch of this line of Scotie kings, determined to have himself inaugurated on Iona, a place at which no Scotie chief had yet been crowned, he might well think it prudent to conform as far as possible with the custom of his ancestors, and endeavour to retain in some degree a portion of the ceremony which his inauguration might seem to lack legality in the eyes of the people's eyes, and for that purpose might have had come to Iona a slab which had either been originally brought from Ireland or had else been quarried out of the sandstone of Dunstaffnage, on which his ancestors were probably inaugurated, and the slab thus brought to Columb's monastery might have remained there and have become known as "Columb's pillow," which afterwards was divided between the Columban churches of Ireland and Scotland at the partition of his relics in the ninth century. This suggestion seems to be a not impossible explanation of the existence of conflicting traditions that indicate a dual connection between this stone and Dunstaffnage and Iona, making it at once the "pillar-stone of Columb," the inauguration-stone of pagan chiefs who lived before the Christian time, and of the veneration with which it must have been regarded when King Kenneth deposited it at Scone, and the custom of crowning the Scottish kings upon it. If this explanation of the existence in Ireland of other red stones connected with the tradition with St. Columbcille would also be accounted for, and if this suggestion should coincide with fact, King Eadgar who descends from Fergus Mac Erc and the latter's Dalriadan ancestors, when crowned next June at Westminster will be seated above a stone on which his remote ancestor King Aidan sat some 1,300 years ago when Columb, laying his hand upon his head and blessing him, inaugurated him on Iona.

When the stone was brought to England at the end of the thirteenth century the use which is about to be made of it was not contemplated. It was a trophy of victory, and was offered as such to the Abbey in order to serve a humble purpose of a seat for a chantry priest. According to Dean STANLEY, EDWARD I. ordered a chair to be made of the stone. When a desire was expressed for its return to Scotland there was, it is believed, a promise made to that effect. But it was without avail. There is evidence both that the stone were never much esteemed in England. Sir ROGER COVERLEY is made to express the opinion of the earl of Argyll of the eighteenth century when, after the cicerone had told the story of "Jacob's pillar," he asked "What answer they had to say that JACOB had ever been in Scotland." Instead of answering the difficult question the guide said the knight to pay his forfeit for seating himself in the chair. Sir ROGER whispered that their friend WILL WARRICK



d have contrived to get a tobacco stopper out of or other of the chairs. It is remarkable that about fifty ago FRANCIS WEY, the French writer, relates that a who was a member of his party also endeavoured to ate the chair, and he evidently shared in her annoy- when her knife was confiscated. He describes the as "assez sale et peu élégant," but, as he says, it has fine longevity for a wooden chair.

When it has served in the forthcoming ceremony, we something will be done to demonstrate to all visitors istoric importance of the stone apart from its mythic iations by preparing a different setting for it, but it d be a graceful act to return it to the country which most claim upon it. Why should Scotsmen still have dure the affliction of seeing an object so prized by retained in England in spite of the treaty of 1338 solemnly provided for its return?

## THE ENCYCLOPÆDIA BRITANNICA \*

VERY man who desires to witness an increase of human power must be glad when his encyclopædia nes obsolete, although it may involve a loss to himself. rk of that kind is at its best when it represents the e cycle of knowledge of the time when it was pre- l. In recent years the cycle has been widening st continuously, and yesterday's measurements may e applicable to-day. All classes of knowledge do not r to advance at an equal rate. But the extent of is stationary is decreasing. Even theology endeavours come expansive. Wherever investigation and experi- are applicable the law is progress, and as MACAULAY "a point which yesterday was invisible is the goal to- and will be the starting-post to-morrow."

he nine editions of the "Encyclopædia Britannica" e taken as recording the state of knowledge between and 1889. From the extent of the work and the ion of the alphabetical principle it would be more ct to say that the latest completed edition relates to a d between 1875 and 1889. For sciences which come the first letter of the alphabet, the results of the rs of students during a quarter of a century have to plained, and in some instances they are of marvellous rtance. It is, therefore, courageous on the part of the ctors of the tenth edition to assume that the readers ave recourse to the preceding edition, and hence it is sary to regard only what may be called the victories ence in its most comprehensive sense since 1875. lan adopted has the advantage of enabling students to themselves acquainted with the latest developments man endeavour in many fields without undergoing the r of considering those aspects of the subjects which ceased to possess more than an historic interest. will be evident from a brief glance at a part of the nts of the first volume of the continuation.

ne of the earliest articles we meet with is "Abyssinia." re informed by Count GLEICHEN that since 1875 st has shifted from the northern to the southern ces, and several new sources of information have opened to us. The history is brought down to 1901. "Royal Academy" is not generally credited with a progressive institution, but it has had to submit to iversal law of change. Laymen and Associates are allowed to hold offices which formerly were mono- d by Academicians. The number of Associates has raised to a minimum of thirty, and since 1884 they e placed on the retired list. The schools continue to rom 5,000l. to 6,000l. a year, and the average annual nt of pensions is about 2,000l. As usual the amount me is not stated. The number of works offered ibition has grown from 3,011 in 1868 to 13,462 in "Accumulators" have to keep pace with the ce of electricity. "Acetylene" with its applications

he new volumes of the "Encyclopædia Britannica," constituting ibination with the existing volumes of the ninth edition the dition of that work, and also supplying a new, distinctive and dent library of reference dealing with recent events and ments, the first of the new volumes being Volume XXV. of mplete work. Published by Adam & Charles Black, and the

may be mentioned as a subject which for the Encyclopædia is new, as it was only in 1892 that the process of making calcium carbide was discovered. "Acoustics" is a topic which has interest for architects, and the investigations up to the end of the nineteenth century are described. How they are to be turned to account in building has yet to be as- certainated. "Aeronautics" has received an impulse of late years, and photographs are given of the machines by M. SANTOS-DUMONT and others. "Africa" cannot now be regarded as the Dark Continent, for while in 1875 Great Britain possessed 241,461 square miles, in 1900 the British area was 2,713,910, and the influence of possession there makes for light. The French increase in area is more remarkable, for the respective numbers are 168,250 and 3,804,974. Nearly two millions, however, are called Sahara, which means much. There is a change suggested by the article on "Agriculture," for cattle are now recognised personalities, and have their photographs taken. Mathematicians will, no doubt, be delighted by the forty closely printed pages relating to "Algebraic Forms," by Major MACMAHON.

The subject of "America" will appeal to archaeologists, for the anthropology of the continent is dealt with by Professor O. T. MASON, of Washington. The ancient inhabitants have received much attention. Already it has been ascertained that there are nearly 200 linguistic families in America, embracing over 1,000 languages and dialects. Pictorial language appears to have been widely used from north to south. It is remarkable that no iron tools existed prior to the invasion of the whites. The immense buildings were erected without mechanical appliances. "The architectural Mexicans, Central Americans, and especially the Peruvians, had no derricks or other hoisting devices, but rolled great stones into place along prepared ways and up inclined planes of earth, which were afterwards removed. In building the fortress of Sac-sahuaman heights had to be scaled; in Teahuanaco stones weighing 400 tons were carried 17 miles; in the edifices of Ollantaytambo not only were large stones hauled up an ascent, but were fitted perfectly." The dwelling was dominated by the tribal system. Stone working was general; the sawing was by means of sand with a thin piece of harder stuff. There was much waste, but there was an unlimited supply of material. The metallurgy is a mystery which puzzled the Spanish goldsmiths. They contrived to make pottery without the aid of a wheel. Fine art was attempted, and in "the Valley of Mexico the human figure, animal forms, fanciful life *motifs* in endless variety were embodied in masks, yokes, tablets, calendars, cylinders, discs, boxes, vases and ornaments." Their great buildings are most impressive, although sometimes the mass of masonry to chamber space is about as 40 to 1. With so vast a field it is no wonder that organisations of explorers are engaged. Professor E. B. TYLOR deals with general "Anthropology," in which he treats at some length of the Tasmanians. He maintains that previous to their coming in contact with European settlers they were not the broken outcasts they afterwards became, but led a normal and not unhappy life.

The article on "Classical Archaeology" is by Professor PERCY GARDNER. He describes the explorations in Athens and other parts of Greece and in Rome. Not until the sixth century B.C. did art become definitely Hellenic. Professor GARDNER says an important fact is overlooked in the Darwinian search after origins, and most attention has been given to qualities which Greece possessed in common with other races in the same early stage of civilisation, for "in many respects the art of Greece is incomparable—one of the great inspirations which have redeemed the world from mediocrity and vulgarity. And it is the searching out and appreciation of this unique and ideal beauty in all its phases, in idea and composition and execution, which is the true task of Greek archaeological science." The article contains forty figures which will be novel to most readers. It is to be regretted that more examples of British success are not forthcoming, but the insignificant sums which are at the disposal of the explorers are not sufficient for great undertakings. The article on "Modern Architecture" is by Mr. STATHAM, who describes "Queen Anne" and its developments. In the course of it we are told that "the real cause of



failure, as far as modern architecture is a failure, lies partly in the fact that it is practised too much as a profession or business and too little as an art; partly to the deadening effect of public indifference to art in Britain." The American high buildings are recognised as a new contribution to architecture, but are said to be false, and may probably prove to be dangerous. Some foreign examples of buildings are also included. Mr. PHÉNÉ SPIERS treats of the archaeological discoveries relating to architecture in Egypt, Persia, Greece and Rome. He agrees with M. DE VOGUÉ in the conclusion that the Pointed arch was derived from Egypt and Assyria, and was employed by the Saracens in Sicily. In Palestine, prior to the crusades, while the doors and windows had circular arches, the vaults were pointed. Professor WALDSTEIN explains the results of the excavations by the Americans from 1892 to 1895 at "Argos." Mr. TILTON concludes that the image of Hera, which was the work of POLYCLETUS, including the base and throne, would be about 8 metres; the goddess herself 5.50 metres; the face, arms, feet and neck were probably of ivory, while the rest of the figure was draped in gold. There are articles on "Art Galleries," "Art Sales," "Art Societies," "Art Teaching," the last by Mr. W. CRANE, as well as one by him on "Arts and Crafts." Mr. J. B. BOURCHIER describes "Ancient and Modern Athens." Our readers will of course understand there are many other articles on technical subjects which are no less important, although they may be remote from construction.

The illustrations in the new volumes will not only be numerous, but more varied in character than in any cyclopædia with which we are acquainted. Some important paintings will be represented by whole-page copies. Efforts will also be made to suggest colour. The maps have the clearness and accuracy of those forming the *Times Atlas*. In the older editions it was the custom to keep the engravings separately, but by incorporating them in the text greater clearness is insured. The new encyclopædia is a vast undertaking, which requires the co-operation of at least 1,000 contributors, besides a staff of editors, departmental editors, associate editors and sub-editors. As a treasury for reference it will be unique, and for students who are business men it will be invaluable, since without loss of time they will be able to realise the latest and most advanced conclusions on every subject.

A work so colossal recalls the early attempts to produce "rounds of knowledge." It may seem incredible that the great French encyclopædia, which was believed to have been one of the agencies in bringing about the Revolution, was suggested by a simple dictionary of medicine by an Englishman named JAMES, which DIDEROT translated. Then he found there was another encyclopædia by EPHRAIM CHAMBERS, and he resolved to prepare one which should be superior to it in all respects. The first volume appeared in 1751, and six years afterwards the work was suppressed on account of its dangerous character. The volumes were printed surreptitiously, and were reprinted in other countries. It was not until Madame POMPADOUR was able to discover from the pages the difference between the rouge employed by ladies in Madrid and the rouge used in Paris that the danger of confiscation was removed. D'ALEMBERT abandoned the "Encyclopédie" through apprehension of a prison, and DIDEROT was advised by VOLTAIRE to flee to Russia in order to escape the stake. How unlike in its reception was the attempt to disseminate knowledge a few years afterwards in Scotland. The first edition of the "Encyclopædia Britannica" appeared in three volumes in 1771, and from that time the editions have grown in bulk and value to correspond with the progress of knowledge. Who can estimate the benefits conferred by the volumes on English-speaking races throughout the world? In its latest form the work realises the dream of D'ALEMBERT, which was to provide a sanctuary in which the knowledge acquired by men should be protected against the power of time and revolution.

**Mr. William Sterling**, who was assistant to the professor of architecture in University College, committed suicide at his chambers, York Buildings, Adelphi. He was an able designer, but did not gain the success he deserved. He was in his forty-first year.

## THE SOCIETY OF ARCHITECTS.

THE eighteenth annual dinner of this Society was held Friday evening last in the Banqueting Hall, Private Restaurant, Mr. Silvanus Trevail, J.P., president, in the chair. There was a large company, among whom were the Bishop of Southwark, Lord Monkswell, Sir W. B. Richmond, K.C., R.A., the Archdeacon of London, Sir Wyke Bayliss, F.R.S., Major-General Hamley, C.B., the Hon. W. F. Massey, M.P., Alderman Sir William Treloar, the Mayor of Lambeth, St. Pancras, Stoke Newington, Camberwell, Shoreditch, Chatham, Rochester, Battersea, Bethnal Green, Finsbury and Fulham, Judge Rentoul, Col. F. J. Hext, T. P. O'Connor, M.P., Mr. W. A. McArthur, M.P., Mr. Edward Hain, M.P., Mr. Thomas B. Bowring, Mr. Edward Terry, General Manager of the London and South-Western Railway, Mr. Noel T. Kershaw, the Worshipful Master of the Company of Carpenters (Mr. John Wilson), the Electrical Engineer of the London County Council (Mr. J. H. Rider), the President of the Bristol Society of Architects (Mr. F. W. Wills), Mr. Wm. A. Hart, Mr. J. Barr-Robertson, Monsieur Van Houtte, Mr. C. A. V. Conybeare, Mr. Charles H. Collier, Mr. Robert B. Huxham, Mr. Rashleigh Phipps, the Worshipful Master of the Company of Tylers and Bricklayers (Mr. Ellis Marshall, hon. secretary), Mr. E. Farman (solicitor to the Society), W. C. Williams, Mr. L. Schlenheim, Mr. Arthur E. Cornish (city engineer, Norwich), Mr. G. Gard-Pye (vice-president), Mr. John E. Veale, J.P., Mr. William Digby, C.I.E., Mr. Abraham Cohen, Mr. Harold Oakley, Mr. William Beck, Mr. Douglas Archibald, Mr. Frederick B. Hollis, Mr. G. Bertini, Mr. H. W. Bacon, Mr. J. S. Hesselstine, Mr. John Cutler, Mr. L. A. Atherley-Jones, M.P., Mr. E. J. C. Morley, M.P., the General Manager of the Peninsular and Oriental Steamship Company, Mr. Walter H. Harris, C.M.G. (ex-sheriff of London), Mr. H. H. Bartlett (ex-president Master Builders' Association), the Clerk of the London County Council (Mr. G. L. Gomme), President of the District Surveyors' Association (Mr. B. Tabberer), the Superintending Architect of the London County Council (Mr. William E. Riley), Mr. W. Thomas (vice-president), the President of the Institution of Builders (Mr. William F. King), Dr. H. G. Walker, Mr. P. A. Gilbert Wood, Mr. T. R. Featherby, Mr. R. D. Bach, Mr. G. E. Bond, Mr. John Lanyon, Mr. Alfred Curran, Mr. Frank Dodd, Mr. John D. Mason, Mr. H. C. Sedgwick, Mr. W. Hofer, Mr. Maurice Strauss, Alderman C. Skinner, Councillor J. D. Driver, Mr. C. Day (borough surveyor, Chatham), Mr. H. G. Quartermain (hon. treasurer), Mr. T. Walter Emden, L.C.C. (ex-president), Mr. J. R. Manning, Mr. W. R. Manning, Mr. E. L. Fearn, Mr. W. E. Fearn, Mr. J. H. Richardson, Mr. Edward Cornish, L.C.C., Mr. Joselyn Brandon, L.C.C., Alderman Jno. Gleeson, Mr. Cromwell Edwards, Mr. R. W. Roques, Mr. John Stead, Mr. R. H. Cabell, Mr. Albert E. Fridmore, Mr. D. L. Fox, Mr. J. Richardson, Mr. O. Marsland, Mr. C. Palmer, Mr. H. H. Richardson, Mr. Ernest C. Isborn, Mr. Charles Chubb, Mr. W. R. Pertwee, Mr. A. F. Goddard, Mr. F. V. Fox, Mr. John R. White, Mr. John H. Champness, Mr. W. Tucker, Mr. C. D. Collins, Mr. E. A. Scanes, Mr. T. G. Jones, Mr. H. Prosser, Mr. T. R. Richards, Mr. R. G. Bare, Mr. John W. Dyson, Mr. Fred. Foster, Mr. Philip Condy, Mr. Herbert Warren, Mr. Frank C. Warren, Mr. E. H. Dring, Mr. H. C. W. Blyth, Mr. R. H. Spalding, Mr. John B. Maxwell, Mr. John Brewer, Mr. J. H. Bartlett, Mr. Walter Symonds, Mr. John Roberts, Mr. George Lory (secretary of the Local Cornish Association), Mr. R. A. J. Bidwell, Mr. R. Clifton, Mr. Clifton R. Davy, Mr. W. E. Wright, Mr. Charles E. Jackson, Mr. W. R. Mallett, the President of the Manchester Society of Architects (Mr. A. Darbyshire), the President of the Master Builders' Association (Mr. C. J. Lohmeyer), Mr. Arthur H. Pethick, Mr. Bernard Strauss, Mr. W. Cooper, Mr. L. F. St. John, Mr. Edward Keenor, Mr. C. Mason, Mr. A. H. Scott and Mr. C. McArthur Blount (secretary).

The President proposed the toast of "The King," which was received with enthusiasm and passed with musical honours.

The second toast, "Queen Alexandra, their Highnesses the Prince and Princess of Wales, and the Members of the Royal Family," was also proposed by the President, Signor Bocchi's orchestra rendering "God Bless the Prince of Wales."

Sir W. B. Richmond, R.A., proposed "Minister of Religion." He said there were probably no men who worked harder than the clergy. That they had in their time committed errors nobody could doubt, sometimes in theological matters, sometimes in matters of taste, but the whole basis of their influence upon the world had been for good, because at the root of their teaching there was one paramount truth, and that was love. The growing necessities of a poorer population demanded from the officers of religion much greater influence in the direction of charities than they were able to promote in the interests of art. The church is a



did much good work, but it was doubtful if it did as much for the interests of the general population, and especially the clergy and ministers of religion were to-day. He recommended that religion should be based on the purity and simplicity of the designs employed in church building.

The Bishop of Southwark, who responded, said they were not, he believed, because they claimed to be the architects of the morality and the character of the English nation. It was true that their methods of building and their canons of architecture did differ and vary even among themselves. The object, however, of each section and division of the clergy was to elevate the people to the ideal. This could only be accomplished by unity of action. The unity of religion would come about by a militant attitude of section against section, it would not come from voices railing down the ideal of the opponent and imputing wrong motives to one man's work, but it would come from the intellectual attitude of mutual respect, which meant respect for one another.

Archdeacon Sinclair, who also responded, said he was of the opinion that the toast was proposed by the sympathetic mind of Sir John Richmond. The architects had suffered at the hands of the clergy. Sometimes the vast schemes of architects were cut and cut short partly from ignorance on the part of the clergy and partly from want of money; more often it was the lack of funds. There was a conference held some time ago for the complete rebuilding of the parish church at Islington. A design was submitted by Mr. Reginald Field, but his first scheme would have cost 30,000*l.* to carry out, a sum of money far beyond what was likely to be available. After various changes the design was adopted. In carrying out the building it was not absolutely necessary for one generation to finish the whole of their church in a few years. There could be a noble plan, the progress of work ruled by time and money.

Mr. Frank Dodd submitted "The Houses of Parliament," and with the names of Lord Monkswell, Hon. Massey-Mainwaring, M.P., and Mr. E. Hain, M.P.

The Hon. Massey-Mainwaring in his response said that as architecture was concerned in reference to the House of Commons, the members of that house had to thank architects for the magnificent building they had given them. It was true that there was no more glorious edifice to look at than their Houses of Parliament, but inside the arrangements were not altogether satisfactory. Sanitary measures and ventilation did not seem to have been insisted upon in the construction. All must have been a strong feeling when they considered that out of the building emanated all the power and greatness of the State.

Mr. W. A. McArthur, M.P., proposed "The Imperial Palace of the Empire." Major-General Hamley, C.B., and Mr. F. J. Hext responded.

Mr. T. P. O'Connor, M.P., gave the toast of "The London Architectures," coupled with the names of Alderman Sir William Carter, Mr. G. L. Gomme, clerk to the London County Council, Mr. E. Barnes, J.P., mayor of St. Pancras, and Dr. White, mayor of Lambeth.

Mr. Wyke Bayliss, in proposing the toast of the evening, "The Society of Architects and Architecture," said he counted it very happy thing for architecture that the control of the art was in the keeping of architects themselves. Pure architecture, as art, had always suffered when it had been controlled by religion. The Parthenon was not conceived by the mind of a priest, nor was Westminster Abbey. The painter thought in two dimensions of space. The architect thought in three dimensions, the solid, with three dimensions of space. The work of the painter was set with colours of his own choosing, but the work of the architect was set by the chemistry of the materials, or should be, at their best when he had finished his work. The palette of the architect was set by the chemistry of the materials which began when he left off. Chartres Cathedral was as beautiful to-day than it had been before. Nature had been painting it for 600 years or more. This did not mean that it was better than another. It showed that the two arts were different, and they must therefore be treated and judged differently. The Society had that day been visiting a great architect, and he would like to put on record an incident connected with one of the founders of it—the late Cardinal Manning. His Eminence was one day looking through with great interest at a folio of sketches of Italian churches, but it was not until he came to St. Peter's that his heart was thoroughly drawn out. He said that the secret of his admiration for that church lay in its clearness, simplicity and unity—one great hemisphere surmounted by one great hemisphere. That was all, but it was enough. This idea of Cardinal Manning corresponded closely with the original conception of Michel Angelo. The architect had something more to do than to hop over a line of paper with a pair of compasses like a devil on two wheels. He carried something more than a 2-foot rule. The architect of the cathedral of St. Peter's expressed this:—"So I built me with the measuring-rod of the Seventh Angel, and Paradise measured the walls of the new city of God."

Was the angel with measuring-rod seen by St. John really Michel Angelo, who, having served his apprenticeship on earth, found fulfilment in heaven?

The President, in his reply, thanked the many representative men who had gathered around him that day, particularly the metropolitan mayors who had shown their sympathy with architecture. As regarded the needs of London, he did not go back one iota from the improvements suggested in his presidential address of last year. London, with all its wealth, size and importance, was still a city not up to its privileges. They were, however, beginning to improve London by building new thoroughfares. When the authorities had accomplished a little of this improvement they would see how much more there was to do. Rome was not built in a day, and he was full of hope when he saw the beginnings of advance. He was glad that the mayors were there backing up by their presence the architects who had suggested the improvements. His criticisms were made in a no unfriendly spirit, his sole desire being to bring London to a par with such examples afforded by Vienna, Paris and American cities. In the matter of street improvements the architect played an important part. Their Society wished to raise the standard and qualifications of all architects. They had promoted a Bill in Parliament to raise the standard of the profession by registration. The adoption of the measure deserved the assistance of all authorities in the interests of the public generally as well as those of the profession of architecture.

Mr. A. Darbyshire, president of the Manchester Society, also responded.

Mr. W. Scott Scott proposed "The Arts and Crafts Allied to Architecture."

Mr. W. F. King responded.

Mr. W. W. Thomas gave "The Visitors."

Mr. W. Digby responded.

The dinner came to a conclusion, and the guests with great vigour joined in singing "Auld Lang Syne."

## THE LATE THOMAS OLIVER.

ON April 24 Mr. Thomas Oliver, architect, died at Newcastle-on-Tyne, in his seventy-eighth year. The son of an architect, he was trained in the art and set up at first in Sunderland in 1847. Eleven years later, on the death of his father, he went to Newcastle. His practice was extensive. Among his buildings are the Prudhoe Convalescent Home, Whitby, the Saltburn Convalescent Home, the North Riding Infirmary, the Mechanics' Institute, Newcastle, and a number of Board schools at Newcastle, Gateshead, South Shields and throughout the northern district. Many churches were built and restored under his direction, and in the early part of his career a number of chapels were erected from his designs. In addition he was architect of many public institutions and private residences. Mr. Oliver was the founder of the Northern Architectural Association, and was its first secretary—a position he held till 1870, when he was elected president. In 1872 he again took up the duties of secretary till 1876, and for the next three years he was president. In 1883 he again held the position of secretary. He afterwards declined office. He was presented by the Association with a gold watch and chain on his election as president in 1877. He entered into partnership with Mr. R. J. Leeson in 1879. He was a widower, and had been twice married. He leaves one son (Mr. Geo. Dale Oliver, of Carlisle, county architect for Cumberland) and five daughters.

The Prince and Princess of Wales visited the galleries of the Fine Art Society, in New Bond Street, to view the exhibition of Mr. Briton Rivière, R.A.'s, drawings of animal life, and Mr. A. Wallace Rimington's collection of water-colours of England and Spain.

Mr. William Mather, M.P., has offered to present to the Gordon Memorial College at Khartoum the complete equipments necessary for the establishment and organisation of departments for manual training and technical instruction. These equipments will consist of machines and hand-tools for wood and metal-working, a small foundry and forge, a boiler and steam-engine, a dynamo to generate electric current, and electric motors to drive the machine tools, pumps and hydraulic appliances, &c. The object and design of these departments will be to promote classroom studies of natural science and general knowledge, with a view to giving the Soudanese boys now being trained in the primary schools such a practical education beyond the preliminary stage as shall enable them to apply their knowledge to the development of the natural resources of their country.



## NOTES AND COMMENTS.

THE restoration of the Market Cross of Chichester was again considered at the meeting of the Town Council on Friday. The Mayor proposed that the work required on the structure, which is at present in a dangerous condition, should be undertaken as a memorial of the Coronation, and that the funds should be obtained by subscription. One member recommended the substitution of copper bars and bolts instead of iron, as the extra cost would not be more than 100%. Another councillor said the cross was an obstruction, and it ought to be removed to a position where it would be less of a danger, a suggestion which other speakers described as monstrous and deserving of condemnation by the civilised world. If the cross is so important it is strange so little care was taken to preserve the masonry. Eventually it was decided to make an appeal throughout the district for subscriptions towards the cost of restoration, which will amount to 450%.

A QUARTERLY meeting of the Royal Society of Antiquaries of Ireland will be held in Dublin on Monday next, when the following papers will be read:—"Notes on Three Bone Pins found at the bottom of Ballinderry Lake, co. Westmeath;" "High Crosses and Abbeys in Leinster and Munster;" "Stone-Age Settlements in Meath;" "The Giant's Grave, Loughloughin, near Broughshane, co. Antrim;" "The Inquisitions taken on the Death of William, Earl of Ulster, A.D. 1333, and the Occupation of Connaught by the Anglo-Normans." They suggest that a wide field yet remains for the exercise of the energies of archæologists. On Tuesday there will be an excursion to Slane, co. Meath, where there is much which is interesting within a limited area. The place is said to have been known as Ferta Fear Feic, from trenches and earthworks formed for burial in Pagan times by the slaves of FECCOL FERCHERTNI, a heathen prophet. ERC, son of DEG, a bishop and brehon to St. PATRICK, established a hermitage in Slane about 540; a monastery, college and seat of a bishop were founded on the traditional spot where St. PATRICK lit his pascal fire, visible at Tara. The monastery was several times ravaged by Norsemen from 833 to 1170. Its round tower, full of people and relics, was burned 948, the Danes, under their leader BLACAR, having suffered a severe defeat and lost 1,600 men the year before. The English, under RICHARD FLEMYNG, built a castle in Slane about 1175. The see was merged into the Bishopric of Meath in 1216. In 1513 the present college and monastic church were rebuilt for Franciscan monks by CHRISTOPHER BARON, of Slane. On the river Boyne currachs resembling the ancient canoes may still be seen.

THE trade-union policy of interfering with the interests of individuals, whether members of a society or outsiders, has not met with much favour of late in the law courts. A case heard at Manchester before Mr. Justice WILLS is the latest indication of the spirit which now prevails among judges. The plaintiff, JOSEPH THOMAS, is a joiner, and he sued the Amalgamated Society of Carpenters and Joiners for unlawfully procuring his dismissal from employment. In 1900 plaintiff applied to become a member of the Society, and paid a fee. For a time he was compelled to accept work in a non-union place. Afterwards he sought full membership when he was able to pay the full payments, but in vain. He was at work when a deputation of delegates waited on his employer, and announced a strike unless THOMAS was dismissed. The employer reluctantly complied. Since December 1901 THOMAS could obtain work for no more than a fortnight. Mr. Justice WILLS said the question for the jury was whether the action of the delegates was taken to promote the legitimate interests of the society or vindictively to punish the plaintiff for having taken piece-work. The jury found for the plaintiff and assessed the damages at 100%. The injunction was also granted restraining the society from interference with the plaintiff.

## ILLUSTRATIONS.

## NEW DINING-ROOM, COWLEY MANOR.

VERY large and important alterations and additions have for the last two years been carried on, and are now nearly completed, at the above interesting old manor house, in the grounds of which is the source of the river Thames. The drawing illustrated shows the treatment of the new dining-room, a room 42 feet by 23 feet. The panelling, doors and chimney-piece are of Cuba mahogany, the carved swags and shields being of lime-wood. The work has been carried out by Messrs. H. H. MARTYN, Cheltenham. The heavily-enriched plaster ceiling and frieze above the panelling have been executed by Messrs. G. JACKSON & SONS, of London; and Messrs. CLEMENS JEAKES & Co. carried out the heating work. The general contractors were Messrs. J. PARNELL & SON, of Rugby. Mr. R. A. BRIGGS, F.R.I.B.A., of 12 Norfolk Street, Strand, W.C., was the architect, from whose designs and under whose superintendence the work was carried out.

## ALTERATIONS TO CHURCHYARD, ST. ANDREW-BY-THE-WARDROBE, QUEEN VICTORIA STREET, E.C.

THE artistic treatment of the open spaces of the City and more especially, perhaps, of disused churchyards, has added most materially of late years to the convenience and pleasure of those whose daily round of toil is spent within the restricted area of "the square mile." The churchyard of St. Andrew-by-the-Wardrobe, Queen Victoria Street, was originally unseen from the street, its growth of pretty shrubs being obscured by a high brick wall. This obstruction has been removed and the space thrown open to the street. Our illustration shows the alterations that were projected in connection with the churchyard. The original design, which is the work of Messrs. BANISTER FLETCHER & SONS, architects, 29 New Bridge Street, E.C., has not been carried out in its entirety owing to the cost of the work. The illustration shows a rearrangement of the existing steps by the formation of two flights of side steps and the construction of a balcony, the lower portion of which would form an alcove, while the upper part would provide an open space available for seating accommodation. The present arrangement is, however, confined to the removal of the existing ugly brick wall and the erection of stone gate piers and wrought-iron railings in consonance with the general design of the church. The ground behind the railings has been sloped up to the terrace in front of the church itself. This ground has been turfed and laid out as a garden. The fountain shown in the sketch also forms part of the original design.

## MESSRS. GOSLETT'S PREMISES, 127, 129 &amp; 131, CHARING CROSS ROAD, W.C.

THESE new premises have recently been erected on Charing Cross Road for Messrs. GOSLETT, the well-known builders' merchants. The site has a frontage of about 53 feet and a depth of about 40 feet. The materials used are Portland stone and red brick facings, and the roofs are covered with green Westmoreland slates. As to the exterior, the ground and first floors have been grouped together, and an attempt has been made to make the portion as bold as possible; they serve to indicate the showrooms. On the upper floors are the offices and showrooms. The general contractors were Messrs. LAWRENCE & SONS, who have most efficiently carried out the design. Mr. GILBERT SEALE is responsible for the carving to the main cornice. Messrs. WAYGOOD supplied the hydraulic lift, the N.A.P. Window Company supplied the steel casements. Mr. BANISTER F. FLETCHER, A.R.I.B.A., was the architect.

## LUNTREATH CASTLE, STRATHBLANE, N.B.: DINING-ROOM BILLIARD-ROOM.

## CATHEDRAL SERIES.—RIPON: VIEW OF THE SOUTH SIDE OF THE NORTH SIDE OF THE NAVE, SHOWING DOUBLE BUTTRESSES.



# THE ARCHITECTURAL ASSOCIATION.

MEETING of the Association was held on Friday, the 25th ult., Mr. G. B. Carvill, vice-president, in the chair. It was announced that Mr. C. Harrison Townsend had been elected a member.

The following donations to the New Premises Fund were received:—Mr. W. H. Lever, 25*l.*; Mr. John Murray, 10*l.* 10*s.*; Henry White, 10*l.* 10*s.*; Mr. C. de Gruchy, 5*l.* 5*s.*; E. J. Rider, 5*l.* 5*s.*; Mr. L. Jacob, 3*l.* 3*s.*; Mr. E. J. Taylor, 2*l.* 2*s.*; Mr. Francis R. Taylor, 2*l.* 2*s.*; Mr. A. C. Selby, 1*l.* 1*s.*; Mr. T. T. G. Donaldson-Selby, 1*l.* 1*s.*; Mr. H. Flower, 1*l.* 1*s.*; Mr. A. T. Griffith, 1*l.*; Mr. H. W. H. Paton, 1*l.* 1*s.*; Mr. H. C. Strange, 1*l.* 1*s.*; Mr. Horace White, 1*l.* 1*s.*; Mr. C. H. Vernon, 1*l.* 1*s.*; total subscriptions to date, 145*l.* 6*d.*

E. A. GRÜNING read a paper on

## Arbitrations.

I have had the honour of being invited by your committee to read a paper on "Arbitrations." This I do willingly; but I have written books and read papers on this subject for many years, and I therefore propose to speak simply on arbitration from the architect's point of view, and to confine myself to such as may occur in the ordinary practice of an architect. I propose also not to go too deeply into the question of precedents, or of law. In fact, as far as possible, to confine my remarks on the knowledge I have personally gained from my practice.

Arbitration was really the earliest species of law. In early times the king or head of a tribe was the arbitrator in civil and criminal cases. True, he had extraordinary powers, which his successors at the present day do not possess, and sometimes I cannot help thinking it would be a mercy if he did, and were able, in the same way and by the same means, to shorten cases which are otherwise very protracted. In course of time law superseded arbitration, but a custom set in, by which arbitration has become more than a merely recognised means of settling disputes, being now clothed with legal powers, which until recently did not exist. Although many arbitrations had taken place under agreement, the beginning of this change arose with the legislation of the Law Procedure Act of 1854. But the Arbitration Act of 1889 did more than anything to put arbitrations on a legal basis, and to invest them with a dignity and importance till then they had not possessed. Without going into the detailed provisions of this Act, it may be said that the arbitrator has all the powers of a judge of the High Court, the power of committal to prison for contempt of court, and proceedings are as strictly defined as those of the courts. An arbitrator cannot be deposed except for misconduct or corruption. The object of arbitration is, or should be, to simplify the settlement of disputes. The arbitrator should be an expert in the subject which he has to decide, the object being to avoid waste of time in informing him of the customs of professions and trades, and bringing evidence necessary to prove such matters, which he should of his own knowledge be able to decide upon at any such evidence. Arbitrations, too, should not, if possible, be allowed to involve questions of law, and if they do arise, are better dealt with direct by the courts, though I shall afterwards show how an arbitrator can deal with them in case of need.

There are three classes of arbitration—first, with two arbitrators and an umpire, the decision of the umpire alone being necessary; secondly, where the decision of the umpire in conjunction with one of the arbitrators is necessary; thirdly, where there is a sole arbitrator. With regard to the first, excepting cases to which we shall refer hereafter, it is desirable to have two arbitrators and an umpire, unless the arbitrators conduct the case on behalf of their respective clients. It is not so if counsel or solicitors are employed, and in such cases the two arbitrators merely sitting with the umpire is practically more ornamental than useful. Under the third head there is only one class of arbitration, namely, that of party walls, under the Metropolitan Building Act of 1894. It is necessary that two of the three surveyors should be awarded. Under the third head, where there is a sole arbitrator, this is in many respects the best method of arriving at a rapid decision on the points in dispute.

The matters which come to the arbitration of an architect are of two kinds—party walls and structures; and I use the word surveyor in the sense in which Christopher Wren was surveyor to the fabric of St. Paul's, which has been held by his distinguished successors to the present day—can be classed as follows:—

Party walls under the London Building Act of 1894; party structures; questions arising out of the various Acts and amendments thereto; questions relating to party walls; building contracts; dilapidations; professional relations between architect and client, and compensation cases. Under this head would be included insurance claims.

With regard to the dangerous structures, this is a new

form of arbitration, arising under the Act of 1894. Formerly all such cases were under the jurisdiction of and were tried at the police-court of the district. It is now open to any one conceiving himself aggrieved by the receipt of a dangerous structure notice to give notice under Part 9 of the Act, provided he does so within seven days, requiring the matter to be referred to arbitration, and Clause 107 of the Act prescribes the method in which this shall be done. It is practically a repetition of the procedure in party walls, with the exception that the award is signed by the arbitrator or umpire only. In this case, if the owner of the alleged dangerous structure does not demand within seven days after service of the notice the appointment of an arbitrator, the matter reverts to the police-courts, as under the former Acts.

We now come to arbitrations on questions of light and air, by far the most difficult of any with which an architect or surveyor can be called on to deal. The state of the law on this subject could not be more unsatisfactory than it is, owing to the conflicting decisions of various judges and the reversal of the judgments of the Court of First Instance by the Courts of Appeal—notably in recent cases. Efforts are being made to obtain a revision of the law as to easements of this class by a joint special committee appointed by the Royal Institute of British Architects and the Surveyors' Institution, with the assistance of two eminent King's Counsel. A Bill will be introduced into Parliament, we hope, in the current session, and I think every one will wish it success in simplifying matters of such great complication and difficulty. The main principles of the proposed Bill are settlement by arbitration, the proceedings being similar to those under the Factory Acts; the elimination of extravagant claims for special uses of ancient lights; the extinction of claims of this class in future buildings not already possessing ancient lights, and the simplification of means of objecting to such rights being acquired by the simple means of giving a statutory notice of objection instead of the present cumbersome and barbarous means of erecting and maintaining screens or other physical obstructions. Arbitrations under this head arise under different circumstances. The arbitrator or umpire may be appointed by agreement; he may be appointed by the judge of the Court in which the case is tried, or he may be required simply to report to the judge his independent opinion of the case. In this sense he is practically an arbitrator, inasmuch as the judge would probably, and in nearly every case, give his judgment in accordance with such report if confined strictly to questions of fact. The duties of the arbitrator here are very wide, and he can and should often do much to bring the parties together by suggesting a reasonable compromise, either by the modification of the defendant's proposed building, by reasonable compensation for the injury likely to be inflicted, or often successfully by suggesting an improvement to the plaintiff's building—of course, in the latter case to be carried out at the expense of the defendant.

The next class we have to deal with are dilapidations. These are more strictly matters of account. The repairing clauses in leases and agreements are often vague, and it is, therefore, often difficult to arrive at a decision. The arbitrator must determine on the items of claim which he intends to allow, and after that price them according to the best of his knowledge.

A more delicate question than that arising between architects and their clients cannot be conceived. Often these cases are painful to hear, and to decide; they usually take the shape of an alleged overcharge on the part of the architect, resisted by a counterclaim for his negligence, and damages arising therefrom. The procedure is the same as in other arbitrations, but in this—more than in any other class of cases—there is apt to be personal feeling and recrimination. In my own experience most such cases arise where the so-called architect is not a member of the Royal Institute of British Architects, but nevertheless attempts to use, and often to unduly interpret and strain to the utmost the schedule of professional charges.

With compensation cases the architect has comparatively little to do. These claims generally arise with reference to properties taken under the authority of an Act of Parliament. They may arise as a consequence of damage caused by the construction of neighbouring buildings or works, both as regards structural damage and consequential injury; and there may be other causes of complaint. But, as a rule—and particularly as to compensation for compulsory purchase—these are left in the hands of surveyors or agents, pure and simple. I mean agents dealing with properties and accustomed to assess the value of land, and the rental values of land and buildings. I am sorry to say that, with the occasional exception of the plaintiff's case in actions for injury to light and air, there is no class of arbitration or trial in which such exaggeration takes place as in compensation cases. This would seem to arise under the idea that a jury or an arbitrator would average the claims made against the counter offers. It appears often in these cases quite impossible to give conscientious evidence, as that would be of no use to the party represented. In fact, the witnesses too often consider that they are advocates



rather than experts. A well-known judge once remarked that there were three classes of witnesses—the truthful, the perjurer and the professional expert.

With regard to the duties of arbitrators and umpire. Should arbitrators be employed, their duty is to prepare each his own case: to boil it down and simplify it so as to only produce the salient points of real importance at the hearing. I have already said that arbitration is intended to simplify the settlement of disputes, and I cannot too strongly advise anybody engaged in this class of practice to be most particular and most careful in preparing the case for his side, fully setting forth his case without bias or exaggeration. More than this, he should, if he can, endeavour to ascertain and to work out the opponent's case so as to be ready to meet his opponent's arguments. He should have every drawing, every paper that he has to produce during the case, readily accessible and at hand, in order to avoid waste of time. In party-wall cases, before the third surveyor is called in, accurate drawings should be made of the wall, both in plan, elevation and section. The wall should be plumbed to ascertain how far, if at all, it is out of the upright; and the nature of the materials of which it is composed should be, as far as possible, ascertained. The surveyor to the building owner should also be prepared to state exactly what he really proposes to do, which cannot always be disclosed by the statutory party-wall notice, as this has to be given in advance, and it is not always possible at first to ascertain the exact circumstances of the case and condition of the structure in question.

Now in speaking of the duties of arbitrators as such, where there is an umpire, I may as well say that under this head I include the duties of architects or surveyors who have to prepare their side of the case for hearing. In all of these cases the same care should be taken in preparation—no points should be overlooked, and the points likely to be raised by the opposite side should be foreseen. The two architects, whether acting as arbitrators or not, should before the hearing agree facts as far as they possibly can; they should verify each other's drawings. In cases of light and air they should prepare a model, to be jointly agreed upon by both parties, and they should do everything to avoid disputes as to fact at the hearing, so that time will not be wasted in producing a lot of evidence to prove anything which ought not to require proof at all.

With regard to the Factory Acts, arbitrations are a procedure of comparatively modern form. They arise out of the operation of the original Factory Act and of numerous amendments of such Act, and are confined to determining the necessary provision for means of escape in case of fire, and to certain sanitary arrangements, both of which appear formerly to have been much neglected. Many difficult cases arise, owing to practical considerations, and the necessity of obtaining rights of way or access to the premises of neighbouring owners. I must say that the London County Council, as the statutory authority, though gradually improving in this respect, sometimes render these matters very difficult to decide by incorporating in their notices requirements, conditions and provisions with which it is absolutely impossible for the owners of property to comply. But that procedure of some sort was imminently necessary is quite clear. These questions bear very hardly on owners of property, who might in many respects be more leniently dealt with than they are at present. In this case the presence of umpire and two arbitrators is necessary at the hearing. The parties may or may not be represented by solicitors or counsel. The decision, however, rests solely with the umpire. As in all other cases, there is an appeal to the courts, but this appeal can only be on points of law and the validity of award, but not upon the facts as originally decided.

Troublesome matters are arbitrations arising out of builders' contracts. Here, again, much can be done to shorten a reference by agreeing beforehand to such items as possible, and also by agreeing in what order the claim and counterclaim, if any, should be taken, so that in case of need an interim decision may be given, shortening disputes only too likely to be prolonged. It is no unusual thing for the hearing of an arbitration on a building contract to last for any time from twenty to forty days, when anything that either party might have gained is completely swept away by costs. In these protracted cases nearly always personal feeling is introduced, which does not tend to promote a rapid settlement. Under the form of contract now in general use, the arbitration can only be opened after completion of the works, or when either party is dissatisfied with the architect's final certificate. But there are many cases in which much friction can be avoided and time saved by a hearing during progress of the works. The architect of a building must always remember that he is not only the agent of his client or employer. He must also during progress of the works, as above mentioned, hold the scales of justice between employer and contractor. Questions as to material and workmanship may arise which it is difficult to determine later on, when much of the constructive work has been covered up.

As to dilapidation arbitrations, I think I have already said nearly as much as I need. These rarely get into the courts; they are generally settled by the surveyors on behalf of claimant and landlord, and tenant or defendant, an agreement being come to before negotiation as to the name of the third party or umpire, whose decision shall be final. They are matters of little interest, rarely involving any special principle of law, and really only being a money dispute.

With regard to disputes between architects and clients, I think I need add no more to what I have already said. Compensation cases the procedure is practically the same as in other arbitrations already noticed.

I have, therefore, so far, I think, defined the various methods of procedure, the duties of the umpire and arbitrators, including under the latter head the architects and surveyors employed to advise their respective clients.

We now come to the preparation of awards. The duty of the arbitrator or umpire is to ascertain that he is properly and legally appointed; to receive and take into possession the documents or agreements referring to the appointment; to ascertain generally the nature of the claim and counterclaim, if any, so as to avoid what I may call fishing claims, and to regulate the order in which the case shall be heard. The arbitrator or umpire may be appointed in various ways: he may be appointed by a judge of one of the High Courts; he may be appointed by agreement or by some person to whom his nomination has been referred, such as the President of the Royal Institute of British Architects or of the Surveyors' Institution; he may be the person specially nominated in a building contract as the arbitrator. The preliminary points being settled, he must proceed with the hearing, first arranging as to whether witnesses are to be sworn, and must show great patience in allowing all matters to be brought forward, and, at the same time, firmness in stopping irrelevant matter and personal recrimination. He sometimes may, in questions of light and air particularly, be able to make a suggestion which practically puts an end to the case, and it is his duty, whenever he can do so, to shorten the proceedings by means of proposing a fair compromise. He should avoid interfering in the conduct of the case, leaving each party to conduct his own case, and only speaking when it is necessary to give a decision on a point of procedure or to settle or define a doubtful answer. He should particularly avoid showing any leaning to either side, and should allow no expression of opinion as to the merits of the case to escape him. In some cases it may be necessary for him to give an interim decision, or to state a case for the opinion of a superior court prior to proceeding further. For instance, he may have to decide in a disputed account whether or no there is a contract; but this should not be done unless absolutely necessary. At the conclusion of the hearing, having given both sides a fair and impartial opportunity of bringing forward evidence and statements, he should reserve his decision, in order to reflect through the evidence and his own notes. These he should make himself, shortly, both of the arguments of either side as well as of the heads of the evidence. If shorthand notes are taken throughout the whole of the proceedings, his own short notes, embodying only the salient points, are much easier of reference than a verbatim report. It is always well to agree, with regard to shorthand notes, whom they shall be paid for in the first instance, and that they shall be accepted as correct by both parties. It is perfectly useless to have two shorthand writers, one on either side. Generally speaking, it is convenient to have shorthand notes taken of the whole case, without necessarily having them transcribed in their entirety. It saves a great deal of time to have the speeches of counsel and arguments transcribed, as it is impossible for the arbitrator or umpire to follow these exactly with his notes without causing great delay. The heads of evidence he must himself be able to take down. In purely technical cases, such as dangerous structures, party or party fence walls, arbitrators or umpires should be capable of drawing their own awards. In fact, the Act would seem to preclude the employment of solicitors or counsel in these cases. The award should always begin with a recapitulation of the origin of the dispute; under what circumstances it has arisen, whether under contract or otherwise. This part, generally called the preamble, should be accurate and should enumerate the whole matter concisely. The award itself should be drawn carefully in as few words as possible, setting forth the items in dispute in separate paragraphs, one paragraph to each item rather than a connected sentence, stringing them all together, and is sometimes necessary to attach and refer to diagrams, plans, &c. In it the arbitrator must recollect that he is both judge and jury, and, in fact, he has more power than a jury. A jury's decision can be upset on the ground of misdirection by the judge who sums up. An arbitrator has no one to sum up to him, and his decision on the facts is absolutely final, except as I have mentioned in party-wall cases. In most cases except those above named, it is advisable to employ a solicitor to draw the award, furnishing him, of course, with all doc-



necessary to draw the preamble, but not with more than ads of the decision at which you have arrived. If a legal is strongly contested during the hearing, it is better to it once that if such point is insisted upon you will make ward subject to a special case to be stated to one of the or courts. An arbitrator must also remember that he is together in the position of a judge. He has to decide on and not on law, and for that reason it is unadvisable and al that he should in any way give any hint of the reasons have induced him to come to his decision. I have heard that this is cowardly, and that a man should be prepared e his reasons for anything that he does, but I cannot see his accusation is correct. The arbitrator has to do his according to his conscience, and the very essence of his yment is to put a final end to the dispute. His simple on on a point of fact is an end of this, whereas if he gave is he might leave the matter open to continued and pro- further litigation. Where a case is stated for the opinion e superior court it is necessary to give alternative deci- -that is, if the court rule one way, then the decision will and so, the alternative decision being given in case the rules the other way

to costs of arbitrations, these generally follow the decision, many cases both parties may be equally in the wrong, may be necessary to give some decision as to how costs be allotted. Both parties cannot be equally in the right e last word on awards. In making an award do not e or attempt a compromise. As far as possible give your one way or the other. Nothing is so unsatisfactory th parties as striking a balance, or "splitting the nce"

re must also be taken to issue the award within the is prescribed by the Arbitration Act. But the umpire or ator has power to enlarge the time for this, provided es so in writing prior to the expiry of the prescribed l

ow, having spoken of arbitrations, I should like, with permission, to speak on the question of their avoidance ilding contracts, for instance, the necessity for arbitration arises out of carelessness, either in the preparation of ngs, specifications and sometimes of quantities, or out of ant of proper notes made during the carrying out of the s. It is only fair to a builder or contractor that at the t of the job he should know fairly well what he has to do. m it will make a great difference in organising his work n ordering his materials; in fact, it may make the ence to him between profit and loss. Builders are human and if they see a loss before them you are not likely to s good work out of them as if they see a profit, and any actor will tell you that he can work cheaper for one archi- than he can for another. In the first place, contract ngs should not be looked upon as pretty pictures r from an artistic point of view. Every line should efinite, and should mean something; every colour d be an indication of material; shading should be ed; the drawings should not be mixed, details being imposed upon small-scale drawings. Everything should et out as far as possible with the view of giving workmen actually employed what amounts to a book hey can read. Drawings and draft specifications should mpleted before being placed in the hands of the quantity yor. Generally the quantities form no part of the con- but it is only fair that the notes made by the quantity yor during the progress of his work should be carefully dered and added to the drawings and to the specification. quantity surveyor should also have ready access to the tect during the process of taking out quantities, in order any point not clear on drawings, &c., can be made so e the work is tendered for. An architect should as far as ble avoid all alteration of his design during the progress e works, and ought to have made up his mind beforehand e wants to have. Alterations are a fruitful source of te, though they often cannot be avoided on account of the yncrasies of clients. The next great cause of dispute s out of the question of giving orders for extras, omissions variations. It is almost impossible on works to give a n order for every variation and instruction required, but lerk of the works or foreman can be instructed to make of these as they occur from day to day to submit them to rchitect on his next visit, and if the architect initials them can be then acknowledged to be orders in writing under rms of the contract. The proper provision of full-sized detail drawings and other details at the earliest stage of orks is of great use to the contractor, and the showing of deration to him in facilitating the setting out of the work e ordering of goods is an inducement to him to do his conscientiously.

f course builders are also often in fault, raising contentions inwarrantable claims. The only remedy for this is steadily use to entrust them with further work.

With one more remark I shall conclude. A constant source

of trouble in contracts is the attempt to please our client by trying to get a larger amount of work or more elaborate work done for him than an architect can properly expect for the amount placed at his disposal.

Mr. A. O. COLLARD, who proposed a vote of thanks to the author for his paper, said that he should have liked Mr Grüning to have made more references to his own personal experiences. That would offer a good opportunity for any of the members present to raise questions, and in that way to obtain an inexpensive opinion. It was a commonly quoted saying that poets were born and not made. This was also held to apply to artists, but it was no less true of the arbitrator. In taking part in an arbitration it was strongly advisable to avoid the introduction of any legal points, for being usually irrelative they only added to the confusion. There were many architects who were deprived of the faculty of clearly explaining themselves to people, although the whole matter was clear in their own brain. This being so, it was evident that the more an architect knocked about the world the greater chance he had of supplying this deficiency, which was the reason of many troubles. Should any architect be anxious to acquire a personal knowledge of arbitration, the best course was to obtain a lady client and then to accept the contract of a litigious builder. But for students there was no reason why they should not get initiated into the mysteries of arbitration in the same manner as young barristers learn the law, by making a study of it on the spot. The attendance at arbitration cases to see how the architects conduct their cases would be time well spent, even if it had to be taken from the drawing-board, admirable as that institution is. For his part he was of opinion that it ought to form a part of the curriculum of the Association.

Mr. H. T. HARE, who seconded the vote of thanks, remarked that Mr. Grüning's paper had especial value owing to the extreme dryness of all works which treated of arbitrations. The vexed questions concerning ancient lights would be much simplified if the angle of 45 degs. could in some way be recognised by all as the status. There had been several attempts made to improve the law of ancient lights, but there was only one real way, and that was by its total abolition. America had no such law, and no one was anxious to propose one. With regard to what the previous speaker had said about arbitrators being born, not made, it was equally true to quote what Ben Jonson had added when someone made the same statement with regard to poets—that that was so, but all the same they required an endless amount of making.

Mr. C. H. BRODIE was of opinion that bills of quantities ought to be part of the contract, as by that arrangement there would be much less disputing. The committee of the Royal Institute of British Architects had drawn up, and would shortly have ready for use, a form of agreement in which the quantities form part of the contract. He said he considered the Tribunal of Appeal was an excellent instance of the way to deal with arbitration cases. In those cases which came into the courts of law there was frequently a surprising amount of ignorance of technicalities shown by those who had to determine the questions at issue. The state of the law which dealt with ancient lights was nothing short of a scandal. With regard to the adoption of the angle of 45 degs., he thought that it must be perpendicular as well as lateral. A book was soon to be published by the Institute dealing with dilapidations, and this he strongly recommended to the members' attention.

Messrs. H. A. SATCHELL, H. LOVEGROVE, H. J. LEANING and G. B. CARVILL also spoke.

Mr. GRÜNING, in returning thanks, disclaimed the possession of any inherent talent for the duties of arbitrator; it was really a question of luck. When beginning his practice he had got involved in several lawsuits, which both gave him an unusual knowledge of the law and also a reputation of being a fighter. He did not believe that any rigid rule as to the adoption of the angle of 45 degs. would be practical; each case must to a certain extent depend on its own circumstances. He expressed great willingness to help by his advice on matters of arbitration whenever any junior members of the profession found themselves confronted with difficulties. The Tribunal of Appeal was as much a court of law as any court in the world.

The Sanitary Conference held at Manchester have adopted the following resolution with regard to "Garden Cities":—"That whereas the housing problem can be solved and the congestion in crowded centres relieved by a concerted movement of manufacturers, co-operators and others to new areas, arrangements being made for securing to the migrating people the whole of the increased value which their presence will give to the sites, and the area being carefully planned so as to make adequate provision for the individual and social needs of the people, especially with a view to securing for all time the combined advantages of town and country life."



## SOME ANCIENT HAMPSHIRE PALACES.\*

FROM the title of this paper more, perhaps, may be expected than can be gathered even from treasured archives or from what remains of these once important manor houses of the See of Winchester.

With the exception of Wolvesey Castle at Winchester, the other buildings are but fragments of what were once important structures in every way, not alone by the prelate-architects who were associated with their construction, but from the long annals of our land with which they have been closely entwined.

Such examples have been fully represented in Hampshire, and especially in Winchester, whose early history has been bound up with the whole story of the growth of England. Synods and Councils were held at Winchester, and the name of King Alfred the Great, whose brilliant reign has been lately commemorated by a statue designed by Mr Thornycroft and placed in that city, is enough, besides other events, to have made the fame of this southern capital.

Even St. Swithin, to whom the cathedral is dedicated, plays an important rôle in our history, for King Ethelwulf's Charter (the original of which is in the British Museum) gave special grants to the Convent of St. Swithin.

This bishop is said to have induced the monks to build a wall of defence round the cathedral precincts, and it is probable this wall saved the monastery when the Danes were ravaging the city.

It is also said that the outer wall of Wolvesey Castle, which still remains, and shows traces of long and short masonry, flintwork and Roman bricks built therein, is due to St Swithin.

Hence we see the early architectural importance of Winchester. Learning was also represented, and, in the words of Dean Kitchin,† we read:—"Under Alfred's fostering care Winchester became the home of all the learning and the arts known in that day, and rivalled the earlier splendour of the court of Charles the Great at Aix-la-Chapelle. In Wolvesey Castle itself King Alfred compiled the 'Saxon Chronicle,' truly the first history book of the English people."

The artistic activity of Winchester was also seen in the foundation of Hyde Abbey, near the city, where some of the choicest examples of illuminated MSS. were produced, and have come down to our times, preserved at the British Museum and elsewhere. Later on we find this Mediæval city the focus of trade and industry—clear streams supplied resources for the fulling and tanning mills, the cloth manufacture had been well established, and the guild halls of the merchants were a great feature of its life.

As a centre of exchange and trade it rivalled London—so long as Southampton was an important port, Winchester shared in its commerce. In the well-known "Winton Domesday" is recorded the names of the chief citizens, the franchise and liberties this powerful city then enjoyed. It was also a Royal residence, exhibiting true loyalty till the dark days of the Commonwealth, when the city suffered greatly. An attempt was made by Charles II. to revive the ancient glories of the place, for he determined to build there a palace which should rival the splendour of Versailles, and commissioned Sir Christopher Wren to secure a site which would have commanded a stately approach to the cathedral—fair terraces and steps were to lead thither—and a very royal structure would have risen had not the king's death in 1685 arrested the whole design.

Queen Anne was much struck with its situation; the house was never inhabited and was afterwards used as barracks till a great part was lately destroyed by fire. It will thus be seen that Winchester and Hampshire have played a great part in architectural history, and when we consider its prelate-builders, whose names have become household words, a review of their lives and works cannot but form a chapter in our studies. From the first Norman bishop, Walkelin, in 1079, who rebuilt the cathedral, Bishop Henry of Blois, to whom the castles of Farnham, Wolvesey, Merton and others owe their origin, to the famous William of Wykeham, followed by Bishop Wayneflete, and after the Commonwealth period by Morley, the restorer of Wolvesey and Farnham, a series of illustrious craftsmen is presented to our notice.

Their influence also reached to the small village churches, many of which show marks of a high order of merit. A similar influence may be traced in other English counties, especially that of Durham, where Bishop Flambard's hand is not only seen in the glorious cathedral, but in many of the humbler structures, ecclesiastical and domestic, throughout that county.

Of Winchester, writes Dean Kitchin:—"Her ancient buildings, her many customs, gave to the venerable city a right to the undying affection of all those whose lot has fallen to them in such places."

\* A paper read by Mr. S. W. Kershaw, M.A., at the meeting of the Society of Architects held at St. James's Hall, Piccadilly, W., on Thursday, April 24.

† *Historic Towns: Winchester.* 1890.

In offering these outlines of architecture and history to a technical audience I have, in view of the scanty remains of old palaces, ventured to touch more prominently on the names of those prelate-architects who made not only their residence famous, but have added many a page to our country's annals.

In nearly every county there have been palaces and manors belonging to the bishop's see of much historical importance which have played their part in antiquarian annals. Progress and sojourns of some days were made to these houses; they served as a convenient halting-place when journeys were long and tedious, and were also used for the transaction of official business. In the registers and Act books of the various legal and other matters were recorded, with consecration, institutions to livings, several of which were dated from episcopal houses. In Kent these houses were very numerous in olden times, and among the most important were Saltw, Canterbury, Knole, Mayheld (Sussex), Maidstone, and other smaller residences. Their number in this county may be ascribed to the importance of the arch-diocese, which, besides chronicling its own business, included that of other dioceses. In Hampshire the houses are fewer, but no less interesting, and among them were Wolvesey, Bishop's Waltham, Merton, Downton, Highclere, and some of lesser note.

When William of Wykeham was bishop there were twelve different castles, manor houses and places of residence in this country. Of these Wolvesey claims the first rank; tradition goes back to the seventh century and would assign place for a bishop's house on the site of the present structure. From Dean Kitchin's words we gain a glimpse of Wolvesey's early history:—"Under Alfred's fostering care Winchester became the home of the learning and arts in those days. At Wolvesey Castle, with the help of the brethren of St. Swithin's Convent, the earlier part of the Anglo-Saxon Chronicle was compiled and copied—the original MS. has been kept here, fastened by a chain to a desk, that all who wish to read it might read it as it grew from year to year."

Kings and prelates seem to have shared at that time this castle home—in the twelfth century we may fix the foundation of Wolvesey as the "palace" with "a very strong tower," built by Henry de Blois, the architect-bishop who erected portions of Farnham Castle. Bishops and nobles were encouraged by the Norman sovereigns to erect castles in every part of the realm as a stronghold against English rule.

The insecurity of feudal times made every house, no less than the city than in the open country, a castle. Leland describes Wolvesey "a castle or palace well fortified, and the old wall extended almost to the city bridge, being fortified with towers at proper distances," a statement endorsed by Camden, who wrote, "It was very spacious and surrounded with many towers." An interesting feature of Wolvesey was the peculiarity of the masonry of the walls, that were said to have been in connection with a fort on the original structure. Bishop Henry de Blois strengthened this castle, which was again fortified by the Royalists when Winchester and the neighbourhood fell under the contending armies of the Commonwealth.

The city has ever been famed from King Alfred's days to the present; "no English city," writes Dean Kitchin, "has a better record in the past, and a life more peaceful in our rushing age."

Roman roads converged at Winchester, travellers and pilgrims were entertained at St. Swithin's Priory, and foreigners would come from Bordeaux or Havre, after landing at Southampton, to this ancient capital. The city also has a mint from early times, even in King Athelstan's days; in 1105 the mint was destroyed by a fire which burnt the Royal palace and part of the town; the coinage was, however, re-established in another building.

The learning of Alfred and the foundation of Hyde Abbey—so famous for its "Scriptorium"—made the municipal life and guilds of this place very little behind London in those early times, and the Liber de Winton alone, collected by King Alfred, if not his other labours, would have made the city renowned.

To this day the ruins of old Wolvesey remain, picturesque and historic in their decay, while its golden period can recall many a famous incident. At one time it was occupied by Bishop Peter des Roches, a native of Poitiers, and we can almost mind his entertainment of the young King Henry III. here. It was also used as a State prison, as shown by reference to the almoner's roll of St. Swithin's, in which list expenses for the maintenance of prisoners (at Wolvesey) finds a place. Edward III., Queen Philippa and Archbishop Stratford, who had formerly been Bishop of Winchester (1322-33), visited and stayed at Wolvesey. For hospitality and gifts to the attendants and others a heavy charge was incurred, as stated in the receiver's accounts for St. Swithin's Priory. One famous name, William of Wykeham, is prominent as having resided at Wolvesey, and from having lived there in much splendour. Called from his native place, Wickham, near Fareham, in the Hants, he was pre-eminently an architect-prelate, having built Queenborough Castle in the Isle of Sheppey, and Winchester



lege, while his work at Winchester Cathedral and other places would alone signalise his skill.

William of Wykeham was placed at Winchester School; it is not appear, however, that his architectural knowledge developed before his twenty-third year, when he was in King Edward III.'s service and made clerk of all the royal manors, the patent for that office was conferred on him in May 6, followed by the surveyorship of the king's works at Windsor.

Many royal buildings were now rebuilt or restored, the ability followed the example, and it is possible the genius of William of Wykeham exercised a wide influence over the arts of architecture.

Wykeham rose more and more in favour. "Everything," says Froissart, "was done by him, and nothing was done without him."

In 1368 he was enthroned Bishop of Winchester, and as he speedily issued orders to have all the castles, manor houses and palaces belonging to the see repaired. The hospital of St. Cross, near Winchester (so famous in name), was restored by this prelate according to the intention of its founder, Bishop Henry of Blois, Wykeham himself also adding further endowment for the maintenance of thirty-five brethren and three sisters. His great work, the founding of New College, Oxford, was accomplished on March 5, 1380, and the building was finished in six years.

That Winchester might be connected in learning with Oxford this princely prelate founded that famous college in his cathedral city.

"It is natural," says his biographer Lowth, "that he should have a prejudice for the very place which he frequented in his early days; the school which Wykeham went to when a boy and where his college now stands," and it took six years in building.

This great bishop, having seen the completion of his cathedral, began in his seventieth year the greatest of his works—Winchester Cathedral.

He rebuilt the nave, and engrafted the elegant Gothic on his earlier work, still retaining the strength and outline of the old masonry.

"There is no fabric of its kind," says Lowth, "after those of York and Lincoln, which excels the nave and aisles of Winchester Cathedral in greatness and majesty."

Who has not seen with delight the monumental chantries of Esher, Beaufort, Waynflete and Wykeham, in which the perfected styles of art make so prominent and fascinating a picture? Wykeham was one of a band of architects whose genius has adorned our land, and may be cited as an example of one who conquered the difficulties of adapting new ideas to the spirit of the old work.

The picture gallery at Farnham Castle has a fine portrait of this prelate, who will ever be linked with the annals of art and architecture.

Wykeham was nearly succeeded by William Waynflete who was educated at Winchester and Oxford, and founded Magdalen College in that city. In 1438 he was made master of St. Mary Magdalene Hospital, in Winchester, and Henry VI afterwards made him master of Eton, a school which in some respects was modelled after Wykeham's College at Winchester.

Much intercourse took place between the college authorities and Waynflete as to architectural matters, the former visiting the bishop four times a year, accompanied by the chief mason, carpenter, and Walter the carver. "The bishop to supply materials, pay for all labourers, and to provide lodging for said Walter and all his servants."

In 1479 we read that Waynflete contracted for a supply of stone from the quarry at Headington, near Oxford, to be used in building his own college (Magdalen) and Eton.

The roll of accounts mentions several journeys to Winchester. In the year 1482 we read that the lead of the roof was put in by contract between the bishop and one John Woodhouse, of Wynefeld (Wingfield), in Derbyshire. Though Waynflete's share in the Eton buildings was great, Professor Ellis remarks that his work was confined to the church, from the numerous "entries in the accounts connecting his name with work there."\*

Waynflete resumed his work at Eton after the death of Henry VI., and on learning the small amount available for building, "not only took upon himself the direction of the works, but even supplied the necessary funds—an act of singular generosity on his part, as he was at that time engaged in his own foundation at Oxford. We also learn that the shop of Winchester's glazier came three times to Eton in the course of the year to measure the windows of the new church, and the east window is specially mentioned."

Again, in the "Architectural History of Cambridge" (vol. i. 401) is a transcript of the specifications drawn up for the

Eton buildings, and in one item Bishop Waynflete appears as a contributor to the work:—

Item of the Bushop of Wynchester for the wages of X freemasons . . . . . £LXXV XVs.

He lived to see the restoration of the Red Rose in the person of Henry VII., and died in 1486, the last of the illustrious trio, Wykeham, Beaufort, and himself. At Esher are the remains of Wolsey's tower (or gatehouse) of the palace built for that cardinal by Bishop Waynflete—"the stately mansion of brick"—between the years 1450-80, a building which in Wolsey's time must have recalled a small portion of Hampton Court. Naught but the picturesque tower overlooking the river Mole remains to tell of what once was the historic home of prelate and cardinal alike. The original building was mostly of brick, and a winding staircase of that date still exists, said by some to have been in part a faint imitation of the famous staircase in the château at Blois.

It is not unlikely that the influence of foreign workmen and artists who were employed by Henry VIII. at Hampton Court, Nonsuch Palace and Whitehall, may have led to the introduction of some details in Esher Place which could be traced to Italy or France.

In the eighteenth century great changes were made to Esher Place by Kent, the architect of the Horse Guards, in remodelling, insertion of windows, &c., and this took place during the tenure of Henry Pelham, the statesman; after his death the house was pulled down.

Esher Place has lasting memories; here Wolsey took farewell of his chaplains and the Court in the great chamber, addressing to them the pathetic words immortalised by Shakespeare, and if by a dramatic license the Cardinal's grand speech to Cromwell could be given here rather than at York Place, it would recall the well-known lines:—

Oh Cromwell, Cromwell,  
Had I but served my God with half the zeal  
I served my King—He would not in mine age  
Have left me naked to mine enemies.

Another prelate, Bishop Fox, lived much at Wolvesey, and is commemorated by his exquisite chantry tomb in Winchester nave, as well as by the erection of the famous altar screen in St. Saviour's, Southwark, near the once standing Winchester House, the London home of the bishop of that see. Bishop Fox's screen at St. Saviour's is well known for its elaborate work, and affords an interesting contrast to that at Winchester, also designed by this prelate.

The Southwark screen has thirty-three niches, perhaps in allusion to our Saviour's earthly life of thirty-three years, and Bishop Fox's peculiar device, the pelican feeding its young, is seen in many places. The screen is divided horizontally, like the Winchester example, into three stages, and contains some grotesques and other designs of originality and power. Bishop Fox, who often lived at Winchester House (his London home), would frequently have come into his church of St. Marie Overie and inspected the progress of this exquisite screen.

In Winchester, besides the screen, is Fox's glorious chantry, so famous for its details and enrichments with every form of ornamental art and some heraldic work. In the recess behind the altar in this chantry he spent many hours, and it came to be called Fox's study; "thither he was often led after his blindness."

The roof of the present choir of Winchester is attributed to this prelate, and decorated by him about the year 1502. He lived most at his manor of Esher, also at Farnham Castle, Bishop's Waltham and Taunton, all of which houses were attached to the see of Winchester. It is probable that Bishop Fox had no other architect than the freemasons—the master of the works, the designs would have been his, the details and plans the workmen's.

As one of the executors of Henry VII. and Lady Margaret, he had much to do with the building of St. John's College, Cambridge, also King's College, in that university. The designs of the stained glass in King's College Chapel are attributed to Bishop Fox, by the direction of Henry VIII., in 1515. The "Architectural History of the University of Cambridge" corroborates this fact, as appears in a memorandum of payment of 100*l.* to Barnard Flower, the King's glazier, November 30, 1515:—

"This bill witnesseth that Mr. Thomas Larke, prest, surveyor of the King's workes in Cambridge, have receaved of Mr. Robert Hacumblen, Provost of the King's College there, one hundred pounds sterling, to be delivered unto Barnard Flower, the King's glazier, in way of prest towards the glazing of the great Church there in such form and condition as my Lord of Winchester shal devise and comande to be doon." By some, the matchless windows in this chapel have been attributed, without evidence, to Albert Dürer.

Bishop Fox was frequently associated with Wolsey in architectural projects, and when the latter was enlarging Hampton Court, Fox's manor house of Esher was at the dis-

\* *Architectural History of University of Cambridge*. Willis and Clark, 1886.



posal of the cardinal, for the bishop wrote to him, "Would God that the poor lodging at Esher did content your Grace as much as it rejoices me that it can please you to use it, as often and as long as it shall please you, right as your own, and make it a cell to Hampton Court."

In 1523 Wolsey induced him to resign his bishopric on account of his blindness, which Fox declined to do, saying that although he could not distinguish black from white, yet he could discern between true and false, right and wrong, and saw the malice of the cardinal which he did not see before, and it behoved him not to be so blinded with ambition as not to foresee his end.

During Gardiner's episcopate, Wolvesey was the scene of much splendour. Queen Mary and Philip held their marriage feast in the hall of the palace, and Latin orations were pronounced by the Winchester scholars. The Civil Wars raged fiercely in Hampshire; the old palace of Wolvesey was destroyed, or naught left but a few walls; the ancient castle near the entrance to the city was also dismantled in that dire siege which devastated the country all around Winchester.

With the Restoration a new era dawned on Wolvesey; Bishop Morley was then the prelate of St. Swithin's see. He began rebuilding the structure, and employed Sir Christopher Wren for that purpose, who was also designing a new palace for Charles II. in another part of Winchester, a design never completed, and meant in its splendour to rival Versailles. Bishop Morley is also known as having repaired Farnham Castle, and he rebuilt the present chapel of that historic pile. The last to improve Wolvesey was Bishop Trelawney (1707-21), who added one of the wings and made many internal alterations.

Trelawney's name will long live in the West Country, famous as one of the Seven Bishops, and associated with the old Cornish song—

And shall Trelawney die?  
Then twenty thousand Cornishmen shall know the reason why.

In the middle of the eighteenth century Wolvesey was abandoned for Farnham and London as episcopal residences of Bishop Brownlow North; it is stated that he actually ordered the destruction of some part of Morley's work, a proceeding that would to-day receive severe and merited protest.

For some years since that date Wolvesey was left almost an empty house; it was, however, readapted by the late Bishop Harold Browne of Winchester as a Church-house, and thus remains to tell the story of its more interesting and earlier days.

#### *Bishop's Waltham.*

Of this palace, Leland wrote:—"Here the Bishop of Winchester has a right ample and goodly manor house, moated about, and a pretty brook running hard by it." The country around was well suited to such a house; the vast hunting-ground of Waltham Chase was near, and a park of 1,000 acres surrounded the domain. The name Weald-ham or Woldham would suggest the ancient wooded nature of the district, and Bush Waltham has sometimes been mentioned as a probable appellation. The palace was built by Henry de Blois; succeeding prelates added to or improved the house, especially William of Wykeham. To this day the great hall can be traced, its five large windows shrouded in ivy, together with a ruined tower adjoining.

The water or lake around may have served, as of old, for the fish ponds, an important item in those days, when Church fasts were strictly observed.

In the Domesday Survey of 1086, we find that Waltham had always belonged to the bishopric, and that Bishop Wakelin possessed it.

Bishop Henry of Blois was building the palace in 1138, at the time when he was erecting other manor houses of the see, also the famous hospital of St. Cross. A great deal of Bishop Blois's work has perished, but some of the windows on the western side seem to be of his time, also other portions lately uncovered and preserved by the care of Sir William Jenner, a recent owner of the property.

William of Wykeham, who was born in the neighbourhood, loved this palace and much improved it. He resigned his office as Chancellor in 1391, and came to reside at Waltham. The building did not escape the Civil War period; in March 1644 preparations for an assault were made, terms of surrender were agreed on, but in a few months afterwards the palace was almost a ruin.

Bishop's Waltham Church, in the neighbourhood, claims a word as having had in some part of its design the work of Bishop Blois and of William of Wykeham in the chancel, the east window of which has his well-known badge of the rose, seen also in the church at Meonstoke in this county. Besides the architectural skill of William of Wykeham he showed genius in construction of roads over marshy grounds or difficult approaches. The route between London and Winchester was very bad, and was mended and repaired at this prelate's instance. It is said by his biographer, Dr. Lowth,

that to supply himself with the best stone he purchased the use of the Quarr Abbey quarries in the Isle of Wight, and wrote letters to all the clergy of the island to send in as many workmen as they could supply. His position as warden and justiciary of the king's forests seems somewhat appropriate when we know that all round Waltham were vast wooded tracts. Woolmer and Bere forests may have formed part of that great "Anderida" or Andred's Wood which stretched along southern England.

Waltham Chase was well stocked with deer until the last century; it is not surprising, then, that we read of royalty past times favouring this spot. Henry VIII. hunted here, and bishops were known to follow this sport. When Dr. Morley was bishop he divided up Waltham Chase into farms which he leased, and in this way cleverly enriched the episcopal coffers. Bishop Hoadley some years later was urged to restore the ground; he said he had "done mischief enough already." At that time gangs of deer stealers called "Waltham Blacks" had destroyed a great part of the herds, and an Act called the "Black Act" had to be passed against these marauders. Near Liphook there was the so-called "Queen's Bank," from tradition that when Queen Anne was journeying on the Portsmouth Road she saw the whole herd of red deer brought before her by the keepers.

After Tudor times, Waltham became disconnected with the bishops of Winchester. Bishop Andrews (1618-27) seems to have been the last inhabitant of the picturesque house. Dr. Andrews's fame as a preacher and scholar is wide. He was a member of a society of antiquaries which numbered such men as Lord Burleigh, Sir Philip Sidney and others, under the patronage of Archbishop Parker, that "mighty collector of books." One of the objects of this society was the preservation of MSS. dispersed at the dissolution of the monasteries, and steps were taken to have copies or transcripts made of such as could be found. In 1644 Sir William Waller was at Winchester and Basing House, and Bishop's Waltham fell prey to the invading army, and the manor was sold. The Civil War had raged all along the border from Farnham to Winchester, and near that city, at Cheriton, a great battle was fought. The havoc inflicted on many an old building was so great that the remark was current, "no event had wrought so great a change in rural England."

Grose, the antiquary, visited Bishop's Waltham some hundred years ago, and then mentions "two courts, a gate hall, a chapel with cloisters, aisles, &c." Fragments of some of these are still remaining, and help us to imagine what was called in Gough's letters "the fair old house in times past or, as Camden wrote, "the stately seat of the bishops of Winchester."

#### *Merdon.*

Merdon, in Hursley parish, four miles south-west of Winchester, was an occasional residence of the bishops of Winchester, built and fortified by Henry of Blois *circa* 1130; all that is now left is a deep well and some ruins now in Hursley Park. Merdon is not mentioned in Domesday, and in early times was possessed by others than the bishops of Winchester; for a time the manor was held by Sternhold, who had been groom of the chambers to Henry VIII., and better known for his version of Sternhold and Hopkins's psalms.

Merdon may mean the hill fort by the pond or marsh, and it is not unlikely when the country was much wooded that it was a pond or marsh in the hollow. The house was built for defence rather than domestic use, and the manor was distinguished for special customs under which the tenants held their lands. In 1266 we read in a compertus of Bishop Guernsey (Winton) an entry for repairing and furnishing the hall. A fragment only of a flint tower remains of the whole structure; the castle was in ruins in the fifteenth century. The castle was built on an island of chalk down, shut in by trees. The fragment still standing is believed to be part of the northern gateway tower, and the entrance would have been by a drawbridge. An embankment seems to have been thrown up outside the first moat, with an outer moat of its own. The embankments on the south and west commanded a great extent of country, and on the north are steep earthworks, now overgrown with trees. The bishops of Winchester lived at Merdon from time to time, though it gradually fell into decay and was ruinous at the end of the Plantagenet period.

The Lords of Merdon were originally patrons of the church of Hursley; the manor was surrendered to the Crown by Bishop Poyntet, temp. Edward VI., and towards the middle of the eighteenth century became the property of Richard Cromwell, son of the Protector.

The old house was afterwards pulled down, and it is said that one of the walls was found the seal of the Commonwealth.

#### *Highclere.*

Another manor was Highclere, alienated from the see of Winchester in 1551 by Bishop Poyntet, who gave this and other manors to the Protector's brother, Henry Somerset. The



hops of Winchester sometimes lived at Highclere, but they also a house at Bishop's Sutton, near Ropley. Not far off the ancient town of Old Alresford, which was in a way associated with the prelates of Winchester, for Bishop Lucy (1093-1204) formed here a reservoir which communicated with the Itchen river, and thus established water transit between Winchester and Southampton. The town is also said to have been re-established by the same bishop after it had greatly fallen into decay. In glancing at the work of some of the architect-prelates of the see of Winchester, one is compelled to see that their erection and oversight of several manor houses formed no small part of the annals of old English architecture, as well as contributed to the architectural wealth of the diocese.

The surface of our country is studded with historical records, written in stone and brick and earthworks, which reach over the ages before the dawn of written history, and carry them without a break into the living present.

In connection with my subject I may mention the churches of East and West Meon, well known to most architects for their Norman work, but especially associated with this paper as East Meon was one of the bishop's manor houses, and the remains (now a farmhouse) may be seen opposite the church gate.

The brick walls and arches of this once former palace are still standing. Wakelin, the first Norman bishop of Winchester, made it his residence, and the tower of the church is attributed to him.

Farnham Castle, though on the Hampshire border, may easily be included in the list of ancient palaces, especially as the seat of the see and diocese of Winchester, and can therefore form an appropriate close to this paper.

The manor belonged to the bishops of Winchester since 1060. Of the original fortress, built in 1136 by Henry de Blois, bishop of Winchester, little remains save the keep and the servants' hall with its circular pillars, formerly the castle chapel.

The keep, the oldest part, with heavy buttresses, is surrounded by a broad, dry moat.

The castle has seen many changes, at one time almost buried to the ground and again devastated in the Civil War by William Waller. The war cloud broke heavily over Surrey and Hants. Farnham, the border fortress, was most important. Sir John Denham was then its governor, and obtained for the Parliament, and during the siege, George Withers, poet, was in charge of the castle.

We need but recall the siege of Basing House, not so far distant, to learn what havoc war was making in this district. This famous fortress stood a siege of four years, and but a few fragments of the old house remain, as the gateway, ivy covered walls and terraces overgrown with brushwood.

After the Restoration, Farnham Castle entered on its new life, repaired and improved by Bishop Morley, who died the see of Winchester from 1662-84. Morley was the friend of Isaac Walton, the "gentle angler," and at Farnham had his own rooms, and here it is said he wrote the lives of Herbert and Donne. The Bishop had largely given to the air of Winchester Cathedral and to his palace at Wolvesey. He laid out 8,000*l.* on Farnham, and had annexed Winchester House, Chelsea, to the diocese as the town residence for the bishops. These and other handsome gifts evoked the remark of Charles II., that Bishop "Morley would never be a penny richer for his bishopric." The present private chapel erected by this prelate has some interesting features. The wealth of carving by Grinling Gibbons cannot escape notice. Other departments in the castle are the great hall, with portraits of the bishops of Winchester from early times; the panelled galleries also full of historic treasures and paintings.

The castle in old times had its various officers, as constables, keepers of the park, &c.; one of them in the reign of Queen Elizabeth was William More, of Loseley, whose charming Tudor mansion near Guildford has formed the subject of many an architectural sketch and pilgrimage. No more picturesque seat exists in Surrey. The custom of each castle having had its constable in the Middle Ages rendered the office of great importance, and that of Farnham was no exception to the rule, the office being continued so late as 1808, in the time of Bishop North.

Farnham Castle, on the lofty hill, looks down on the busy town below; the entrance-front is of brick and stone; picturesquely placed are many trees and some giant cedars which overshadow the sloping lawns. The entrance-porch of red brick was built by Bishop Fox, and is known as Fox's Tower, battled with octagonal turrets. Over the entrance of this tower is a sundial with the motto, "Imputantur prætereunt."

We have before noticed Bishop Fox's architectural enterprises at Winchester, Eton and elsewhere, and this prelate spent the latter years of his life at Farnham. Queen Elizabeth visited the castle several times in her "Progresses," and James I. made so many visits here that Bishop Bilson ventured to ask His Majesty "if he looked on Farnham as an inn?"

In a paper on the "Historical Associations of Farnham" (*Surrey Archaeological Journal*, vol. viii), Mr. St. John Brodrick truly said "that the interest which attaches to the castle as a relic of antiquity is doubled by the way in which the distinctive features in its history at different periods illustrate the general history of England."

We may also add to these impressive words as to this and like houses, so distinctive a feature of our land, the words of a living writer:—"We may erect new palaces; we cannot hang their walls with the pictured tapestry of history, nor clothe them with the evergreen ivy of national memories."

## BRISTOL SOCIETY OF ARCHITECTS.

THE annual general meeting of this Society was held recently at the Fine Arts Academy, Queen's Road, Clifton, Mr. Frank W. Wills (president) in the chair. After the confirmation of the minutes of the last annual general meeting, the scrutineers appointed for the election of officers and Council reported that the result of the voting was as follows:—President, Mr. Joseph Wood; vice-presidents, Messrs. G. H. Oatley and F. W. Wills; council, Messrs. W. L. Bernard, F. Bligh Bond, J. H. La Trobe, Thomas Nicholson, W. S. Skinner and J. Foster Wood; hon. secretary and treasurer, Mr. H. Dare Bryan; associate members of council, Messrs. M. A. Green and T. H. Weston.

The annual report of the Council was then read by the Hon. Secretary and the audited accounts presented, and upon the motion of the President were adopted.

A highly interesting lecture devoted to architectural research was delivered by Mr. J. Atwood Slater, first silver medallist and premium holder in design in the Royal Academy of Arts, London, and Sharpe prizeman of the Royal Institute of British Architects, London, describing an architectural tour undertaken in 1880, and detailing picturesquely the architecture and incidents of personal concern dependent on travel met with in the departments of Seine-Inférieure, Seine and Oise, and Seine, penetrating into the heart of France as far as Auxerre. The course of the Seine, with its diverse monuments, was topographically followed from Harfleur to Paris, and subsequently in its considerable ramification the stately river Yonne, Melun, Fontainebleau, Sens, and finally the rich town of Auxerre coming under consideration. The lecturer also drew special attention to the advantage derived from travelling alone for the purpose of observing better the archaeological wealth and the customs of the French, having a distinct and definite line of study and object lesson ever in view; to his wide sympathy with the French people, to their sumptuous care for their ancient monuments, their courtesy and reverential manner of hospitality towards English-speaking students; and also in particular to the unsuspicious, deferential manner in which they are entertained and regarded by the Ministerial authorities, detailing in precise biographical manner his experience with bourgeoisie and with peasant, ecclesiastic and soldier. He recorded minutely also the incidents and popular events associated with travel, as study and the tide of time goaded him onward, the wave of diurnal events lying upon the open page of history, here dishevelled, here streaked with adverse episode, and there becalmed. The hour being late, a hearty vote of thanks was accorded the lecturer, and the hearing of the conclusion of a most interesting tour was adjourned to another meeting.

Mr. Joseph Wood, the new president, then thanked the members for his election, and proposed a hearty vote of thanks to the retiring president (Mr. Frank Wills). This was seconded by Mr. G. H. Oatley and supported by the Hon. Secretary. The retiring President acknowledged the vote, and referred in complimentary terms to the assistance he had received from Mr. H. Dare Bryan, the hon. secretary, who had consented to serve in that capacity for another year. The proceedings then terminated.

## THE TRAINING OF ARCHITECTS.

THE following letter has appeared in some daily journals:—The Architectural Association of London has for fifty-four years devoted its energies to the education of architects, and it is now the principal architectural teaching body in the United Kingdom. The present membership is over 1,400, including many of the leading architects of the day.

For forty years instruction in its classes was given voluntarily by its members, but the work during that period had so increased that in the year 1891 reorganisation became necessary, and the school was remodelled under a salaried staff. Its curriculum now embraces all branches of study essential to architectural practice. Last session 230 individual students attended the various classes and studios.



The subjects treated in the Evening School of Design are set and voluntarily criticised by well-known London architects, while the advisory council of the day school includes almost all the architect members of the three Royal Academies of the United Kingdom. This educational work has quite outgrown the premises in which it is being carried on, and the future welfare of the Association depends upon its obtaining extended accommodation without delay.

About 20,000*l.* is needed to provide the building, including equipment and fittings.

Owing to the greatly increased interest now being taken in these subjects by the general public, the executive committee is encouraged to appeal to all those interested in architecture for contributions to enable them to carry out their project.

No art more tends to mark the progress and greatness of a nation and no science does greater service towards securing the health and comfort of its people. The one great aim of the Architectural Association is that students may have the best possible training both in the art and science of architecture.

The committee will gratefully acknowledge the receipt of any donations to the building fund, which should be forwarded to the Secretary of the Architectural Association at No. 56 Great Marlborough Street, London, W.

We are, Sir, yours faithfully,

W. Howard Seth-Smith, president Architectural Association.

R. S. Balfour and H. P. G. Maule, hon. secretaries.

R. Rowland Anderson, LL.D., H.R.S.A.

John Belcher, A.R.A.

Reginald Blomfield, F.S.A.

G. F. Bodley, R.A.

Thomas Brock, R.A.

W. D. Caröe.

Basil Champneys.

Walter Crane.

Thomas Drew, Knt., president Royal Hibernian Academy.

W. Emerson, president Royal Institute of British Architects.

Ernest George.

T. G. Jackson, R.A.

E. W. Mountford.

Edward J. Poynter, Knt., K.B., president Royal Academy.

G. H. Fellowes Prynne.

W. B. Richmond, K.C.B., R.A.

Leonard Stokes.

L. Alma-Tadema, Knt., R.A.

Aston Webb, A.R.A.

The Architectural Association, 56 Great Marlborough Street, W.: April 24.



*The Editor does not hold himself responsible for opinions expressed by the writers.]*

#### St. Mary Magdalene's, Munster Square.

SIR,—“In spite of all advances which have been made in architecture and in ecclesiastical practice during the last fifty years, very little besides the addition of the screen, which the first builders certainly intended that it should have, is needed to make St. Mary Magdalene's Church as much a pattern to others in the twentieth century as it was in the middle of the nineteenth.”

Such is the opinion of Mr. J. T. Micklethwaite, F.S.A., who has submitted an exhaustive report on the whole matter of possible improvements to St. Mary Magdalene's Church. His proposals, shortly, are:—

	Estimated Cost.
Chancel screen, with loft	£1,000
Side screens (each)	800
Altar on south side	50
Returned stalls	70
Better arrangement of steps	100
To these must be added:—	
Cleaning and ventilating	£300
Electric lighting	300
Repair and improvement of organ	650
Outside communication between the two vestries	150

My object in writing this letter is to ascertain whether among your readers any are sufficiently interested in the matter to help us to carry out any portion of Mr. Micklethwaite's designs. We are not a rich congregation, though many people think we are. But there may be some of your readers who would be glad, for the architectural reputation of St. Mary Magdalene's, to contribute, in commemoration of the jubilee of its consecration, something to further its improvement in the ways suggested.

Mr. Micklethwaite's name is sufficient guarantee that his proposals will be carried out in a manner worthy of the best interests of the church and of the profession. Contribution may be sent to the churchwardens of St. Mary Magdalene's, 58 Osnaburgh Street, N.W.—Yours faithfully,

W. H. H. JERVOIS,  
Vicar of St. Mary Magdalene's, N.W.

#### GENERAL.

**Mr. Sidney Hall** has had the honour of submitting to their Majesties drawings of their Royal Highnesses the Prince and Princess of Wales's Colonial tour.

**The First Commissioner of Works** has stated that the construction of the new road from the Mall to Charing Cross will be carried out as soon as possible after the obtaining of the necessary funds. The houses to be removed to secure the opening into Charing Cross will be in vacant possession of the Department this summer.

**An Exhibition** of books, pictures and prints dealing with past Coronations is to be opened at the British Museum.

**The Académie des Beaux-Arts** have admitted the following students of sculpture to compete for the Prix de Rome:—MM. Terroir, Maillard, Descatoire, Raset, Brasseur, Billot Durand, Benneteau, Piron and Boudier.

**The Corporation of London** will oppose in Parliament the London County Council's Bill for constructing a tramway along the Embankment.

**The Miss Yonge Memorial Committee** have resolved that the memorial at Otterbourne, where Miss C. E. Yonge lived and worked all her days, should be a chancel-screen in the parish church, and that in Winchester Cathedral a new reredos should be erected to her memory in the lady chapel.

**The German Emperor** has given a series of mosaics representing scenes from the life of St. Elizabeth, to be placed in the room which she inhabited in the Wartburg, near Eisenach.

**Mr. Walter Crane** was elected a full member of the Royal Society of Painters in Water-Colours at the general meeting held last Monday.

**Two Studentships**, endowed for the furtherance of advanced study or research away from Cambridge in the language, literature, history, archaeology, or art of ancient Greece or Rome, according to a course proposed by the applicant and approved by the electors, are available. The student will receive 200*l.* for one year.

**The Municipal Council of Berlin** have postponed until the autumn the construction of the “Fairy-stories Fountain” at Friedrichshain. The German Emperor has insisted on considerable alterations in the plan.

**Miss K. L. Long** has been appointed by the Wandsworth Borough Council as a female sanitary inspector at a salary of 100*l.* a year, rising to 130*l.*

**Mr. R. Carr Bosanquet**, director of the British School at Athens, has begun excavations on a promising Mycenaean site at Palaioakastro, near Sitia, in Eastern Crete. Although it was not possible to devote any part of the Cretan Exploration Fund to this object, the sum raised being insufficient even for the completion of Mr. Evans's excavations at Knossos, the two explorers are working in concert, and the house at Candia which was acquired by the managers of the fund (of whom Mr. Bosanquet is one), is also at the service of the school.

**Lord Alverstone**, the Lord Chief Justice, said on Monday that if owners of land in the suburbs, when laying out new building estates, reserved a site for a church, they would find that their property would sell much better.

**The Guards' Memorial**, which is to be placed in the Guards' Chapel at Wellington Barracks in memory of those comrades who lost their lives in the present war, has been approved. The intention is to complete the decoration of the apse of the chapel by additional mosaic embellishment immediately in front of the similar mosaic memorial of the late General Philip Smith in the semi-dome. Further, alabaster columns will be substituted for the existent white stone columns supporting the arch of the apse, and from which droop the old Crimean standards of the Guards, whilst the names of the 700 Guardsmen who have fallen or died during the campaign will be inscribed on marble slabs within the chapel. Mr. Clayton prepared the design under the superintendence of Mr. Pearson, the architect.

**Mr. Henry L. Florence** was on Wednesday appointed Grand Superintendent of Works of Grand Lodge of English Freemasons.

**The Bangor City Council** have presented a free site for the erection of new buildings for University College, North Wales.

**The Plans** prepared by Mr. W. H. Ward for the new Workhouse Infirmary, Stockport, have been adopted. The estimated cost is £41,000, or about £130 per bed.



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The Architect, May 2, 1902.

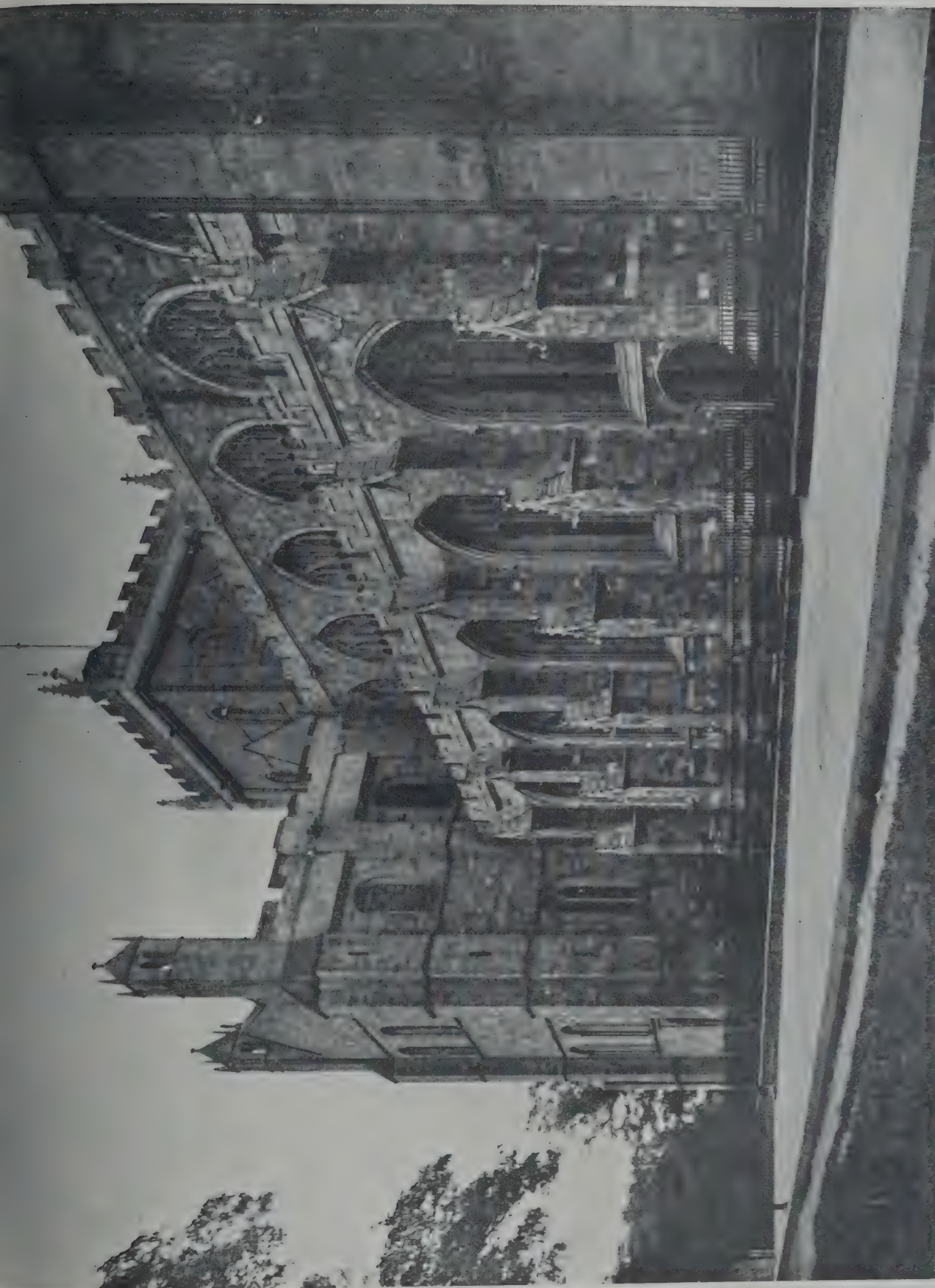


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CATHEDRAL SERIES, NO. 385.—RIPON: VIEW OF THE SOUTH SIDE OF NAVE.





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PHOTO BY S. B. BOLAS & CO., 68 OXFORD STREET, W.

CATHEDRAL SERIES, No. 386.—RIPON: NORTH SIDE OF THE AVE, SHOWING DOUBLE BUTTRESSES.



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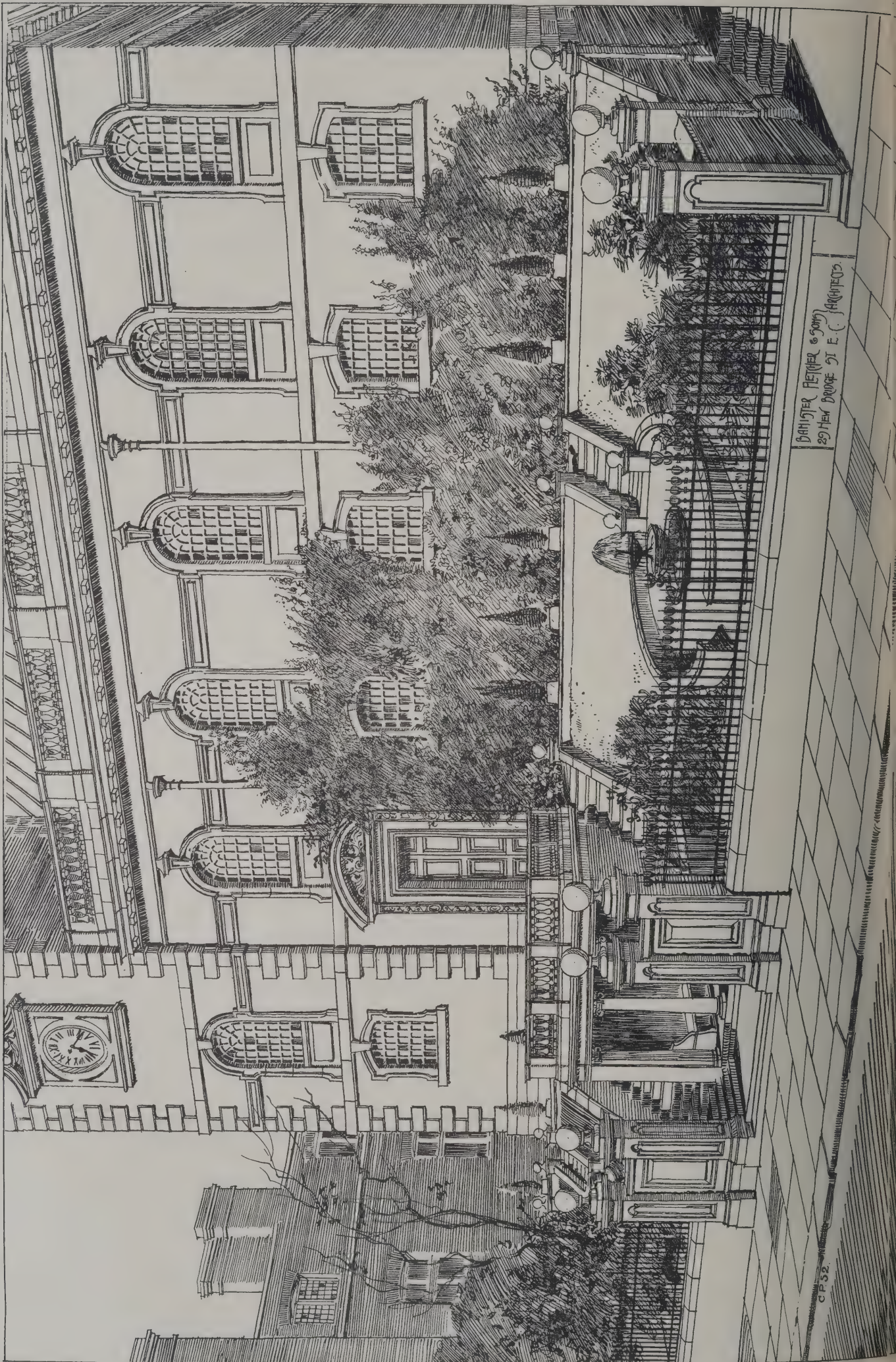


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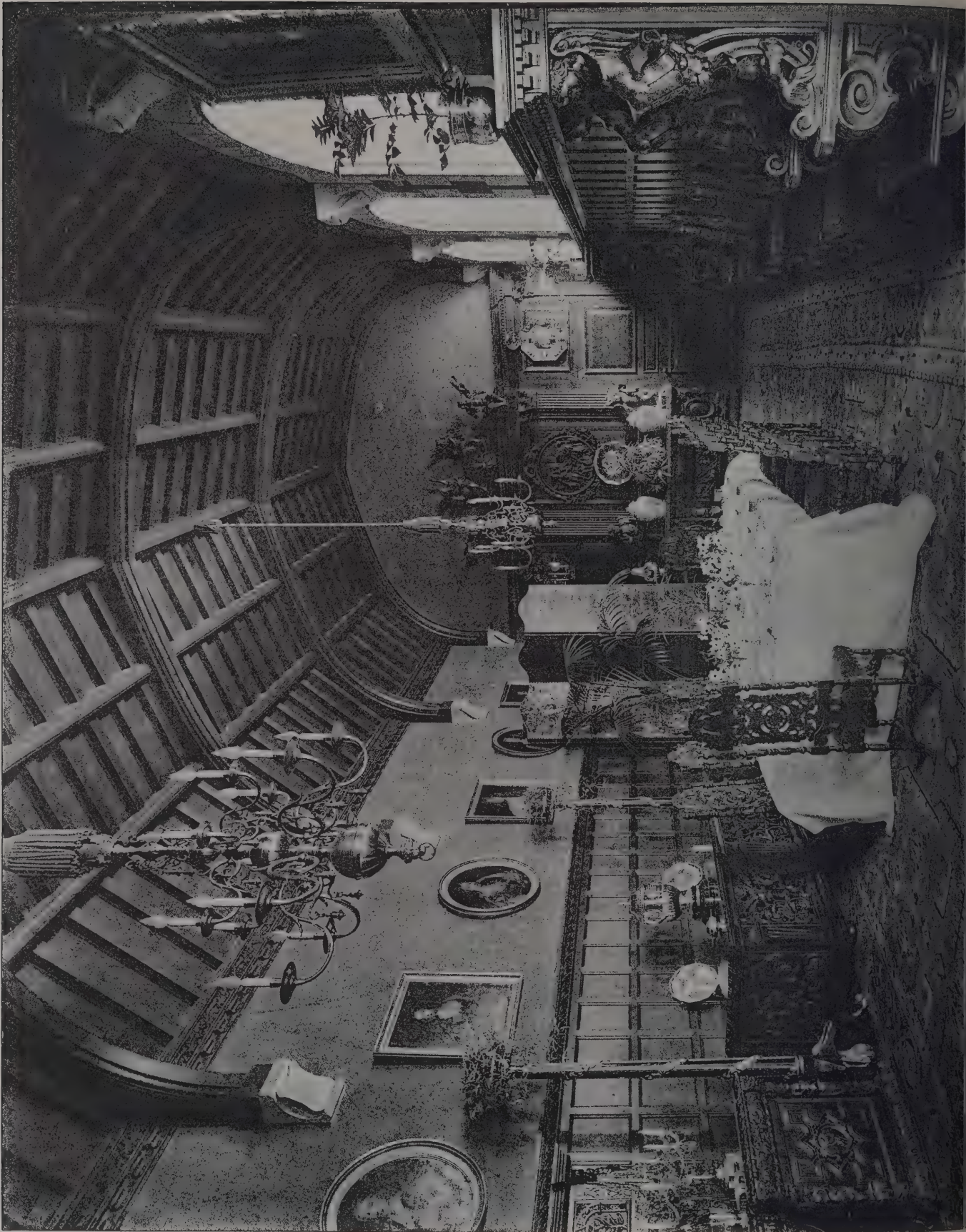






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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**CREWE.**—June 12.—Designs are invited for new municipal offices and council chamber. The author of the design which is judged best will receive a premium of 50%, and he will be invited to carry out the design; second premium, 25%. Particulars will be supplied by the Borough Surveyor, Municipal Offices, Crewe.

**HARROGATE.**—May 14.—Designs required for a new town hall. Premiums, 150%, 100%, and 75%. Mr. F. Bagshaw, Borough Engineer, Harrogate.

**HARTSHILL.**—June 16.—The committee of the North Staffordshire infirmary and eye hospital, Hartshill, Stoke-upon-Trent, invite designs for a home for nurses at Hartshill, Stoke-upon-Trent. Particulars may be obtained on application to Mr. E. Boyce, secretary and house governor.

**KNARESBOROUGH.**—June 1.—The Harrogate and Knaresborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital

at Thistle Hill, Knaresborough. Premiums of 100% and 50% are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100%, 50%, and 25% are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75% and 35% respectively. Mr. J. Robson Smith clerk, School Board Offices, West Hartlepool.

## CONTRACTS OPEN.

**ALNWICK.**—May 7.—For erection of a model lodging-house in Pottergate, Alnwick. Mr. George Reavell, jun., architect, Alnwick.

**APPERLEY BRIDGE.**—For erection of Wesleyan Sunday school. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

**BARNESLEY.**—May 5.—For erection of two houses at Monk Bretton. Mr. A. L. Goddard, architect, 1 Jubilee Stores, Cudworth.

**BELFAST.**—May 12.—For supply of one Otto-Crossley high-speed gas-engine of 41 effective horse-power working load, with coal gas, including water vessels and all piping, and to be fixed complete; and one four-pole dynamo, with regulating resistance in shunt winding, giving an output of 420 amperes at 65 volts, complete with slide rails, delivered and fixed on foundations put in by the company, for the Great Northern Railway Company (Ireland). Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

**BINGLEY.**—May 9.—For pulling-down and rebuilding a portion of engineering works and warehouse in Dubb Lane, Bingley, Yorks. Mr. Wm. Rhodes Nunns, architect, Market Street, Bingley.

**BIRMINGHAM.**—May 15.—For erection of a block for the female merit class at the Birmingham workhouse. Mr. W. H. Ward, architect, Paradise Street, Birmingham.

**BISHOP'S STORTFORD.**—May 7.—For erection of a Wesleyan church and schools at Bishop's Stortford. Messrs. Gordon & Gunton, architects, Finsbury House, Blomfield Street, E.C.

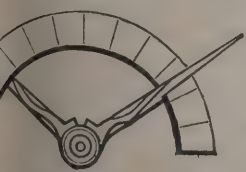
**BISHOP'S STORTFORD.**—May 12.—For erection of additional buildings at the Bishop's Stortford Urban District Council offices. Mr. Thos. Swatheridge, clerk, Urban District Council, North Street, Bishop's Stortford.

**BRADFORD.**—May 5.—For alterations and additions to the Lorne Street Board school, Wakefield Road, Bradford. Mr. Thos. Garbutt, clerk, School Board office, Manor Row, Bradford.

**BRIGHTON.**—May 12.—For erection of a boundary wall and extensions to the Corporation tramways car sheds, Lewes Road. Mr. Francis J. Tillstone, town clerk, Town Hall, Brighton.

**BRISTOL.**—May 7.—For sinking a trial well on Bishop's Farm, Claverham. Mr. A. Powell, engineer, 3 Unity Street, College Green, Bristol.

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**BRISTOL.**—May 7.—For construction of a culvert on land adjoining Greenbank cemetery. Mr. T. H. Yabbicom, city engineer, 63 Queen Square, Bristol.

**BURNLEY.**—May 12.—For erection of a Primitive Methodist church and schools, Padiham Road, Burnley. Mr. John B. Thornley, architect, 45 Market Street, Darwen.

**BURTON-UPON-TRENT.**—May 5.—For the following buildings and works, for the Corporation:—Labourers' dwellings; (contract No. 4) sewerage and making-up street about 150 yards in length; (5) erecting a block of 38 cottages; fire-brigade station and dwellings, new street, highways, &c., depôt, Park Street, comprising stables for 12 horses, sheds, &c., and dwelling-houses; reconstructing Horninglow Canal bridge (1) brickwork, (2) steelwork. Mr. George T. Lynam, borough surveyor, Burton-on-Trent.

**CALLINGTON.**—May 7.—For erection of a Bible Christian Road. Callington, Cornwall. Rev. J. Datson, Launceston Road.

**CHARMINSTER.**—May 22.—For erection of a house for private patients on land adjoining the county asylum, near Charminster, Dorset. Mr. George T. Hine, architect, 35 Parliament Street, S.W.

**CHELTENHAM.**—May 20.—For erection of a chalet at the Essex Lodge entrance to Pittville Park. Mr. E. T. Brydges, town clerk, Municipal Offices, Cheltenham.

**CHESTERFIELD.**—May 8.—For erection of new stores, &c., at West Bars, Chesterfield. Mr. Geo. Haslam & Son, architects, Euclid House, Ilkeston.

**COLCHESTER.**—May 7.—For extension of the boiler and engine houses at the electric-light station, Osborn Street. Mr. Herbert Goodyear, borough engineer, Town Hall, Colchester.

**COVENTRY.**—May 14.—For rebuilding the Salutation inn, London Road. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry.

**DARLINGTON.**—May 21.—For construction of a three-lift gasholder, 140 feet diameter, in the vicinity of the gasworks. Mr. Hy. G. Steavenson, town clerk, Houndgate, Darlington.

**DAWLISH.**—May 6.—For erection of a house at Holcombe, near Dawlish. Mr. Charles Cole, architect, 50 High Street, Exeter.

**DENHOLME.**—May 5.—For erection of three houses, shed, conveniences, &c., Denholme, Yorks. Mr. G. Knowles, architect, Old Bank Chambers, Keighley.

**DERBY.**—May 10.—For erection of a detached block thirty patients at the asylum. Mr. B. S. Jacobs, architect, Lincoln's Inn Buildings, Bowalley Lane, Hull.

**DEWSBURY.**—May 12.—For supply and erection of traction switchboard. Mr. R. H. Campion, borough electrical engineer, Bradford Road, Dewsbury.

**DONCASTER.**—For erection of schools at Hyde. Messrs. Athron & Beck, architects, Dolphin Chambers, Doncaster.

**DUDLEY.**—For erection of laundry, washhouse, engine boiler house at the workhouse. Mr. Arthur Marshall, architect, King Street, Nottingham.

**EASTBOURNE.**—May 5.—For erection of a galvanised shed on steel stanchions, 60 feet long by 30 feet wide, at fish market on the Crumbles. Mr. R. M. Gloyne, borough engineer, Town Hall, Eastbourne.

**ERITH.**—May 5.—For free wiring in the district. Charles H. Fry, clerk, District Council Offices, Bexley Road, Erith.

**FALMOUTH.**—May 7.—For additions to infants' classes at the National schools, Falmouth. Specifications and drawings may be seen at the Church House.

**GOOLE.**—May 7.—For erection of a block of offices, Goole, for the Goole Steam Shipping Company, Ltd. George W. Atkinson, architect, 1 Mark Lane, Leeds.

**HANDSWORTH.**—May 5.—For erection of an engine-house for well pumps at the destructor works, Queen's Head Road. All particulars can be obtained from the Surveyor, Council House, Handsworth, Staffordshire.

**HARRINGTON.**—May 5.—For alterations and additions to a dwelling-house at Eller Vale, Harrington, Cumberland. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

**HARROGATE.**—For erection of a gardener's cottage at Heatherdene convalescent home, Harrogate. Messrs. Frazer Milnes & France, architects, 99 Swan Arcade, Bradford.

**HARROW.**—May 6.—For erection of a classroom at Kenton school to accommodate fifty children. Mr. A. Fillmore, clerk to School Board, High Street, Harrow.

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**HEREFORD.**—For alterations and additions to the Herefordshire and District Industrial Working Boys' Home, Bath Street. Messrs. James Brooks, Son & Godsell, architects, 10 Chambers, Hereford.

**HINCKLEY.**—May 7.—For erection of two cottages at 100, Mallory, Hinckley. Mr. A. W. Byron, 5 Low Pavement, Chesterfield.

**HORWICH.**—May 5.—For erection of schools on Chorley Road, Horwich, Leeds. Mr. Ernest W. Dyson, architect, 17 Lee Lane, Horwich.

**HUDDESFIELD.**—May 7.—For erection of six dwellings, North Street, Lockwood. Mr. J. Berry, architect, 10 Market Place, Huddersfield.

**HUDDESFIELD.**—May 15.—For erection of a ready-made establishment in Fitzwilliam Street. Messrs. John Kirk & Sons, architects, Huddersfield.

**HULL.**—For erection of offices, Queen's Dock Side, Hull. Messrs. Gelder & Kitchen, architects, 76 Lowgate, Hull.

**HUNSLET.**—For erection of caretaker's house at Wesleyan Hall, Waterloo Road, Hunslet. Messrs. Danby & Simpson, architects, 10 Park Row, Leeds.

**KIRKBY.**—For erection of Baptist Sunday school premises, 100, Messrs. Garside & Pennington, architects, Pontefract.

**LONDON.**—May 8.—For altering and repairing the county house, Londonderry, and providing furniture for same, exceeding £4,000. Mr. David R. Babington, secretary, County Council Office, Londonderry.

**LONDON.**—May 10.—For completing the tower and finishing other works at Durrow Church, Queen's County. Mr. H. Byrne, architect, 20 Suffolk Street, Dublin.

**LONDON.**—May 10.—For erection of show buildings, grand horse and cattle stalls, fencing, &c., for the Enniscorthy & Syndicate, at the grounds, Bellefield, Enniscorthy. Mr. Edward S. O'Brien, architect, Westown House, The Gate, Wexford.

**LONDON.**—May 10.—For rebuilding 5 Hamilton Terrace, Doran. Mr. W. Sampson Jervois, architect, Armagh.

**LONDON.**—May 12.—For erection of twenty-seven cottages, in three contracts, in the town of Carlow. Messrs. Kelly, town clerk, Town Hall, Carlow.

**IRELAND.**—May 17.—For erection of a temperance hall at Dunleer (masonry and brickwork only). Mr. John F. McGahon, architect, Dundalk.

**JARROW.**—May 14.—For pulling-down and rebuilding municipal buildings, Grange Road, Jarrow. Mr. Fred. Rennoldson, architect, 37 King Street, South Shields.

**KINGSTON-UPON-THAMES.**—May 13.—For erection of a dust-destructor. Particulars on application to the Borough Surveyor, Clattern House, Kingston-upon-Thames.

**LEEDS.**—May 8.—For foundations and side walls for five greenhouses at Roundhay Park. Particulars may be obtained at the city engineer's office, Leeds.

**LONDON.**—May 8.—For relaying of the whole of the floors of the wards of the workhouse infirmary in St. Dunstan's Road, Hammersmith, W., with pitch-pine boards. Mr. E. J. Mott, clerk, Fulham Palace Road, Hammersmith, W.

**LOUGHBOROUGH.**—May 10.—For extensions and alterations to the police court at Loughborough, Leicestershire. Mr. S. Perkins Pick, county architect, 6 Millstone Lane, Leicester.

**LYDNEY.**—For constructing and fixing pumping plant in connection with Lydney water supply. The engines and pumps are to be capable of lifting 10,000 gallons of water per hour to a height of 300 feet, and will be required in duplicate. Mr. J. Fletcher Trew, engineer, County Chambers, Station Road, Gloucester.

**MANCHESTER.**—May 7.—For construction of underground lavatories for males and females at New Cross, City. Particulars can be obtained at the office of the City Surveyor, Town Hall.

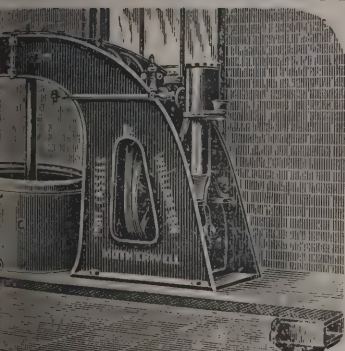
**MANCHESTER.**—May 7.—For construction of an underground urinal at Clopton Street, Hulme. Particulars can be obtained at the office of the City Surveyor, Town Hall.

**MANCHESTER.**—May 17.—For erection of public baths at Old Trafford. Mr. E. Woodhouse, architect, 88 Mosley Street, Manchester.

**MANSFIELD.**—May 7.—For erection of wards for the treatment of patients suffering from tuberculosis at the workhouse. Messrs. Vallance & Westwick, architects, White Hart Chambers, Mansfield.

**NEWCHURCH-IN-PENDLE.**—May 9.—For reroofing and other alterations at St. Mary's Church, Newchurch-in-Pendle. Plans and specifications may be seen at the Vicarage.

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NEWPORT.—May 8.—For (1) fitting-up showground according to plan and specification which may be seen at the office of Mr. W. H. Burton, hon. secretary, Newport District Agricultural Society, Newport, Salop; and (2) for the privilege of erecting a grand stand and charging admission.

NEWTON ABBOT.—May 7.—For alterations and additions to the Wesleyan church premises, Courtenay Street, Newton Abbot, Devon. Mr. H. J. Snell, architect, 11 The Crescent, Plymouth.

NEWTON ST. CYRES.—May 13.—For erection of a dwelling-house at Ford farm, Newton St. Cyres, Devon. Messrs. Ellis, Son & Bowden, surveyors, Bedford Chambers, Exeter.

NORWICH.—May 5.—For retaining wall in brickwork and concrete, and supplying and fixing thereon cast-iron standards and wrought-iron rails at Riverside Road, Norwich, and for the maintenance thereof for six months. Mr. Arthur E. Collins, city engineer, &c, Guildhall, Norwich.

NOTTINGHAM.—For erection of warehouse premises in rear of buildings on Short Hill, Nottingham. Mr. Hedley J. Price, architect, 24 Low Pavement.

PONTYPOOL ROAD.—May 13.—For construction of a new transfer shed at Pontypool Road, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

PRESTON.—May 13.—For widening the following bridges in the neighbourhood of Leigh, Atherton and Hindley, in connection with the construction of the South Lancashire Tramway Company's lines:—Bosdane Bridge, Hindley; Bowker's Bridge, Leigh; Small Brook Bridge, Leigh and Atherton; Hindsford Bridge, Tyldesley; Howe Bridge, Atherton; Pennington Mill Bridge, Leigh. Particulars to be obtained at the County Bridgmaster's Office, Preston.

ST. PANCRAS.—May 8.—For erection of a receiving home for children within the parish. Mr. A. E. Pridmore, 2 Broad Street Buildings, E.C.

ST. PANCRAS.—May 13.—For erection of buildings at King's Road power station and northern and southern substations. Mr. C. H. F. Barrett, town clerk, Town Hall, Pancras Road, London, N.W.

ST. STEPHEN'S-BY-SALTASH.—May 5.—For plastering the New inn, St. Stephen's, Cornwall. Mr. H. Bowden, builder, Cross Park, St. Stephen's-by-Saltash.

SCILLY BANKS.—May 5.—For erection of two dwelling-houses at Scilly Banks, Cumberland. Mr. William Carmichael, architect, Parton, Whitehaven.

SCOTLAND.—May 5.—For alterations and additions school buildings at public school, Kirkpatrick-Fleming Boar. Mr. J. B. Leslie, East Lodge, Mossknow.

SCOTLAND.—May 5.—For erection of premises in Ba Street and Chapel Street, Lochgelly. Mr. John Murr, architect, 233 High Street, Kirkcaldy.

SCOTLAND.—May 6.—For the timber framing required for the construction of a new gasholder at Provan gasworks. J. D. Marwick, town clerk, City Chambers, Glasgow.

SCOTLAND.—May 6.—For renovation of house, Man Farm, Hutton; erection of a kitchen wing, Cushnie, and double byre wing, Knockleith. Messrs. James Duncan & Son, architects, Turriff.

SCOTLAND.—May 7.—For construction of three buttresses in cement concrete, pitching, stairs, &c, at the sea-wall at the foot of Craighall Road, Leith. Mr. T. B. Laing, town clerk, Leith.

SCOTLAND.—May 7.—For supply and erection of a 20-hp. electrically-driven overhead crane, with the necessary supporting columns and girders, at the Dee village electricity works, Aberdeen. Mr. J. Alex Bell, city electrical engineer, City Street, Aberdeen.

SCOTLAND.—May 8.—For erection of (1) dwelling-house at Affleck, Huntly; (2) dwelling-house at Binhall, Cairn; (3) dwelling-house at Coachford Smithy, Cairn; (4) additions and alterations on dwelling-house at Craigwillie, Huntly; a pair of farm labourers' cottages at Old Noth, Rhynie; byres and turnip sheds, &c., at Bralandknows, Gart; (7) byres and turnip sheds at Ittingstone, Huntly; (8) byres and turnip sheds at Dowmin, Huntly; (9) stable and byre, &c., at Upper Cuttlehill, Cairn; (10) stable, &c., at Dykehead, Cairn; and for the plasterers' work of Nos. 1, 2, 3, 4 and 5 and for the plumbers' work of No. 4 on the Gordon-Richmond estate. Specifications may be seen at the Factor's Office, Huntly.

SCOTLAND.—May 10.—For reconstruction of Westfields Mill near Blairgowrie. Mr. Lake Falconer, architect, 27 Bank Buildings, Blairgowrie.

SHOTTON COLLIERY.—May 17.—For erection of a large number of colliery houses at Shotton Colliery, Durham.

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SKINNINGGROVE.—May 7.—For erection of a schoolroom  
d classrooms, &c, in connection with the Wesleyan chapel,  
inningrove, Yorks. Rev. S. H. Terrill, Loftus.

STOCKTON-ON-TEES.—For erection of a Wesleyan church  
(th spire) and schools at Stockton-on-Tees. Messrs. W. J.  
rley & Son, architects, 269 Swan Arcade, Bradford.

TROWBRIDGE.—May 6.—For erection of a machine bakery  
Court Street, Trowbridge. Mr. Walter W. Snailum, archi-  
t, Church Street, Trowbridge.

UXBRIDGE.—May 10.—For erection of Sunday schools and  
er buildings. Messrs. Heron & Bellairs and Wm. L. Eves,  
at architects, 54 High Street, Uxbridge.

WAKEFIELD.—For erection of parochial institute and addi-  
s to Sunday schools, Outwood, near Wakefield. Messrs.  
ler Wilson & Oglesby, architects, 12 East Parade, Leeds.

WALES.—For alterations and additions to the Zion Welsh  
sbyterian chapel, Wrexham. Mr. T. G. Williams, archi-  
t, 3 Cable Street, Liverpool.

WALES.—May 5.—For erection of a dwelling-house and  
buildings at Dyffryn Mill, near Aberporth. Mr. D. Morris,  
d surveyor, Cardigan.

WALES.—May 5.—For additions to the Duffryn Co-opera-  
Stores, Commercial Street, Mountain Ash. Messrs.  
rgan & Elford, architects, 1 Jeffrey Street, Mountain Ash.

WALES.—May 8.—For erection of a front boundary wall at  
electric power station, Newport Road, Cardiff. Mr. J. L.  
eatley, town clerk, Town Hall, Cardiff.

WALES.—May 10.—For repairs and renovations at Carmel  
pel, Beaufort. Mr. Hy. Waters, architect, Beaufort.

WALES.—May 10.—For erection of an additional class-  
m, &c, to the Board school, Llangadock. Mr. J. F.  
rgan, High Gate, Llangadock.

WALES.—May 10.—For erection of a house and shop at  
nharan. Mr. James Smith, Cottages, Llanharan.

WALES.—May 12.—For erection of Board school, out-  
ces and boundary walls in the parish of Llanbedr-goch,  
glesey. Mr. Jos. Owen, architect, Menai Bridge.

WALES.—May 13.—For erection of a school at Mynydd-  
rig, Llanddarog. Mr. David Jenkins, architect, Llandilo.

WALES.—May 14.—For rebuilding the Harp inn and five  
dwelling-houses at Skewen. Mr. J. Cook Rees, architect,  
Neath.

WALES.—May 16.—For erection of five shops at Tir Phil.  
Mr. P. Vivian Jones, architect, Hengoed.

WALES.—May 20.—For erection of workmen's institute at  
Ynysybw. Mr. J. Rees, architect, Pentre.

WALES.—May 22.—For alterations and improvements to  
the Portmadoc Market Hall. Mr. Jno. Jones, clerk to Urban  
District Council, 20 Bank Place, Portmadoc.

WALLINGTON.—May 5.—For erection of seven shops and  
houses at Wallington, Surrey. Messrs. Warran & Stupart,  
architects, 385 Green Lanes, Harringay, N.

WALSALL.—May 12.—For alterations and additions to  
present schools, Bath Street, Walsall. Messrs. Bailey &  
McConnal, architects, Bridge Street, Walsall.

WEST HAM.—May 13.—For the construction of eight  
transformer chambers. Mr. Fred. E. Hilleary, town clerk,  
Town Hall, West Ham.

WESTON-SUPER-MARE.—May 6.—For erection of an  
additional ward, &c, at the fever hospital, Uphill Drove Road,  
Weston-super-Mare. Mr. Hugh Nettleton, surveyor Town  
Hall, Weston-super-Mare.

WHITBY.—May 22.—For erection of dwelling, for signal-  
house, &c, near Whitby, Yorkshire. Messrs. Corderoy, Selby  
& Corderoy, 21 Queen Anne's Gate, Westminster, S.W.

WOODLAND.—May 10.—For erection of Wesleyan Sunday  
school and temperance hall at Woodland, Durham. Mr. I.  
Tarn, Zetland House, Woodland.

At the St. Helens Town Hall on the 29th ult. Mr. A. A. G.  
Malet, M.I.C.E., and Dr. Buchanan held an inquiry on behalf  
of the Local Government Board into the application of the St.  
Helens Corporation to borrow 18,500*l.* for works of sewage  
disposal. The town clerk explained that the scheme for  
which borrowing powers were sought was for the disposal of  
the sewage of the north-westerly portion of the borough,  
exclusive of Parr and Sutton, which would be the subject of a  
separate scheme.

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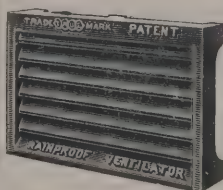
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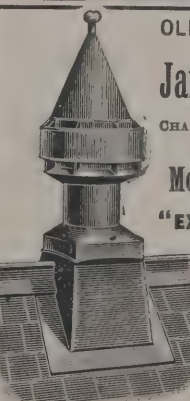
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W. Proctor	152	0	0
E. Pickstock	149	4	6
C. Gordon	145	0	0
S. Jackson	141	0	0
W. STREET, Sandbach Heath (accepted)	137	0	0

**BARNESLEY.**

For erection of stone boundary walls in Pogmoor Road and Jordan Hill. Messrs. CRAWSHAW & WILKINSON, architects, 13 Regent Street, Barnsley.

HIGHAM & SON, Measbrough Dyke, Barnsley (accepted) £472 18 4

**BARROW-IN-FURNESS.**

For enlargement of Cambridge Street school. Mr. HENRY T. FOWLER, architect.

*Accepted tenders.*

J. H. Neal, Abbey Road, excavator, drainer and bricklayer	£1,204	10	0
T. Slee, Warwick Street, carpenter and joiner	520	0	0
J. Walker, School Street, slater and plasterer	318	0	0
J. E. Goddard, Rawlinson Street, painter, plumber and glazier	279	6	3
W. W. Fairbairn, Rawlinson Street, stonemason	76	10	3

**BATH.**

For rebuilding of the Gloucester inn, Somerset Buildings, Bath. Mr. F. W. GARDINER, architect, Barton Street, Bath.

E. Uphill	£959	12	0
Chancellor & Sons	949	0	0
Erwood & Morris	928	0	0
Wills & Sons	850	0	0
W. Webb	849	0	0
J. Foster	798	0	0
F. PARSONS, Railway Place (accepted)	789	0	0

**BATH—continued.**

For additions to the Bath Statutory Hospital, Claverton Down. Mr. F. W. GARDINER, architect, Barton Street, Bath.

*Discharging wards.*

J. Foster	£236	0
F. Parsons	228	0
Mould Bros.	216	0
G. Fisher	211	1
C. WIBLEY, James Street, Bath (accepted)	206	1

*Disinfecting rooms.*

Coleby & Sons	113	4
C. Wibley	99	10
J. Foster	95	0
F. Parsons	92	10
Mould Bros.	88	0
G. FISHER, Bath (accepted)	61	10

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Henman	644	0
T. W. Marsh	640	0
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R. Jackson	537	0
H. Williams	495	0
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C. Wright	430	0
W. Haynes	425	0
J. JACKSON, Forest Gate (accepted)	393	0

**BRADFORD.**

For erection of a caretaker's house at Carlton Street school, Bradford.

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C. Trueman 8,500 0 0  
Wimpey & Co. 8,292 0 0  
Carey 8,180 5 0  
ADAMS, Green Lanes Goods Station, Wood Green (accepted) 7,939 0 0

BRANKSOME.

construction of new roads and sewers on the Penn Hill Park Estate, Branksome, Dorset. Mr. J. E. CLIFTON, surveyor.  
& J. Hardy £2,990 0 0  
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T. Budden 1,483 14 7  
Saunders 1,400 0 0  
C. BRIXEY, Newtown, Parkstone (accepted) 1,395 9 0

CORNWALL.

restoration of St. Colomb Major Church, Cornwall. Mr. GEO. H. FELLOWES PRYNNE, architect, 6 Queen Anne's Gate, Westminster. Quantities by Mr. R. HENRY HALE  
3 Old Queen Street, Westminster, S.W.  
Wicks & Co. £6,198 7 4  
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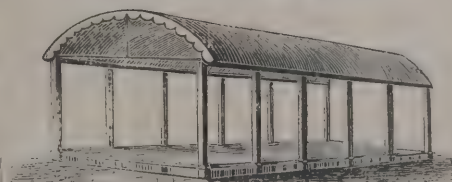
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## EVESHAM.

For alterations and additions at the sanatorium, Bengeworth, Evesham Mr. HENRY STANLEY HARVEY, architect, 30 Sanatorium Road, Bengeworth.

A. Cliff . . . . . £230 0 0  
F. W. GARDULL, Bengeworth, Evesham (accepted) . . . . . 190 0 0

## EWELL.

For erection of an engineer's cottage at the Ewell sewage works. Mr. H. D. SEARLES WOOD, architect, 157 Wool Exchange, Coleman Street.

Williams & Taylor . . . . . £539 0 0  
T. W. Cannon . . . . . 534 15 0  
Newton & Co. . . . . 465 0 0  
Goodship & Saunders . . . . . 445 0 0  
E. B. Tucker . . . . . 437 0 0  
R. Jones & Son . . . . . 436 0 0  
H. & W. BEAMS, Ewell (accepted) . . . . . 394 0 0

## GUILDFORD.

For street works in the following roads:—Oxford Road, Oxford Terrace, the road connecting Onslow Road and Queen's Road, part of Ludlow Road, part of Cooper Road. Mr. C. G. MASON, borough surveyor.

E. H. King . . . . . £1,039 0 0  
Streeters & Todhunter . . . . . 822 14 0  
G. A. FRANKS, Station Approach, Guildford (accepted) . . . . . 704 8 1

## HEADINGLEY.

For alterations and enlargement of The Priory, Cumberland Road, Headingley, Leeds. Messrs. G. F. DANBY & E. M. SIMPSON, architects, 10 Park Row, Leeds.

## Accepted tenders.

M. Wilson, bricklayer, mason, &c. . . . . £750 0 0  
T. Harrod, joiner . . . . . 455 0 0  
J. D. Vine, plumber . . . . . 194 15 0  
W. Pennington & Sons, plasterer . . . . . 108 0 0  
J. Atkinson & Son, slater . . . . . 57 0 0  
A. B. Dykes & Son, painter . . . . . 31 14 0

## HARROW.

For making-up Kenton Avenue. Mr. J. PERCY BENNE surveyor.

C. Ford . . . . . £456  
Bracey & Clarke . . . . . 445  
Free & Sons . . . . . 415 1  
E. Hollingsworth . . . . . 412 1  
WIMPEY & Co., Hammersmith (accepted) . . . . . 400

## HULL.

For plant and work required at Sculcoates Lane general station (Contract 36), pipework, pumps, motors, &c.

Barker & Apsey . . . . . £3,816  
Rose, Downs & Thompson, Ltd. . . . . 3,767  
Maxim Electrical and Engineering Co., Ltd. . . . . 3,676  
Babcock & Wilcox, Ltd. . . . . 3,562  
Crompton & Co., Ltd. . . . . 3,516  
Korting Bros. . . . . 3,450  
Aiton & Co. . . . . 3,369  
J. Spencer, Ltd., Wednesbury (informal) . . . . . 3,207  
THORNTON & CRABTREE, Bradford (accepted) . . . . . 3,312

## ILFRACOMBE.

For erection of St. Peter's new church, Ilfracombe, Devon. Mr. GEO. H. FELLOWES PRYNNE, architect, 6 Queen Anne's Gate, Westminster. Quantities by Mr. R. H. HALE, 33 Old Queen Street, Westminster, S.W.

W. Wiffen . . . . . £10,796 1  
Stephens, Bastow & Co. . . . . 10,692  
W. Dart . . . . . 10,352  
Luscombe & Sons . . . . . 9,992  
F. J. Reed . . . . . 9,866  
Willcocks & Co. . . . . 9,583  
G. Bowen . . . . . 8,814 1  
BRITTEN & PICKETT, Ilfracombe (accepted) . . . . . 7,531

## IRELAND.

For construction of reservoir and tank, and the laying of pipes and erection of fountains in connection with the proposed waterworks for the village of Glanworth, Fermoy.

BRIAN E. F. SHEEHY, engineer, Limerick.  
D. HAYES, Fermoy (accepted) . . . . . £1,749  
For alterations at the union fever hospital, Londonderry. M. A. ROBINSON, architect, Londonderry.  
R. COLHOUN, Strand Road (accepted) . . . . . £16 10

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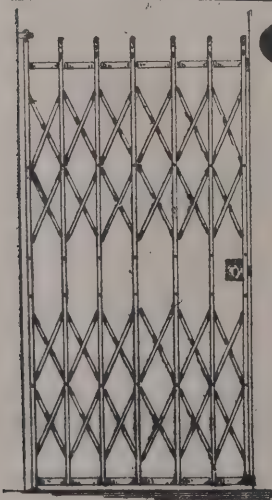
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## IRTHLINGBOROUGH.

Erection of a hall in Victoria Street, Irtlingborough, Northants. Messrs. SHARMAN & ARCHER, architects, Wellingborough.

Yes . . . . .	£910	0	0
Brown & Son . . . . .	899	10	0
Henson . . . . .	895	0	0
& C. Berrill . . . . .	895	0	0
Stevens . . . . .	886	0	0
arrow . . . . .	875	0	0
mus . . . . .	860	0	0
ACKSLEY BROS., Wellingborough (accepted) . . . . .	855	5	5

## LONDON.

Decoration of offices, 85 Gresham Street, E.C. Messrs. G. & R. P. BAINES, architects, 5 Clement's Inn, Strand, W.C.

ttley, Sons & Holness . . . . .	£168	0	0
llingwood & Co. . . . .	148	0	0
H. LASCELLES & CO., 121 Bunhill Row, E.C. (accepted) . . . . .	137	0	0

Addition of new vestries, heating chamber, &c., to St. Peter's Church, Streatham. Mr. GEO. H. FELLOWES PRYNNE, architect, 6 Queen Anne's Gate, Westminster. Quantities by Mr. R. HENRY HALE, 33 Old Queen Street, Westminster, S.W.

Smith & Son . . . . .	£2,394	0	0
ddard & Sons . . . . .	2,202	0	0
& C. Bowyer . . . . .	2,168	0	0
H. Lorden & Son . . . . .	2,144	0	0
G. Minter . . . . .	2,127	0	0
ANSELL, Lambeth (accepted) . . . . .	2,121	0	0

## MARYLEBONE.

Repairs, &c., at the infirmary. MOR & CO., Poplar (accepted) . . . . .

£1,494 0 0

## PLUMSTEAD.

Maintaining, &c., at the infirmary.

Proctor . . . . .	£308	0	0
Mills . . . . .	289	0	0
E. MILLS, Westcombe Park, Greenwich (accepted) . . . . .	263	0	0

## PRESTON.

For street works in the back roads between Trower Street and Ruskin Street, Ruskin Street and Frenchwood Avenue, Brunswick Place and Prospect Place South, Dove Street and Goldfinch Street, for the Corporation.

*Dove Street and Goldfinch Street.*

G. CHADWICK, Blackburn (accepted) . . . . . £211 12 0

For street works in North Road, from Garstang Road to Ormskirk Road.

J. MOXHAM & SONS, Brackenbury Street (accepted) . . . . . £898 10 0

## ROCHDALE.

For painting, cleaning, &c., at the infirmary.

Cook & Sharp . . . . .	£114	10	0
Brook & Whitworth . . . . .	70	10	0
Hill & Thackray . . . . .	61	0	0
J. & F. S. BUCKLEY, Bridge Street (accepted) . . . . .	60	0	0

## SALISBURY.

For erection of shop and premises, Blue Boar Row. Mr. A. C. BOTHAMS, architect, Salisbury.

Vincent & Folland . . . . .	£2,230	0	0
Kite . . . . .	2,116	0	0
Wort & Way . . . . .	2,098	0	0
Harris Bros. . . . .	2,075	0	0
Mitchell . . . . .	2,059	0	0
Young Bros. . . . .	2,035	0	0
Dawkers . . . . .	1,985	0	0
HALE (accepted) . . . . .	1,980	0	0

## SCOTLAND.

For additions to Rosemount public school, Aberdeen.

*Accepted tenders.*

Gall & Walker, mason.

Leslie & Hay, carpenter.

A. Martin, slater.

J. Scott & Son, plasterer.

A. Fiddis, plumber.

J. Mason & Son, painter and glazier.

J. A. Sangster, heating engineer's work.

Total, £7,338 19s. 6d.

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**SCOTLAND—continued.**

For reconstruction and enlargement of Woodside public school, Aberdeen.

*Accepted tenders.*

G. Hall, mason.  
Hendry & Keith, carpenter.  
Mason & Stewart, slater.  
J. Scott & Sons, plasterer.  
Thorn & Strachan, plumber.  
Murray & Mitchell, painter and glazier.  
W. McKinnon & Co, steelwork.  
J. Abernethy & Co, iron and blacksmiths' work.  
Total, £17,087 18s.

For supply and erection of the following for the Corporation of Oban:—(No. 4) steam, exhaust, drain and other pipes, pumps, condensing plant, &c.; (5) balancing transformers and motor-generators; (6) storage batteries; (7) switch-board; (8) arc lamps, incandescent lamps and fittings; (9) cablework; (11) travelling crane.

*Accepted tenders.*

Babcock & Wilcox, Ltd., Oriel House, Farringdon Street, London, E.C., steam-pipes.  
B. Thomas, Cornbrook Telegraph Works, Manchester, balancing transformers, &c.  
British Power Traction and Lighting Company, Hull Road Works, York, storage batteries.  
B. Thomas, switchboard.  
Oliver & Co, Cambridge Place, Burrage Road, Woolwich, Kent, arc lamps, &c.  
St. Helens Cable Company, Ltd., Warrington, cablework.  
J. Carrick & Sons, Ltd., Dalry-Ironworks, Edinburgh, travelling crane.

For erection at the Riverbank gasworks of a telescopic gas-holder 120 feet diameter (bottom lift) by two lifts 30 feet deep each.

BOYD & FORREST, Kilmarnock (*accepted*) £4,264 0 0

**SHUTFORD.**

For cleaning-out and building a wall across the parish pool, so as to make it watertight.

W. WALTON, East Adderbury, Banbury (*accepted*) £16 10 6

**SHENFIELD.**

For erection of a residence at Shenfield, Essex. Messrs. G. & R. P. BAINES, architects, 5 Clement's Strand, W.C.

S. J. Scott . . . . .	£2,450	0
G. J. Hosking . . . . .	2,424	0
J. Chessum & Sons . . . . .	2,420	0
Turtle & Appleton . . . . .	2,346	0
A. & J. Cross . . . . .	2,314	0
Johnson & Co, Ltd. . . . .	2,279	0
Battley, Sons & Holness . . . . .	2,193	0
Brown & Son . . . . .	2,192	0
Hammond & Son . . . . .	2,189	0
F. & H. F. Higgs . . . . .	2,152	0
E. West, Chelmsford * . . . .	1,983	0

\* Accepted with slight deductions.

**SHIPLEY.**

For erection of a villa residence at Nab Wood, Shipley, York. Mr. ABM. SHARP, architect, Pearl Assurance Building, Market Street, Bradford.

*Accepted tenders.*

J. Deacon, Shipley, mason and joiner.  
S. E. Jackson, Bradford, plumber.  
A. Taylor, Eccleshill, plasterer.  
Hill & Nelson, Bradford, slater.

**SOUTHAMPTON.**

For construction of tramways in St. Deny's Road.

Saunders & Saunders . . . . .	£7,178	4
Coston & Co. . . . .	5,208	0
F. Osman . . . . .	5,160	7
W. Griffiths & Co. . . . .	4,905	16
G. Wimpey & Co. . . . .	4,841	0
F. Grace . . . . .	4,733	0
DOUGLAS & RICHARDS, Southampton ( <i>accepted</i> ) . . . . .	4,666	0

**SUTTON SCOTNEY.**

For erection of a pair of cottages on Lower Cranbourne farm near Sutton Scotney, Hants. Messrs. W. & G. A. B. architects, Andover.

F. Beale & Sons . . . . .	£663	0
Goodall . . . . .	659	0
S. Bell . . . . .	565	0
C. Grace & Sons . . . . .	538	0

Note.—No tender has at present been accepted.

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Accepted tenders.

Fairview Road.

Adams, Wood Green . . . . . £797 0 0

Berkeley Road.

Adams . . . . . 437 0 0

Gourley Street.

Adams . . . . . 236 0 0

Gladesmore Road.

Bloomfield, South Tottenham . . . . . 811 0 0

Newlyn Road.

Bloomfield . . . . . 779 0 0

Napier Road.

Bloomfield . . . . . 643 0 0

WATERLOO.

rection of branch shop and cottages at Waterloo, Lanes.  
Mr. A. J. HOWCROFT, architect, 12 Clegg Street, Oldham.  
WOOLLEY, Newmarket Road, Taunton, Ashton-under-  
lyne (accepted).

WHITEHAVEN.

For erection of an infirmary on land adjoining the workhouse.  
Mr. G. BOYD, architect, 33 Queen Street, Whitehaven.

Accepted tenders.

L. Ferguson, Workington, mason . . . . .	£4,885	0	0
R. Bragg, Workington, joiner . . . . .	1,644	0	0
W. Strathern, Whitehaven, plumber . . . . .	983	0	0
J. Lawson, Workington, plasterer . . . . .	649	0	0
J. Lithgow & Sons, Workington, slater . . . . .	302	0	0
L. Ferguson, ironfounder . . . . .	140	0	0
E. McConn, Whitehaven, painter . . . . .	120	0	0

Received too late for Classification.

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For enlargement, Chisenhale Road, Hackney—boys, 48; girls,  
48; infants, 48; total, 144, with additional cloakrooms for  
each department.

Willmott & Sons . . . . .	£2,725	0	0
W. Gregar & Son . . . . .	2,677	0	0
J. Chessum & Sons . . . . .	2,651	0	0
Snewin Bros & Co. . . . .	2,635	0	0
W. Shurmur & Sons, Ltd. . . . .	2,583	0	0
C. Miskin & Sons . . . . .	2,522	0	0
F. & F. J. Wood . . . . .	2,513	0	0
E. Lawrance & Sons . . . . .	2,491	0	0
J. & M. Patrick . . . . .	2,454	0	0
C. Cox . . . . .	2,439	0	0
Treasure & Son, London and Shrewsbury* . . . . .	2,387	0	0

For manual-training centre for twenty (with extension to forty),  
Slade, Greenwich.

F. & H. F. Higgs . . . . .	£1,139	0	0
W. Downs . . . . .	1,055	0	0
Johnson & Co. . . . .	1,020	0	0
J. Smith & Sons, Ltd. . . . .	964	0	0
E. P. Bulled & Co. . . . .	957	0	0
J. Garrett & Son . . . . .	920	0	0
J. & C. Bowyer . . . . .	897	0	0
J. Marsland & Sons. . . . .	893	0	0
E. Triggs . . . . .	883	0	0
Kirk & Randall . . . . .	878	0	0
Thomas & Edge . . . . .	852	10	0
T. D. Leng* . . . . .	824	0	0

\* Recommended for acceptance.

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For special school for mentally defective children, enlargement, two classrooms of twenty each, Mansfield Road, Marylebone.

H. Wall & Co.	£1,480	0	0
Marchant & Hirst	1,444	0	0
Treasure & Son	1,431	0	0
General Builders, Ltd.	1,408	0	0
McCormick & Sons	1,389	0	0
C. Cox	1,375	0	0
C. Dearing & Son	1,336	0	0
Willmott & Sons	1,312	0	0
G. S. S. Williams & Son	1,306	0	0
E. Lawrance & Sons*	1,270	0	0

For three rooms of twenty each, special school, Haverstock Hill, Marylebone

F. Gough & Co.	4,264	0	0
McCormick & Sons	4,245	0	0
C. Dearing & Son	4,217	0	0
Willmott & Sons	4,150	0	0
J. Grover & Son	4,142	0	0
L. H. & R. Roberts	4,135	0	0
Marchant & Hirst	4,118	0	0
H. Wall & Co.	4,118	0	0
C. Cox	4,068	0	0
G. S. S. Williams & Son	3,882	0	0
E. Lawrance & Sons	3,841	0	0
J. Simpson & Son	3,752	0	0
Stimpson & Co.	3,714	0	0
Treasure & Son	3,692	0	0
E. Triggs*	3,553	0	0

For extending low-pressure hot-water apparatus to three new corridors on ground, first and second floors, Haseltine Road, Greenwich.

Werner, Pfeiderer & Perkins, Ltd.	£153	6	6
C. Kite & Co.	135	0	0
T. Knight & Sons	128	0	0
J. Esson	123	0	0
Palowkar & Sons	114	10	0
Bates & Sons*	99	10	0

\* Recommended for acceptance.

## PLYMOUTH.

For electrically wiring the destructor works. Mr. J. A. PATON, borough engineer.

Lord & Shand	£70
HEATH & Co., Plymouth (accepted)	67

For street works in the following streets and lanes:—  
Plain Lane, South View Terrace Section 2 (footway of Collingwood Avenue Lane, Clayton Place, Turret Grove Road No. 1, Turret Grove Road No. 2. Mr. JAMES PATON, borough surveyor.

## Turret Grove Road No. 2.

Jefford & Sons	£198
E. DUKE, Plymouth (accepted)	153

## Turret Grove Road No. 1.

Jefford & Sons	283
E. DUKE (accepted)	220

## South View Terrace, Section 2.

Pearce Bros.	145
E. DUKE (accepted)	126

## Mutley Plain Lane.

Pearce Bros.	53
E. DUKE (accepted)	51

## Collingwood Avenue Lane.

Pearce Bros.	305
E. DUKE (accepted)	295

## Clayton Place.

Jefford & Sons	115
Pearce Bros.	104
E. DUKE (accepted)	98

At the meeting of the Liverpool housing committee, held on the 28th ult., Mr. Austin Taylor in the chair, it was announced that Mr. Thomas Blashill, F.R.I.B.A., late superintendent architect to the London County Council, had been offered and had agreed to accept the position of assessor in competition shortly to be thrown open to architects for a scheme providing for the erection of houses for the work classes on the Hornby Street area.

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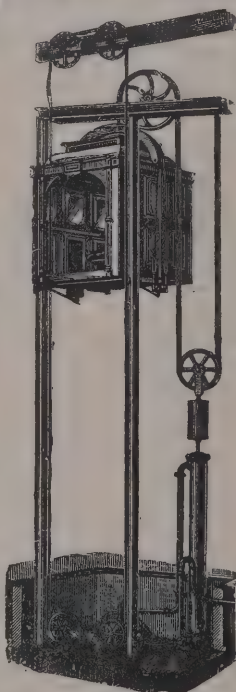
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## MAY-OATWAY FIRE ALARMS

Since the recent practical test of this at Ilford, bookings have been very heavy. Dingle Station, the scene of the late fire, is now protected by the May-Oatway System and connected direct with the pool Fire Brigade.

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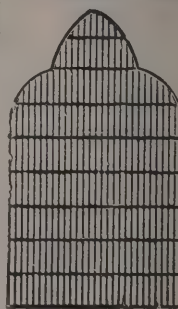
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DUKE OF CONNAUGHT AT WOLVERHAMPTON.

The Duke and Duchess of Connaught visited Wolverhampton yesterday (Thursday) for the purpose of declaring the exhibition open. As a souvenir of the occasion His Royal Highness was presented by Messrs. Chubb & Sons with a key of which we are able to give a presentment.



The key, which is of the finest workmanship, is fashioned in solid gold by hand, and has the shamrock as the base of its design, in reference to His Royal Highness's title, his initial "C," in diamonds, forming the centre of the bow. It was prepared from the design of Mr. Walter Churcher, and is presented by Sir George Hayter Chubb, Bart., chairman of the don committee.

TRADE NOTES.

THE extensions to the Technical schools, Sale, are being warmed and ventilated by means of Shorlands' patent Manchester grates, exhaust roof ventilators and special inlet panels, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

MESSRS. COUSLAND & MACKAY, ventilating engineers, Glasgow and Manchester, have carried out the ventilation of St Mary's Street Boys' school, Kidderminster, by means of Mackay's patent direct-acting turret ventilators and improved quadrant inlets, of which they are the sole makers

MESSRS. ARCHIBALD SMITH & STEVENS, of Queen's Road, Battersea, write to us to the effect that they supplied the two express passenger lifts which have been fitted in the Alliance Insurance Company's handsome new offices in the Strand, an illustration of which appeared in our issue of the 18th ult.

MR. ALBERT HILDESHEIMER, fine art publisher and colour printer, asks us to mention that he has secured new offices and warehouses at 33 and 34 Shoe Lane, E.C., as his old premises—2 New Zealand Avenue, E.C.—were entirely destroyed by the recent great fire in Barbican.

MR. SAM DEARDS'S patent self-locking glazing system has lately been adopted for the following electric power stations and car-sheds, viz :—Oban, Sutton, Broughty Ferry, Ilford, Weston-super-Mare; also for the Walthamstow School Board, new roofing at Fulham Workhouse, extensions at Messrs. Mann, Crossman & Paulin's, Mile End, and Southampton Library.

MESSRS. JAMES PAIN & SONS, 9 St. Mary Axe, manufacturers of the useful smoke cases for drain testing, forward us a lengthy list of testimonials which they have received from surveyors, engineers, sanitary inspectors of corporations, urban and rural district councils, &c., all of which are emphatic in their testimony to the value of this very simple contrivance.

MESSRS. MESSENGER & CO., LTD., horticultural builders, of Loughborough, in a neat little price list which they have just got out, give some capital illustrations, some of them from photos, of work which they have recently carried out. These buildings combine lightness with substantiality in an eminently practical manner, and to judge by the prices given their cost is not by any means an onerous matter. We are reminded in this booklet that Messrs. Messenger are the holders of numerous medals, &c., gained at the various exhibitions.

THE new municipal buildings, town hall, court-room, police offices and swimming baths for the Town Council of



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MESSRS. THE GRAHTRYX VENTILATING AND ENGINEERING CO., LTD., successors to Baird, Thompson & Co, Ltd., ventilating engineers, and specialists in ventilation, heating, drying, cooling and sanitation, of 23 Sutterton Street, Caledonian Road, inform us that they have recently finished ventilating and warming by low-pressure steam the new free library at Wolverhampton and the new drill hall, Bilston. Amongst other contracts they now have in hand are the ventilation and warming of the new Technical schools for the Southend Corporation and the new Technical school for the Tunbridge Wells Corporation, the heating and hot-water supply of Oak Lodge, Wimbledon, for Mr. A. J. Bolton, and the ventilation and warming of Broadway Court, Evesham, for Mr. A. Ede Navarro.

### VARIETIES.

THE new Wesleyan chapel at Great Hale, near Sleaford, erected at a cost of about 650*l.*, was opened on Sunday last.

THE new Wesley Sunday schools, situate in Church Street, Whitby, were dedicated on Wednesday.

THE sites committee of the London County Council have concluded it is not expedient that a site on the Crescent island to be formed in connection with the Holborn-to-Strand improvement should be reserved for the erection of new offices for the Council.

THE new Roman Catholic church of St. Andrew's, erected at Ravelston Place, Edinburgh, to serve the growing Catholic population in the north-west district of the city, has been opened. The new church is only a temporary edifice. It is built of wood in the old English style, seated with chairs upholstered in tapestry, and affords accommodation for 600 worshippers. The church cost about 850*l.*

THE Abercorn Public school, erected on the Renfrew Road Paisley, at an estimated cost, including furnishings, of 25,000 was formally opened on the 28th ult. It occupies a site of three acres. The main building is two storeys in height, with ceilings 14 feet high. Accommodation is provided for 1,400 scholars, and there are wide fireproof staircases for the boys and girls at their respective entrances.

THE Council of the Institution of Civil Engineers have awarded the following medals and premiums:—A Telford gold medal to Mr. W. M. Mordey, and a George Stephenson gold medal to Mr. B. M. Jenkin, a Watt gold medal to Mr. J. A. Aspinall, and Telford premiums to Messrs. W. C. Coppell, Thwaite, A. H. Haigh, B.Sc., and J. Davis. The Council have also awarded the Howard quinquennial prize of the institution to Mr. R. A. Hadfield, of Sheffield, for his scientific work in investigating methods of treatment and new alloys of steel, and on account of the importance in industry of some of the new products introduced by him.

THE new baths and washhouses which have been erected by the Fulham Borough Council were opened on the 10th ult. The establishment is a fine and commodious one. It has three swimming ponds—a ladies' bath with 31 dressing-boxes, a first-class men's bath with 64 dressing-boxes, and a second-class men's bath with 125 dressing-boxes. In addition there are 28 first-class and 56 second-class private baths for ladies and 18 first-class and 41 second-class private baths for men besides douche baths, &c. Separate entrances are, of course, provided for men and women, but both are situated in the central or administrative block, which fronts Melmoth Place. The public washhouse is situated in Hartismere Road, and is attractively built and finished. It contains stalls for 66 washers, a like number of drying horses and four hydro-extractors. A large ironing-room is also provided. The boilers are placed under the washhouse, while adjoining is the engine-room and well-house. A furnace chimney, 80 feet high, is also provided and built entirely detached from the building. There are, of course, the usual attendants' and general offices. The whole scheme has cost over 60,000*l.* Mr. H. Dighton Pearson, of Chancery Lane, is the architect.

ON Thursday, April 25, the ceremony took place which marked the completion of the first stage in the scheme for the restoration of Paisley Abbey, the ceremony in question being the formal reopening of the venerable church. The general scheme provides for the restoration of the choir, the transept

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the central tower, and in the meantime the first section of the tower and the transepts has been finished, whilst the old choir Chapel or sounding aisle has been opened up, and a new organ chamber has been placed at the entrance to the choir. It has been the aim of the architect, Dr. Rowandson, of Edinburgh, to have the restoration work so laid out as to be in unison with the existing nave and the old portion of the edifice, and in this, as is shown by the improvements already effected, he has been eminently successful. The transepts, of which but a ruined gable was all that remained, have been admirably restored and brought into the church proper, and an excellent harmony has been effected in their junction with the nave. An impressive appearance has also been given to the transepts by the beautiful leaded-glass windows which have been placed in them. There are three of these windows, and the largest, representing prophets and evangelists, has been erected by Mrs. Polson, in memory of her husband. The restoring of the first section of the central tower has been a work of great magnitude. Every precaution has been taken to make the foundations thoroughly secure. The tower rises from four piers connecting the choir and the nave, and the section, 40 feet square, has been carried several feet above the level of the main building. Owing to the formation of the piers four arches have been formed between the pillars, the ceilings being beautifully groined, whilst the ceilings of the transepts are of gracefully carved woodwork. By restoring of the transepts additional space has been added in the nave, and the sitting accommodation of the church has been altogether increased by about 400. Advantage has been taken of the improvements to introduce the electric light into the edifice. The work so far completed has been in progress during the past three years, and has cost fully £10,000.

#### BUILDING AND BUILDERS.

A visiting committee of the East Riding Asylum require £1,000 for extension purposes, including the erection of a new wing for 120 patients. The Ayr Corporation have accepted the tender of Mr. James Watson, Ayr, amounting to £1,753 10s., for drainage contracts. No. 10.

THE Holbeck Guardians have accepted tenders amounting to £6,924 for part of the work connected with the extensions and alterations at the workhouse.

THE memorial-stone of a new United Free church, to be dedicated to St. James, which is in course of erection in Kilmalcolm, N.B., at a cost of £11,000, was laid on Saturday last.

THE United Methodist Free church, Westcliff-on-Sea, was opened on April 30. The style is Perpendicular. Messrs. Battley, Sons & Holness were the contractors, and Messrs. G. & R. P. Baines the architects.

THE scaffolding upon which Frank Dobbs, of Birmingham, and William Carr, of Burton-on-Trent, both steeplejacks, were working on a chimney at Cheetham & Hill's foundry, Derby, collapsed on the 28th ult. Both men fell 50 feet, Dobbs being killed outright. Carr broke his fall on the roof of a shed, through which he crashed on to some barrels, sustaining concussion and broken ribs. He is still unconscious.

AT last week's meeting of the Dudley Board of Guardians the building committee reported that the estimated cost of the new laundry, washhouses and boiler-house was £11,000, which included the cost of boilers, architect's and quantity surveyor's charges, salary of clerk of the works, cost of raising loan and contingencies; and they recommended that Mr. J. A. Fullwood, of Sedgley, mining engineer, be employed to make an inspection of the fireclay workings under the site of the land on which it was proposed to erect the laundry building, &c., and that his report be forwarded to the Local Government Board. They further recommended that the Local Government Board be asked to allow the sum of £1,163 10s. 2d. per cent. consolidated stock, being the unexpended balance of the sale of fireclay, to be applied towards the cost of the new laundry buildings. The report was adopted.

THE half-yearly meeting of the Scottish Building Trades Federation was held last week. Mr. Robert Lamb, builder, Edinburgh, president, in the chair. Members were present from various parts of the country, including Glasgow, Edinburgh, Dundee, Aberdeen, Perth, Kilmarnock, Stirling, Inverness, Coatbridge, Airdrie, &c. The secretary, Mr. James L. Selkirk, submitted the report, which detailed the work carried on by the executive during the past six months. The subjects referred to therein were severally considered and discussed, and a number of important resolutions were come to in regard

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to future operations. These had reference to organisation, trade disputes, working by-laws, conditions of contract, finance, &c. A resolution was arrived at to render the federation a still more efficient instrument for the promotion of the various objects for the furtherance of which it was instituted. An influential deputation from the National Association of Building Trades' Employers of Great Britain and Ireland attended, and addressed the meeting in encouraging terms.

### ELECTRIC NOTES.

ADMIRAL SIR HENRY NICHOLSON, K.C.B., chairman, and the directors of Electric Lighting Boards, Ltd., entertained a large party at luncheon at the Criterion Restaurant on Friday last to meet Miss A. Ashton Bence on her departure for the Cape on the company's behalf, the party including Sir James Weeks Szlumper, D.L., J.P., Professor R. H. Smith, M.Inst.C.E., Mr. Edwin O. Sachs, A.M.Inst.C.E., Major Fox (London Salvage Corps), Dr. Hoffman (Home Office), Mr. Max Byng, M.Inst.C.E. (General Electric Company), Mr. F. R. Farrow, F.R.I.B.A., Mr. Paterson (Johnson & Phillips), Mr. Bloxam (Abel & Imray), Mr. Crick (Rose-Innes, Son & Crick), Mr. Theodor (Theodor & Rawlins) and a number of friends and experts. Miss Bence, who was the recipient of many flattering telegrams, was congratulated on her enterprise, by Sir Henry Nicholson and wished "good speed" by Sir James Szlumper on her arduous task at the Cape, which has much similarity to that of her successful visit to the United States in 1901, when the company's properties in America were sold for a very large consideration. Major Fox thanked the chairman for the visitors, and concluded the proceedings by entertaining the party at the Shaftesbury Avenue station of the London Salvage Corps.

CONSIDERABLE progress is being made in the erection of the electricity generating station at Oban, N.B. The buildings are now well advanced, and gangs of men are engaged on the system of distribution. When completed the power will be generated from Babcock boilers, three 100 horse-power steam dynamos and electric accumulators. Mr. H. R. T. Burstall (of Messrs. Burstall & Monkhouse, London), the consulting engineer, gave an interesting lecture in the Oban Hall, and with the assistance of numerous lantern slides described the system being adopted. Mr. Burstall showed and explained the many purposes for which electricity could be used in buildings, &c.,

as in lighting by arc and incandescent lights, power heating. Mr. Robertson, the convener, explained that he hoped to be able to supply the current for lighting at 6d. unit and for power at 3d. per unit, and, if so, consumers would find there would be a large saving in comparison with the cost of gas, which at present is charged at 7s. 6d. per 1,000 feet. Mr. Robertson pointed out, however, that the rate of current to be charged must depend on the consumption of applications. The convener intimated that a contract had been entered into with Messrs. Claud Hamilton, Ltd., electrical engineers, Glasgow, whereby this company is appointed wiring contractors to the Council, and will undertake the fitting of buildings for lighting and power on a deferred payment system, extending over five or seven years, at rates approved by the Council, the work being carried out to the satisfaction and approval of their engineer.

### ROYAL SCOTTISH SOCIETY OF ARTS.

THE tenth meeting of the current session of the Royal Scottish Society of Arts was held on Monday night in the hall, George Street, Edinburgh. Mr. Norman D. Macdonald, advocate, made a long communication, in which he dealt with some railway problems considered from the standpoint of American practice. Touching on the problem of the track, he commended the ease of railway travelling in America, partly to the excellent build and design of the rolling stock and more so to the absence of "chairs." Whether in locomotive the Americans were well ahead of us in the matter of railway track, though they were not yet content. As yet we did not seem to understand the question of curves. In America great pains were taken in laying out curves, with the result that there was an entire absence of jolting and lurching. We were behind also in the signalling as compared with America, where the safety and convenience of the arrangements were very great. The brake system was likewise superior, the problem of control and couplers having been solved in the States. We were still years out of date on this subject, but he was glad to say that within the past few weeks a Great Western locomotive had appeared with brakes on bogey wheels. Subsequently Mr. Macdonald discussed in detail the locomotive power on American railways, enlarging

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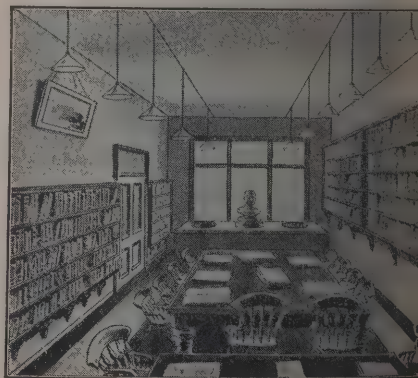
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different types of engines and their outstanding features. Interesting collection of slides of locomotives was shown on screen, and it was observed that our railway men con- excused themselves for not having more powerful engines by pointing out that the tunnels in this country pre- sents from getting so big ones as other nations. That was true, but even as matters were we had not got to the limit of power. Finally, Mr. Macdonald praised the com- mand luxury of the American passenger coaches, and re- d that evidently one of the problems that had not yet been grappled with in this country was the thorough cleaning of coaches. At the close, Mr. Macdonald, whose paper was fully illustrated, was awarded a cordial vote of thanks.

## METROPOLITAN BAKERIES.

Last report Dr. Dudfield, medical officer of health to the borough of Kensington, has the following remarks on the construction of bakeries, a subject which has not yet received attention of the authorities which is demanded by its importance:—

Viewed from the public health point of view, probably the most important part of the new Act is of more immediate or greater interest to the sanitary authority than that relating to bakehouses. As in London, the defects of the places where bread is made are largely dependent on two factors—(1) That the premises are not constructed for the purpose, and (2) that they are on bad ground. Ere long the borough councils will have to face the question whether these underground premises are sanitariously constructed. When the Factory and Workshop Act, 1895, became law, it was hoped that (by sub-section (3) of section 27) a step towards the abolition of underground bakehouses had been achieved; but this hope was not realised, although the defect in the sub-section had been rectified, under circumstances to be related later. The Act of 1901 did nothing to immediately secure the desired object. But there is hope in the future, and we wish to draw the attention of the Council to the matter, yet there is time to avoid, in respect of bakehouses, the mistake resulting from the inaction of the sanitary authorities, between 1856-73, in regard to private slaughter-houses. With few exceptions the bakehouses in the borough are on bad ground, being generally the two basement

rooms—kitchen and scullery—of an ordinary dwelling-house, adapted by the construction of one or more ovens under the footway of the adjoining street; imperfectly lighted by a hinged sash in the stall-board of the shop, this, moreover, being the principal if not the only means of ventilation. In practice, however, the window is seldom opened, for operative bakers who work in great heat are very susceptible to the effects of draughts—and when opened it admits dust and other street filth blown in from the carriageway. It would seem impossible to a sanitary authority to "certify" a bakehouse so situated, so constructed, so ill-lighted, and practically un-ventilated, to be "suitable" for the purposes of a business demanding the utmost cleanliness.

But we have not yet done with the new provisions of law, for it is further enacted in sub-section (7) that—

"In the event of the refusal of a certificate by the District Council, the occupier of the bakehouse may within twenty-one days from the refusal, by complaint apply to a court of summary jurisdiction, and if it appears to the satisfaction of the court that the bakehouse is suitable for use as regards construction, light, ventilation and in all other respects, the court shall thereupon grant a certificate of suitability of the bakehouse which shall have effect as if granted by the District Council."

In a word, a single magistrate, who may be without practical knowledge or experience in regard to the matter, may override the decision of the District Council, a sanitary authority acting upon the advice of their expert officers.

It is, of course, to be hoped that no such conflict will arise in the execution of the law, but that the trade will themselves take steps to bring matters to a satisfactory settlement in conformity with the requirements of the Act and the necessities of the case. It should not be difficult to establish co-operative bakeries, if it were found impracticable for each baker to provide himself with a suitable bakehouse above or underground. Probably a solution may be found in a new system, under which bakers' shops should become, in the main, distributing agencies or places for the sale of bread made in large wholesale bakeries, where this staple article of human food shall have been prepared by machinery. Nothing better could be desired—looking at the matter from the point of view proper to the sanitary authority. In any case, the matter should not be allowed to drift, for if the bakers do nothing, and if the sanitary authorities fail to make their views known, it may be alleged, and not unreasonably, on the expiration of the period of grace, that the people cannot be supplied with the "staff of

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life" should "unsuitable" underground bakehouses be closed, in conformity with the express provisions of the new Act.

### LIGHT AND SANITATION.

AN address was delivered by Sir J. Crichton Browne on "Light and Sanitation" at the Sanitary Congress in Manchester. He said:—We have scriptural warrant as well as personal experience for believing that the "light is sweet," and that it is "a pleasant thing to behold the sun." And my thesis this morning is that it is not only a pleasant but a wholesome thing to bask in the rays of that great luminary. And in submitting that thesis to you I am asking your acceptance of no new doctrine, for it has long been held almost all over the world that certain salutary influences emanate from the sun as part of his radiant energy. True, the sun has been accused of morbid as well as of healthful operations. Snow-blindness, certain cutaneous eruptions, and sunstroke have been justly laid to his charge, and, like the moon in the matter of lunacy, he has had to bear the blame of visitations of which he has been wholly innocent. But whatever his pathogenic misdeeds, real or imaginary, may have been, they have been far more than counterbalanced, even in popular estimation, by his beneficent and healing powers, and in many countries we hear echoes of the common Italian proverb, "Where the sun does not enter the doctor comes," and find prevalent the practice of exposing to his bleaching and cleansing processes clothing, bedding, and other articles liable to pollution. Much patient investigation is yet necessary as to the action of light on bacteria. We want to know its action, in different degrees of intensity, on different species in different surroundings, but even now what we know of its action on the disease-causing varieties warrants us in hailing it as a sanitary ally of the first puissance in our combat with disease. That cannot be too strongly insisted on. We know already that bright sunlight is fatal to many of our most dangerous and insidious enemies amongst the bacteria, and that even the feeble rays of the winter sun will often suffice for their destruction. We know that the slow and sustained action of light, even of comparatively low temperature, on these bacteria, when they are not killed by it, so alters their behaviour that they are afterwards different from bacteria not so acted on in their power of fermenting organic substances. We know that when the spores of bacteria escape into the air, and are there enveloped in the direct rays of the sun, they

gradually deteriorate and lose their pernicious qualities. We seem to understand why epidemics due to parasitic fungi so often associated in people's minds with dull, cloudy, sultry weather. We realise that that pencil of sunlight that planet intercepts and that whisks round its circumference in its revolutions on its axis is, if I may use an ignoble simile, like a mighty scavenger's broom, sweeping before it the noxious and injurious matter. We conclude that it is a sanitary obligation upon all of us to give the light free play, to do no more that can hinder or obstruct its salubrious progress. Light has more deep and intimate human relations of a sanitary nature. Light is a necessary condition of mental and bodily well-being. Its tonic psychical effects are everywhere recognised. properly organised men and women love the light, and it is merely to children that darkness brings with it a sense of powerlessness, danger and alarm. But whatever the therapeutic values of the different rays of light may be, white light, heaven's own mixture, is the normal cerebral atmosphere, variations in its intensity have probably widely diffused constitutional effects. These, however, are not always immediate and obvious, but often remote and subtle, and grave errors have arisen from confusing the primary psychical with secondary somatic consequences of light in the human organisation. Light is instrumental in preserving health and maintaining it at a high standard by its immediate effects on the individual man, psychical and trophical, as well as by its action in safeguarding him from microbic attacks. Light is a sanitary agent of the first order, and it behoves all good sanitarians to spread the light, to conserve the light, and to protect it from pollution.

In this country, until a very recent date, there were actual legislative restrictions on the enjoyment of this common necessary of life. The window tax, which was instituted in 1696 and continued in force until 1851, among other evil results, blighted domestic architecture for 150 years; it undermined in some degree, the physical vigour of the people, and stamped on them decrepitude from the vestige of which we are doubtless suffering to this hour. The effect of the window tax was to accustom the people to dingy dwellings, and I question whether we have even yet arrived at a state of fenestral perfection. It is for practical sanitarians to insist on the big window and open window, and to teach that the light and air that thus admit sweeten and disinfect the house, and prevent sickness and divers diseases. But the big window will not be of much avail if the light cannot gain access to it, and its situation

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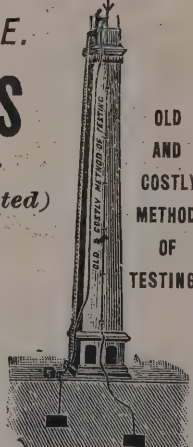
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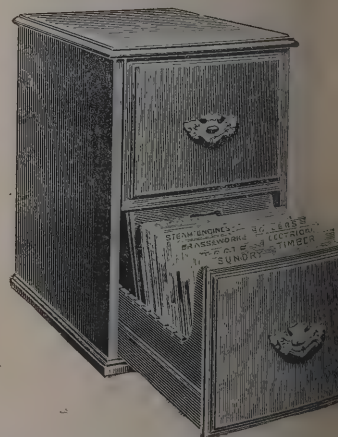
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its size is therefore of sanitary importance. It should be placed that it is not heavily overshadowed, and that the light during some part of the day can directly fall on it. Here we encounter the great crux in connection with sanitary-house-building in our towns and cities. It is impossible to do without anxiety the piling-up process that is going on. The walled towns of yore the houses grew aloft, acrogenously, on storeys, because lateral expansion was impossible in the protected area, and in the industrial towns of to-day the considerations as rigid as stone walls create enclosures within which accommodation can only be found for crowds that press into them by packing them tier on tier. The general skyward movement is in progress. Artisan dwellings, warehouses, shops, mills and mansions go on adding to their stature, and lengthening and deepening the streets around them. There are streets in London that are like tunnels, courts like damp cellars, rooms innumerable—in fashionable quarters—that no glint of sunshine has ever reached. Little wonder that so many of our London children—Lancashire children, too—are puny mites, with poor, thin and flabby muscles. In dealing with that housing problem which should occupy the most prominent place on the mind of every social reformer, and on the solution of which the attention should be concentrated, it should be steadily in mind that every human habitation or block of habitations should be surrounded by a belt of light as inviolate as the silver sea that surrounds our island. It will be of small avail that we provide open spaces about dwellings and enlarge our windows if at the same time we leave the window of the sky to be blurred and darkened, and unhappily what is going on all over this England of this is the age of smoke in which we are living. Our population has increased, our industries have multiplied, our streets have become condensed and extended, and over every town, great and small, hangs a canopy of soot and noxious fumes more or less dense, veiling the sun and cutting off its benign influence. Nor does the carboniferous rest upon its urban bed alone. It streams away into the surrounding country, defiling it and stifling its vegetation in animal life. Lancashire is a forest of tall chimneys, and every factory shaft emits as much smoke as 200 domestic stoves. You are smothered in the products of combustion year round; in winter these settle down on you in fogs, and horrible, and you must go far afield before you can find a sheep with a white fleece or pick a flower or blade

without soiling your fingers. A sable incubus embarrasses your breathing, a hideous scum settles on your skin and clothes, a swart awning offends your vision, a sullen cloud oppresses your spirits, and you quietly tolerate all this, apparently having come to regard it as inevitable and as a penalty inseparable from industrial prosperity. But is it so? Assuredly not. It is certain that this smoke nuisance is to a large extent the offspring of culpable negligence and profligate waste, and that it could be enormously abated, if not abolished.

He did not think the smoke evil would be put an end to by incessant prosecutions and cumulative fines, but rather by convincing the manufacturers that it is economical to avoid smoke-making, and that there are processes and contrivances now available for obtaining mechanical power in a smokeless and thrifty way. "Let there be light" was the first creative fiat, and it had to be repeated to-day. Then will the grass grow green again, the herb flourish after its kind, flowers blossom in our urban gardens, moss and lichens mantle on our city walls; then will the faces of our toiling millions again be burnished with the glow of health, while the pale pestilence that walketh in darkness will slink away abashed. Then, too, it may be hoped, the sleeping spirit of beauty amongst us will awake, at the touch of the auroral prince, from her long fume-begotten torpor, so that ugliness may depart from our streets and the glories of architecture again adorn them, while the refining influences of art exalt the national life.

#### MAIDSTONE BUILDING TRADES ASSOCIATION.

THE members of this Association dined together on the 25th ult. at the Bull Hotel under the chairmanship of Mr. R. Avar (president of the Association), Mr. W. F. Wallis (vice-president) facing him at the other end of the table. Guests and members present included Mr. W. West (vice-president of the Chatham Builders' Association), Major C. Pye Oliver, Mr. E. Vaughan, Mr. A. W. Smith, Mr. T. F. Bunting (borough surveyor), Mr. W. Jackling (sanitary inspector), &c.

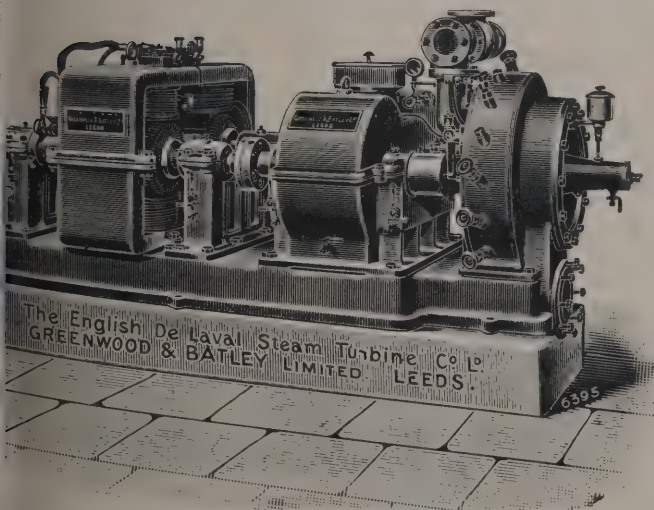
The toast of "The King and the rest of the Royal Family" having been loyally honoured,

The Chairman proposed "The Imperial Forces," coupled with the name of Major Oliver, who, in reply, said the corps he had the honour to command had increased its strength in the past fifteen years from forty to 280, and had sent 150 men to the war.

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Mr. West gave "Success to the Maidstone Building Trades Association." He said he wished success to every Association in the district, and more especially that at Maidstone, because it was one of the oldest associations in Kent, and it was due to the enthusiasm of the Maidstone Association that they at present had a society in Chatham. He thought they had everything in their favour at Maidstone for forming an organising centre for the South-Eastern District Federation. Their vice-president (Mr. Wallis) was one of the most active members of the trade in promoting that movement. It had been his privilege to attend several meetings in connection with the Federation, and he congratulated them upon having the services of such an able man as Mr. Wallis. The Federation of the Southern Counties had not perhaps been quite the success that Mr. Wallis and several others would have wished, but it was no fault of his, for he had done everything possible, and it was hoped he would see a great reward for the vast amount of labour he had put into the Federation movement. They also had reason to congratulate themselves upon the very successful issue to which they brought the dispute over the question of hours in several trades last winter. They at Chatham followed the trend of that dispute very carefully, because in a measure they were labouring under the same difficulty in the winter. The step taken at Maidstone was one in the right direction, and he had given notice to the Chatham Association that he would propose the adoption of the same rules for that district.

Mr. Wallis in reply said he had always taken a deep interest in the Association. He recognised that they were not so well organised as the workmen, and they had the architects and surveyors also with their well-organised Institute. The workmen's organisation was exceedingly well-managed, and they had enormous funds and knew how to use them. Although they (the builders) were organised locally and had carried their point with a certain amount of success, they wanted to be fully respected by the men, and therefore should form a larger organisation, and with this view he went somewhat strongly into the idea of the federation of the Southern Counties. He was sorry it had not been taken up generally with the enthusiasm it deserved. The workmen's union, however, only had small beginnings, and he was not without hope that their own Federation would in time develop into proportions that would command the respect of both sides. The great stumbling-block was the question of finance. The workman, very much more alive to his interests than the employer, put by a considerable percentage of his earnings, placing them in the hands

of his Society, and the builders ought to make up their minds to do something similar and consider it as an insurance fund. If they put by a corresponding amount to the insurance they would have greater freedom from trade disputes. Apart from the men, the Federation would give them a better status with the architects and surveyors in dealing with forms of contract they were sometimes called upon to sign. The London Association had been trying for ten years to get a better form adopted, but the architects had not accepted their views. The speaker suggested the formation of an association amongst the towns in the centre of Kent on similar lines for the insurance of the employer against accident to the workmen, with a reserve fund to deal with disputes.

Subsequently, in proposing the toast of "The Architects and Surveyors of Maidstone," Mr. Wallis said they at Maidstone were exceptionally fortunate in having to deal with gentlemen who ranked amongst the best architects and surveyors he had met with.

Mr. Smith in reply said he believed the building trade stood at present on a higher platform than ever it did. It had often been remarked that they could not put up buildings nowadays such as the ancients did. He did not agree with that people, but he believed in the fact that the fittest had survived. They had with them now examples of true and honest work, but those examples were few and far between. What had become of the ordinary buildings of past centuries? They had gone with centuries. The ordinary dwellings of the present, the work that was put up to serve the purpose of the time, had gone, and the monumental buildings alone remained. He believed the percentage that would remain after their time would be far greater than the percentage of buildings which had survived past ages. There was work they would not do to last as examples of what was done at the end of the nineteenth and beginning of the twentieth centuries, but there was good honest work that would compare with any in the world and it was upon that they would pledge their reputation.

For the "Town and Trade of Maidstone," proposed by Mr. Cox, Mr. E. Vaughan replied. He said he doubted whether the trade in the town was as good as it was some two or three years ago. He added that he had always been a trade unionist and if builders would combine not only would trade be increased, but work would be more harmonious between employer and employed.

Mr. R. Corben proposed "The Visitors," and Mr. B. St. John responded.



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# The Architect.

## THE WEEK.

A CURIOUS case which has interest for the building trade was brought last week on appeal before the King's Bench Division. About two years ago a man named READ who was twenty-five years of age apprenticed himself to Messrs. WIGG & WRIGHT, of Ipswich, and agreed to serve for three years, receiving only 15s. a week wages, on the understanding that he was to be taught the trade of a stonemason. The two masters as well as the men in their employment were members of the Friendly Society of Operative Stonemasons. They had agreed to the following trade rule:—"Apprentices.—That boys entering the trade shall not work more than three months without being legally bound apprentice, and in no case to be more than sixteen years of age, except masons' sons and stepsons. Employers to have one apprentice to every four masons on an average." It was not long before the Society objected to the new apprentice, and in consequence the man was obliged to keep to labourer's work. Afterwards a strike was threatened. READ, on account of the action of the Society, sued them for damages for maliciously inducing his masters to break the contract with him. The judge at the Ipswich County Court decided that there was no cause of action against the Society, as no improper motive could be alleged. The plaintiff accordingly appealed. Mr. Justice DARLING and Mr. Justice CHANNELL held that the County Court judge was wrong, and that there should be a new trial. The Lord Chief Justice considered that judgment should have been entered for the plaintiff, but as the other judges were not prepared to go to that length there would be only judgment for a new trial. His Lordship said the law in the case was established; for Chief Justice BIRLE had laid down that "the procurement of the violation of a right is a cause of action in all cases where the violation is an actionable wrong." The Society instead of taking action against Messrs. WIGG & WRIGHT for a supposed breach by them of the contract, if any, embodied in the rules of the association, did for their own personal ends procure Messrs. WIGG & WRIGHT to commit an actionable wrong—i.e. to break the terms of a special contract with the plaintiff. There was no evidence to show that the Society or any of its members would be injured by Messrs. WIGG & WRIGHT's fulfilment of their contract with the plaintiff. The facts negatived any suggestion that the action was taken on behalf of individuals to protect their own interests.

AN important paper on "The Timber Resources of the Australian Commonwealth" was read last week at a meeting of the Society of Arts. There is a desire to employ colonial timber as far as possible in England, but as information on the subject is not generally exact and time presses, it is no wonder that timber importers are not so much encouraged as is desirable. It was expected the Imperial Institute would help to impart knowledge concerning colonial products, but there is no use now in thinking over the failure of the project. Mr. E. T. SCAMMELL, the author of the paper, believes, first, that importers and users of timbers in Great Britain and Ireland should be prepared to give favourable consideration to the claims advanced on behalf of the woods of all British dependencies; second, that the British Government should do its part to assist the development of trade within its own dominions; and third, that the various States of the Australian Commonwealth, or better still the Federal Government, should concert measures for the conservation, management and development of the forest resources of each State; the classification, naming and testing of all timbers available for export; the provision of all necessary internal transit and other facilities in order to assist in the development of the timber industry in each State, and to encourage them to expend more capital upon it; the organisation of a bureau in the City of London, where samples of Australian woods may be inspected, and where the fullest information in regard to all timbers available for export may be obtained. The last suggestion is of especial importance. Hitherto attention has been mostly given to jarrah and karri, but

there are other woods which could be utilised in smaller quantities if particulars were forthcoming about their qualities and cost, and intended buyers could become acquainted with the appearance of sections.

THE golden vessels which were discovered at Boscoreale, and are now in the Louvre, were a revelation of the luxury of the ancient Italians, for there was nothing met with in Pompeii of equal importance. The Italian Government were too late to save the plate from exportation. Soon afterwards came the announcement of the finding of frescoes at Boscoreale, and no time was lost in adopting measures to keep them in Italy. Experts were appointed to examine the works and to report upon their value as works of art. It has been arranged as a result of the reports that five of the frescoes are to become the property of the State without payment for them. They are considered as treasure-trove. For the remaining works a sum not exceeding 15,000 lire will be paid. The owner cannot be satisfied with such stringent terms, but what power can an individual have against the Italian Government? England would have given a large sum for the paintings, for that class of art is almost unrepresented in the national collections.

WHY should not Stratford-on-Avon become like the court of Navarre—"a little Academe, still and contemplative in living art?" It is hardly worthy of its renown if it is contented to remain as a "show place." One effort of the right kind is the production of a shilling quarterly magazine, *The Shrine*, of which Mr. E. STOCK is the London publisher. The first number contains articles relating to SHAKESPEARE, such as the "Birthday Celebrations," the "Shakespeare-Bacon Controversy," "Hamlet and Ophelia," the "Phoenix and Turtle," the "Birthday Revival Play;" but other subjects are not neglected. There is an account of the social experiments in East Aurora, near Buffalo, of Mr. ELBERT HUBBARD, who is supposed to have drawn inspiration from the late WILLIAM MORRIS; but the American devotes all the money he earns by writing, publishing and lecturing to a common fund, and participates in the common life. There is room in the magazine world for a new aid to enjoyment which will be inspired by the Shakespearean spirit, and *The Shrine* merits a welcome from those who love life, literature and art.

ALTHOUGH Great Britain has many rivals, it cannot be said that the products of this country have been ousted from all parts of Europe. Even in Germany the desire for British goods of various kinds is increasing. It must, however, be regretted that the study of the markets is not more general. The British Consul at Stettin, in his last report, says:—"No inquiries (with a view to sales) have been received during the past year from manufacturers or exporters of the various saleable goods; no doubt the small number of articles of British origin exposed for sale here may largely be attributed to this fact. It is to be regretted that the remarks and suggestions contained in consular reports are not more widely taken notice of by technical and industrial publications and thus made known in interested circles, from which criticisms might often be of value to consuls, endeavouring to push British trade, who are frequently unaware if their efforts are made in the right direction." According to Consul BERNAL, "The gross profits of the Stettin Bredower Portland Cement Factory amount to 178,792 marks (8,939/), against 241,489 marks (12,074/.) in 1900. The cement and brick industry is at present in a very bad condition, and prices for these articles are still declining, but as the cement works have not been enlarged for some years, the output of cement was disposed of during the year. The brickworks at Stettin were regularly employed, but at Schwenz only one-half of the preceding year's output was reached, and could only be disposed of at prices which did not leave any profit." We are too ready to assume in England that Germans are conquering everywhere, and statements are made in the newspapers from which it is easy to infer that their trading is most profitable. It is evident, however, from official investigation that Germany, like other countries, cannot escape from depression of business.



## ARCHITECTURE AT THE ROYAL ACADEMY—II.

THE Central Hall, St. Paul's School for Girls," by Mr. G. C. HORSLEY, is among the works which will gratify a visitor. It would have served in the college which the Princess IDA established. The ceiling is a flat arch and is decorated. The galleries are supported on carved cantilevers, and there is an organ. Altogether the hall indicates the modern spirit of providing worthy accessories whenever refined education is sought. Mr. BODLEY's "Holy Trinity, Kensington," could hardly be simpler in form, for it consists of no more than four walls and a roof. Owing to the plainness of the building the beauty of the windows appears enhanced, for they are worthy of a costlier church. The "Billiard-room, Manhattan, Lancashire," by Mr. HUON A. MATEAR, is shown in one of the best coloured drawings in the collection. The room is luxurious in its arrangements, and the walls above the seats are adorned with special paintings. The design for the "Manchester Fire Station," from Messrs. LANCHESTER, STEWART & RICKARDS, if judged by the view alone would easily be considered as intended for a different purpose, for the various storeys might well serve as municipal or public offices. There is no indication of arrangements for the storage of fire-escapes or of tall gateways to allow them to pass, which no doubt would be found in some other elevation. As a study of fenestration there is skill in the arrangements. There are two views of a very large country house, "Castle Dyke," by Mr. J. B. MITCHELL WITHERS.

The "Proposed War Memorial at Winchester College," by Messrs. MARTIN & MEDLICOTT, shows an entrance and lodge with a common-room, which we suppose are in keeping with other buildings, but after a few years how are the limits of the memorial to be indicated? Mr. TEMPLE MOORE has two churches at Middlesbrough. In one the altar is approached by two flights of steps, and in the space between them a small crypt is introduced with a second altar beneath the high altar. This expedient recalls ancient usage, but the advantages are not obvious for a modern church. "Business Premises, Bombay," by Messrs. CASH & HACK, are constructed of a dark-grey stone; the lower part is formed as an arcade, while above are open recesses. Refreshing shade is obtained by the planning. "Marlborough Chambers, Jermyn Street," by Mr. REGINALD MORPHEW, consists of flats and shops. The corner is emphasised by planning the rooms in order to give some resemblance to a tower, if such a word is applicable to a peaceful projection. The "House at Welwyn, Herts," designed by Mr. R. A. BRIGGS, might well be thought from its reposeful appearance to have at least a century and a half of existence; the effect is not so much due to the curved gables and square windows, but to the absence of fussiness. His "Piazza and the Porch of Cowley Manor, Gloucestershire," shows how much can be gained by the use of detached columns, than which no more graceful architectural form has been devised. By the same architect is also a "Mission Church at Pentonville," the cost of which should be stated. It is constructed mainly of timber, and is sufficiently picturesque to make a congregation contented with it. In Mr. PEACH's "Power-station, Grove Road," the chimney is the most striking feature; it is square on plan, with sloping sides, but on the faces in the upper part the form of the windows in the offices has been imitated. It might not unnaturally be presumed that a glass opening was contemplated. For "A Dining-room at The Boltons, Kensington," Mr. COLE ADAMS has designed a frieze of conventional ornament, consisting of repeats, without any union. The lower portion of the room is panelled, the intermediate space being dark-red. The geometrical forms are now old-fashioned, because much freedom in flowing lines is obtainable without great exercise of ability.

"St. Anne's Cathedral, Leeds," occupies a fine site, but the lugubrious drawing presents before us a building that might be destined for penitential purposes only. If shown in a different style Mr. EASTWOOD's church, which is Gothic with square buttresses, would appear to more advantage. The interior includes a high altar and baldachino, which may become effective. Mr. E. NEWTON's "House at West Green, Winchfield," has sharper gables than he usually employs. The attempt to make a key pattern of plain bricks is a curious experiment. "The Saracens' Lair, Mayford," by Mr. W. F. UNSWORTH, is another example of

the use of strong timbers which can be made to express a style of their own. Mr. J. J. TALBOT has a two storeyed Liberal Club at New Ferry and a pleasing house at Bromborough. In the two drawings by Mr. H. INIGO TRIGGS we have, besides houses, small formal gardens, each containing a statue and fountain. Mr. R. G. HAMMOND in "13 Charles Street, Mayfair," offers another attempt to solve the difficult problem of dealing with a very narrow frontage. Height rather than width expressed in the windows and entrance-porch, and the result is successful.

In Mr. NICHOLSON's scheme of decorations for St. Matthew's, VIEWSLEY, the spandrels and such wall space as is available are utilised to represent Scriptural and ecclesiastical incidents. An attractive interior is sometimes secured in that way, but it must be allowed that architectural forms become of little account. "The School of Domestic Training, Colwall," by Mr. F. W. CATTERALL, is more like a mansion than a place for training servants, but on that account it is probably better adapted for its purpose. "The Institute of Journalists," by Mr. H. L. FLORENCE, will be a red brick building, with the name in big letters on the front, symbolising that business and not dilettanteism is to be found there. The design for the "Hereford Municipal Buildings," by Mr. MILNER ALLEN, is less pretentious than most modern buildings of the class. It has only two storeys, with round-headed windows below and square above. There are two gateways besides the entrance, with turrets over them. Another design for the same buildings is by Messrs. CRANFIELD & POTTER, and is no less suitable. Mr. A. MITCHELL has a vigorous pencil-drawing of "The Willows, Northwood;" the bay windows are semi-hexagonal, and in the space between the storeys swags are introduced of graceful form. The drawing by Messrs. KARSLAKE & FORRESTER, of "Clare House, Beckenham, Kent," is somehow suggestive of an old-fashioned roadside inn, to which additions have been made as necessity arose. Mr. RAVENSCROFT's design for a "London Terrace-house" has more resemblance to four quiet, small, red-brick houses, but they are too simple for the average metropolitan terrace. "Guildown Grange, Guildford," by Mr. JOHN BELCHER, is a country house showing much variety, a part being curved on plan. In the two gardens of Tapeley Park and Cornbury Park, water, which is said to be the eye of a garden, is introduced. The "Business Premises, Fleet Street," will not be unlike others in the vicinity, and the "Board-room, Electra House," seems to have been designed with a view to the display of busts, portraits and models of ships.

In the "New Organ Gallery and Case, the Chapel, Haileybury College," Mr. REGINALD BLOMFIELD has adopted a florid type of Renaissance. The organ-case is close to the balustrade forming the front of the gallery, and the upper part projects a little. The whole is suggestive of costliness, as if the instrument were an important auxiliary in the services. The "Entrance and Vestibule, Brocklesby Park," is another excellent Renaissance composition by the same architect, in which skilful use is made of columns. The pediment over entrance is filled with sculpture, and the vestibule is lighted from above. The "Electric Station, &c., on the Severn," by Mr. GEORGE HORNBLLOWER, is well grouped, and might be taken for a twentieth-century fortification. It has little of the factory in appearance, for the windows are small. It is the most satisfactory of the manufactories in the room. In Mr. P. WATERHOUSE's "Maurice Hostel, Hoxton," the stone or terra-cotta piers are so treated that they form, as it were, a frame for the brick walls and windows. The front is very narrow, but has nothing commonplace, and cannot be passed unobserved. Mr. G. C. HORSLEY's "Church at Longdon-leek," has a low tower on which a crucifix is sculptured. It consists of a nave and aisle with a baptistery at one end in line with the chancel. "A Commemoration Bridge" is a novelty. It is by Mr. A. S. JONES. The waterway runs through masonry arches of elliptical form. The roadway is covered, with arched openings at the sides for lighting. In the centre and at the ends are buildings. But the composition becomes prosaic when we find the expensive ornamental structures are to be devoted to hairdressing, dining and reading-rooms. It is no wonder engineers are amused at the projects of architectural bridge builders.



The "House near Skibbereen," by Mr. R. S. BALFOUR, must be unlike all others in the neighbourhood. The walls are white, the roof is of red tiles, and a platform enables the approach of moonlighters to be observed, the whole having a variety that is not characteristic of an Irish house. "St. Mark's Church, Plumstead," is another Romanesque building. Mr. MILEHAM evidently believes in the advantages of a dim religious light. The screen is carried right across through nave and aisles. The novelty of the attempt will excite emulation. Sir THOMAS DREW's "Queen Victoria Memorial" is only a drawing of the triumphal arch which it was proposed to erect at the entrance from Spring Gardens, and which would stand out effectively in such a position. The new chapel for Tonbridge School, by Mr. CAMPBELL JONES, appears to be an unusually lofty Gothic interior. A light stone is employed, and coloured panels, probably paintings, are introduced beneath the windows. The chancel window is large, with painted glass. The "Proposed Orphanage near Farnham," by Mr. J. H. CORAM, is a large plain building flanked by one-storeyed structures, which we presume are to be used for workshops. "The Extension of the Stock Exchange, London," suffers from the deficiencies of the drawing. Like the existing building the style is Italian. There are large arches and coffered ceiling; care seems to have been taken with detail. Mr. ROBERT L. COLE is the architect.

Mr. HARRY SIRR in the "Wing for Boys' School, St. Augustine's, Kilburn," consisting of covered playground, classrooms and drawing room, has paid attention to the style of the existing building. Mr. A. KOCH's "Reformed Church, Rorschach, Switzerland," should be accompanied by a plan. From the grouping of several piers round a central spire, it may be assumed that the usual cruciform plan has not been followed, and that an octagonal one was substituted. The combination of piers is satisfactory, and the building is welcome from its novelty. Mr. FALKNER's "Entrance Gate for Strangers' Corner, Farnham," will be a simple work, but it attracts attention from the character of the drawing, which might have come from Mr. NEW's hand. "St. Andrew's Presbyterian Church, Blackrock, co. Dublin," of which Messrs. MURRAY & FORRESTER are architects, indicates that Romanesque has gained a footing in Ireland. The tower is the most successful feature. An effort has been made to produce a building that would be as light as ordinary Gothic, but some of the vigour of the style has been lost in the process.

"St. John's Church, Byfleet," is one of Mr. CARÖE's picturesque buildings. Timber seems to be combined in the buttresses. The tower is small, and the church is well adapted to its position. "The Pupil Teachers' School, Barnsbury," has more of an Italian spirit than Mr. BAILEY generally allows himself to be imbued with. Mr. RAINE's design for a memorial church is striking from the extent to which verticality is expressed by parallel lines. The memorial for a public park by Messrs. WILSON & OGLESBY consists of a clock tower, the upper stage making a graceful termination, in which seated figures are introduced. Messrs. HOARE & WHEELER have elevations of "Three Town Houses" in one frame, each different in character, the most important being one in New Cavendish Street, in which stone and red brick are combined. The "West Riding Union Bank, Leeds," by Messrs. OLIVER & JODGSHUN, is a good type of the modern bank, and of the advantage which is gained by employing sculpture as an element. From the general scheme of the new buildings for the University of Birmingham we perceive that the American plan has been adopted by Messrs. ASTON, WEBB & INGRESS BELL, of arranging the buildings on a semicircular line, a plan which is not without its utility. With the exception of the central building, there is uniformity among the others. Each is surmounted by a flat dome, and has a frieze which will, no doubt, be explanatory of the kind of instruction imparted within.

"The Lower Hall of the New Sessions House for the City of London," which is a part of Mr. MOUNTFORD's design, should be taken as a hint by the dilatory Corporation, for the commencement of the building has been so long delayed. The hall is a vigorous composition and befitting its purpose. Tuscan columns and pilasters are employed, coloured materials but of a sober colour are utilised, there are recesses for consultations. A staircase

leads to the courts above. "Helnestowe, Abingdon" (Mr. H. REDFERN, architect) is a dwelling-house and offices so placed as to appear in connection with the church. The design for entrance-gates to a public park, by Mr. RALPH KNOTT, imparts an impression of substantiality from the masonry in the centre and at the ends. The railings are plain and the effect mainly relies on the masonry. Messrs. OSWALD & SONS show new offices at Newcastle-upon-Tyne, which are cleverly designed, and the stepped gables do not seem out of place. The "Consumption Sanatorium, Delamere Forest," by Mr. CECIL HARDISTY, does not offer anything which is suggestive of novel treatment. It is a large three-storeyed building with two rows of balconies and with pleasing surroundings, which might have been intended for a hotel or hydropathic establishment. The decorations to "St. Mary's, West Kensington," designed by Mr. H. C. BREWER, are of an elaborate kind, for the drawing is like a page from some illuminated manuscript in which the fine colour is heightened by an abundance of gold. "Vulcan Buildings, Upper Thames Street," by Mr. C. REILLY, show a difference in treatment between the buildings at the corner of the site and the adjoining warehouses. The block will be an improvement to the busy thoroughfare. Mr. E. P. WARREN has "Four Houses and Shops in High Street, Oxford," which are quiet examples, grey stone being used for the walls, with projecting windows on the first floor. Another of the large country houses is "Briar Dene, Cheshire," by Mr. ATKINSON. Mr. GEORGE JACK's "New Room, Great Tangley Manor," has a gallery over the fireplace, which is an unusual position; the walls are hidden by tapestry and the lower part is of panelling.

The "Covered Market and Corn Exchange, Hull," by Mr. J. H. HIRST, is another combination of red brick and stone, with one of those towers of which the utility is rarely apparent. Mr. S. RUSSELL's "Restaurant and Club, Stratford," is a more extensive building than the name indicates. On the ground floor there are large arches, sculpture is employed, and the use of piers adds vigour to the front. "A Town Club-house," by Mr. A. E. CORBETT, is noteworthy from the numerous vertical lines. His design for a chapel and school at Ilkley is not without originality, especially in the tower. "A House in Germany" is shown in two drawings by Mr. BAILLIE SCOTT; a portion of the front is in half-timber, and as some of the rooms are curved on plan, the front seems a survival, or rather adaptation, of a feudal castle. The interior has an antique severity, but the painted decoration which is freely introduced can be considered as delicate. A corner of Fitzgeorge Avenue, by Mr. DELISSA JOSEPH, recalls a tower which becomes more striking from the arched openings adjoining it. Mr. W. H. THORP's design for the Burnley Technical Institute consists of two parts so dissimilar in character, it would have been well if there was a separation between them. In the "Dining-room to Mansion, Suffolk," which is one of Mr. PRENTICE's contributions, the chimney-piece rises in a large triangular pediment; there are no doubt precedents for such a form, but it cannot be said to be graceful, and it is illogical, for it suggests rain rather than heat. Messrs. MCKEWAN & SWAN show a part of the "Keighley Library," there is a capacious entrance, but in the wall above the only windows are small diamond openings with ornamental borders. Mr. F. WHEELER's "Mount Vernon Hospital for Consumption, Northwood," is placed on terraces. The windows are big, and some open on to a balcony which is carried along the front. It is an excellent example of the modern hospital. "St. Felix Schools, Southwold," of which Mr. ARNOLD MITCHELL is the architect, are of considerable extent and are skilfully combined.

Visitors to Port Sunlight have remarked the absence of a church. Services are held in the schools. In the paper read by Mr. W. H. LEVER before the Architectural Association he spoke of one that was in progress from the designs of Messrs. W. & S. OWEN, and he said the aim had been to produce an honest piece of work with every detail speaking of thoroughness and truth, and with such ornament only as would add dignity and produce reverence. The drawing for the building is now in the Academy. It is Gothic in style, and corresponds with many village churches. The grouping is effective, the window space is plentiful, and there is a low tower. It will be in keeping with the buildings around it, and will increase the interest



of the village. Mr. W. H. BIDLAKE'S west front of St. Agatha's Church, Birmingham, has rather a defiant aspect, with its tower in the centre of the drawing. No attempt has been made to enhance the effect by a perspective view, or to surpass the average character of the churches in the locality. Mr. W. BOURNE'S drawing of new buildings Park Gate, Darlington, shows a mode of treatment that is now generally adopted, *i.e.* the shops form a series of arches. There are arched windows on the first floor, and above they are square-headed. The semicircular arch is evidently in favour this year. In Mr. A. M. POYNTER'S manor house, "Mount Grace Priory," a long, narrow strip of land had to be used as a site. In consequence the rooms follow each other in this order—scullery, kitchen, dining-room, drawing-room. The building is, therefore, all side or length without breadth, and, under the circumstances, it is skilfully treated. The design for the "Lady Chapel, St. Patrick's Cathedral, New York," by Mr. CARÖE, is not, we presume, to be carried out, for in no church in this country would so costly an effort be realised. Finally, we must mention the "Queen Victoria Memorial, Bradford," by Messrs. ALFRED DRURY & SIMPSON, and the "Model of Dome, Electra House," by Mr. J. BELCHER. They are more explanatory to the public than any drawings, but the young people who find a refuge and relaxation in the room we understand object to them, because they imagine the models have caused the removal of a second seat.

### PAINTING AT THE ROYAL ACADEMY.

PAINTERS may be sceptical whether the pyramidal arrangement should be imperative in the composition of pictures, for a rule of that kind is considered to be too academical for our time. But there can be no doubt that instinctively the visitors to the Royal Academy and other exhibitions are dissatisfied unless the pyramidal principle is manifest. BYRON expressed his idea of English poetry by drawing a triangle with "the many" at the base and ROGERS at the apex, some other contemporaries appearing in layers between them. The visitor to exhibitions desires a similar disposition of merit. For the greater number of pictures he has no care; what he seeks is the dominant one, and having that fixed for him it is easy to dispose of the remaining works by a graduated scale.

It is an advantage in this year's exhibition for all who have a genuine love of art that the principle is compelled to be parallelistic rather than pyramidal. If the qualities of the pictures were to be ascertained in the old-fashioned way by allotting marks to colouring, modelling, &c., it would be found that there was a surprising equality among the results. This peculiarity should be accepted as advantageous, for it is preferable to have painters of average power than a few giants and a vast number of dwarfs.

It is easy for people who are without any clear notions concerning the production of pictures to express dissatisfaction with the greater part of what is to be seen on the walls of the Academy. We must always expect to have observers who can journey from Dan to Beersheba and see nothing but sterility on the way. There are, however, few annual exhibitions on a large scale which are without interesting works. The collection in the Royal Academy, if taken as a whole, possesses unusual variety, and testifies to an earnest desire of advancing on the part of several artists.

We have, for instance, this year at least three efforts in what has been long regarded as the highest class of painting. Mr. FRANK TOPHAM in his *What is Truth?* depicts CHRIST before PILATE. It is true the crucial difficulty of revealing a countenance expressive of the union of the human and divine is evaded, for we see only the back of a figure in a white robe tightly bound with cords. The arrangement, however, is allowable, and it enables us to witness as it were the manner of judging. We have the Roman or judicial aspect of the trial. The court and the attendants do not show any sign of that hatred towards the accused which is common in representations of the Passion. The merits of the picture deserve to be generally recognised. There are two figures of the Mother of CHRIST by English artists. Mr. VAL PRINSEP'S *The Virgin at Bethlehem* might at first be taken as a portrait,

for it differs from the majority of the types adopted by Renaissance or modern artists. Evidently the painter was desirous of expressing the realisation by the Blessed Virgin of the great duty which was before her and a resolution to fulfil it. As a character study, the figure is interesting. Mr. MELTON FISHER'S *Madonna* will probably be more admired. It shows another interpretation. We have heard of symphonies in blue; this might be described as a hymn in blue which was adapted for children. MARY appears as if she were a priestess in a cope richly ornamented, and fastened by a chain. She stands in a garden where tall flowers are blooming. A mist surrounds the scene, in which angels' heads can be discerned. It is comforting in an age like the present to see a picture with so much tenderness and ideal beauty, one which could be hung in a convent chapel and would inspire devotion. M. LYBAERT'S *Madonna of Ghent* is a less remarkable effort than either of the English works. He imitates Flemish precedents rather than creates. We must admire the fidelity and courage shown by the adoption of old methods, but he could at least count on an appreciation by his countrymen which is absent in England. The influence of the modern spirit is suggested by the expressing of ruling power on the face of the Child, for the majority of the Old Masters were satisfied to indicate no more than was seen among ordinary children.

Far apart as they are in spirit, mythological subjects are usually looked upon as being next in difficulty. We have no longer, it is true, a LEIGHTON, who had claims to be considered as a resurrectionised Greek. The President is satisfied with sending a small *Vision of Endymion*, which is among the cabinet pictures, for his *Storm Nymphs* belongs to a later time. Sir W. B. RICHMOND has a large work, *Hera in the House of Hephaistos*. Whether he is correct in representing the goddess muffled up as if she wished to be disguised is uncertain, but in this case the figure is of secondary importance to the famous chamber made by the metalworker of the gods, which was the prototype of all the modern strong-rooms:—

Then went she to her chamber, which her son  
Vulcan had for her made with door-posts high,  
And solid doors, which of the gods not one  
Could open but herself, such mystery  
Was in the lock and key. Then went she in,  
And fast she locked the door, and there alone  
She with ambrosia cleansed her dainty skin,  
Till not a speck unmeet was left thereon.

With such a subject an artist has to depend for evidence mainly on the palace of ALCINOUS which is described in the "Odyssey," and in which VULCAN also co-operated. The walls were brazen, the doors golden. But in JUNO'S room silver does not appear to have been used for the door-posts or the lintel. The richness of the apartment, which will be considered as no more than an accessory, may not appeal to the public, but it is an honest effort at realisation. In his *Aphrodite* Mr. BRITON RIVIERE has found a subject which is well adapted to display his skill. The goddess is seen hastening down the slopes of Ida, accompanied by several wild beasts, who for the occasion have lost their savageness. They are represented with the painter's customary power. But a draped Venus is a novelty and may not be accepted as appropriate. Opposite to it Mr. ALISON MARTIN'S *Evoe! Eleleu!* is worth attention as an animated Bacchanalian scene, which should have a better position. Mr. SOLOMON'S *Psyche* lying overcome on the ground was a difficult figure to attempt. It is not without pathos, but it is more French than Greek. The *Last Drive of Hippolytus*, by Mr. F. O. SALISBURY, shows the son of THESEUS rushing to his doom on the sea-coast. Few subjects are so exacting, since horses have to be represented as well as rocks and a foaming sea. The absence of the sea monster makes the scene more real. If compared with such legends Sir ALMA-TADEMA'S *Caracalla* appears almost modern. Although one of the smallest pictures in the exhibition, it will receive general admiration. The emperor is seen entering a building, several maidens are strewing rose-leaves before his steps, there is a slave, and spectators watch attentively the spectacle from without. There is less display of polished marble than usual, and it is introduced in columns, carved panels and other details. The floor is composed of white tesserae. Beautiful as are the



animate parts of the picture, they do not lessen the interest in the figures. It is exquisite in colour. The painting could serve for other emperors besides CARACALLA, and we can assume that similar scenes were common among the great patricians.

Among the historical pictures, the most interesting are those relating to our own time. Mr. J. F. BACON's scene of the Guildhall on the return of the Volunteers from South Africa merits the position assigned to it. Immense labour as required in its production, as it comprises some hundreds of portraits, but the toil is concealed, for the work is the appearance of being executed with facility. As a combination of colour it will seem strange in the eyes of foreigners, among whom is the belief that everything with red is dull and dreary. The expanse of khaki, the scarlet robes of the aldermen, the mazarine gowns of the common councillors, with much else that is brilliant, form a whole that is well combined. Another dazzling scene is the *In Memoriam* of Mr. JOHN CHARLTON, showing Queen VICTORIA on her way to St. Paul's Cathedral for the thanksgiving service. As in all spectacles of the kind, the principal figure becomes subordinate, which is an objection in an historical sense. The *Home coming of Charles II.*, by Mr. C. M. ADDAY, is enough to suggest that an English act of rejoicing should take place on the sea. Mr. ORCHARDSON's *The Borgia* may also be taken as a history piece, although it would be impossible to say which one of many murders made the subject. A small table has been laid out in the open air, at which are seated CÆSAR and a guest who has just collapsed under poison. Assumptively there were two more additional guests, but they have vanished or their bodies were carried off. The pines in the background and the place itself are suggestive of repose, so the tragedy is therefore intensified. Mr. J. COLLIER a few years ago produced a painting of the same kind. A change of title could easily make his *Plague* an historical picture. In it a lady dressed in white satin is represented suddenly overcome, and falls a corpse as a man enters with a lantern. The contrast between the face and white gown is skilfully brought out; the eyes are looking appealingly or upbraidingly at the visitor, who in terror has dropped his lantern. The two pictures we have just named may be considered as morbid, and it would not be a pleasure to look upon them several times a day, but as long as painters do they will endeavour occasionally to repeat the legend of the Medusa, and move spectators with terror. The most interesting historical picture is *Washington's Farewell to the Army*. The spot is on the banks of the Hudson, where he is about to cross the ferry. Even his countrymen who knew him best did not anticipate that he would withdraw to retirement so unostentatiously after such numerous victories. FRANKLIN, when he gave him the fine crab walking-stick, said "if it were a sceptre he has merited it, and would become it." WASHINGTON would not accept the slightest pecuniary recompense from Congress, and was contented with the consciousness of having faithfully done his duty. Mr. Gow has properly interpreted the event. It is sublime from its simplicity, and in the picture there is one stroke of brilliant colour. It is a harmony of greys, blues, white and green. Mr. Gow has not been afraid to utilise the large number of upright lines which the occasion offered. The tossed oars of the ferrymen and the piles of the landing-stage seem to be continued in the muskets of the troops who line the ground and stand like statues.

There is another class of subject which is also concerned with the past. When we find the President in his *Storm Nymphs* adopting an almost identical subject with Mr. J. DRAPER's *A Deep Sea Idyll*, we have a sign of the reality which we believe to be one of the characteristics of this year. The President's nymphs take delight in the silver plate which some Spanish galleon has cast into their sea, while the nymph of the younger painter seems exulting with the figure-head of a similar vessel. Both recall the Invincible Armada, and should be found together in some public collection. Mr. DICKSEE has courageously attempted *La Belle Dame sans Merci*, selecting the time when the knight has placed the enchantress on his steed and walks beside her. It is doubtful whether any artist will be able to paint forms corresponding with those which imagination creates when reading KEATS's ballad. All

the visible qualities may be in Mr. DICKSEE's work, but it wants the magic. Mr. MOUAT LOUDAN's *Sleeping Beauty* suffers from a like deficiency. There is a pleasing figure of a girl, and the amorini are childlike and silent, but what is desired is something that no model will suggest. The late PHILIP CALDERON some years ago painted a bewitching woman with a quaint head-dress as an illustration of the song in "Measure for Measure," "Take, O Take those Lips Away." It expressed a man's notion, and the time when it was painted was less cynical than the present. Mrs. FORBES's version is probably much more true and modern, for the singer is made younger than the lady, who is far from being a beauty. Perhaps in all ideal scenes it would be an advantage if it could be suggested that poetry and infatuation are akin. A neighbouring work, Mr. W. D. ADAMS's *Merlin and Nimue*, showing the seer kissing the robe of a scornful woman, has also its lesson, while it must be allowed the picture is boldly painted, and is as pleasing to look on as any small piece of tapestry.

The tendency in modern times is towards the representation of everyday life, and in this year's Academy works of that class attain a high standard. Mr. RIDGWAY KNIGHT's *Last Roses*, a French peasant girl in a rose-garden near a river, is an example of style which students of painting would do well to study. Mr. H. J. HALEY's *Heraldic Engravers* suggests how well daily labour can be transformed into a pictorial scene. The men are seated alongside a bench working by artificial light, and are as much engrossed with the objects on which they are engaged as if every stroke was paid for. But all the qualities of a good painting are combined on the canvas, and it is more pleasing than many ambitious works in the exhibition. Mr. H. WOODS's *A Venetian Water-Seller* is one of his most brilliant pictures, and is true in characterisation. Mr. LE THANGUE is again fortunate in his subjects, in which Sussex is shown under sunshine. In *Goshings* the birds in the foreground are matched by the trees and blossoms which form the background. In his *March Marigolds* the mass of yellow is subdued by the cows and geese, and in other works the artist and the observer are evident. With so much success there is the risk of falling into mannerism, and it is reassuring to find that the artist has been also drawing inspiration from Provence. It cannot be said that as yet the difference between the two classes of works is definite. The *Lighting-up Time* of Mr. STANHOPE FORBES is a very simple scene, showing poor people in a small cart returning from a village and lighting a lantern before departure. But the artist has already proved his power in dealing with artificial light. His *Chadding in Mount's Bay* shows children in a white boat fishing on a summer's day. Mr. FRANK BRAMLEY displays unusual breadth in the head of the old gardener who symbolises Time. Mr. GEORGE CLAUSEN suggests a wearied world by his *Homeward*, in which two farm horses are going back to their stables of an evening. Miss LUCY KEMP-WELCH has a masterly picture called *Ploughing on the South Coast, Devonshire*. In it are two teams of horses, some foreshortened, with sea-gulls that seek food in the furrows, while beyond is the Channel. We have thus a variety which is not often found in pictures of animals. The same artist's *Morning*, a horse standing over a wounded man in khaki on a bleak African plain, is pathetic without being sensational. Mr. F. A. BRIDGMAN affords us a glimpse of Eastern life in his *Moorish Villa at El-Biar*, which has none of the garishness generally found in such representations. Mr. R. W. MACBETH has delightful subjects in his *Faire Pledges of a Fruitful Tree*, in which a girl is seen in a garden with trees in blossom playing with a fawn, while the dog is more sad than jealous. In a different style but no less pleasing is his *La Coquille*, a French girl with a basket containing shell fish. *Grace after Meat*, by Mr. H. S. HOPWOOD, an old woman with a couple of boys, is as true to its subject as if it were painted by M. ISRAELS. *A Cornish Idyll*, showing a young fisherman and a girl, by Mr. WALTER LANGLEY, is one of the best of the incidents from that region, and happily there is no suggestion of a tragedy as in so many of the artist's works. The contrast between modern life and that of a past age could hardly be better suggested than by the



*Green Lizard* of Mr. C. E. PERUGINI, a painter who has the knack of bringing ancient ways vividly before us. In it we see two girls on a terrace, which is architectural, gazing at a tiny lizard which a youth playing on a pipe appears to control. So much leisure and capacity to be interested in trifles must excite the envy of busy men during their hurried visit to the gallery. In many modern pictures there is a suggestion of relationship between maternity and martyrdom. Mr. T. C. GÖTCH's *Holy Motherhood* might at a distance be taken for an enthroned Madonna with singing angels, or a copy of an Italian picture. The work is, however, a modern allegory, but it is never likely to come before those for whom it would be a consolation. As a revival of an ancient arrangement the picture is remarkable, but a French painter would not have hesitated to clothe the figures in the dresses of the poor.

The landscapes this year include foreign as well as English subjects. Mr. DAVID MURRAY has a series which is faithful to the beautiful scenery in the vicinity of Bolton Abbey. Mr. LOGSDAIL, who generally restricts himself to Venetian buildings, has a fine view *From Taormina to Etna*, which is boldly painted, and well expresses the characteristics of the South. Mr. H. W. ADAMS is very successful in *Malvern's Lonely Height*, in which we see a hill-top covered with snow, and with varying effects of light. As a picture, the sky, which presents nature with fidelity, will bear comparison with Mr. A. GOODWIN's *The End of the Pilgrim's Road*, where imagination is allowed to revel. No landscapes deserve more consideration than those by Mr. ALFRED EAST. His manner of treatment may be supposed by some as wanting the final touches which give effect and make views resemble reality. It is evident, however, that the painter has derived a consistent idea of nature, and has come to the conclusion that this idea of the relations and gradations can only be harmoniously expressed by subdued colours which will allow of proportionate effects. In an *Idyll of Como*, for example, Mr. EAST appears to treat a scene in the manner of WATTEAU, while in the *Valley of the Lambourne* we almost seem to look at the country through a veil. A different experiment is seen in *Morning Sunshine*, and a further test is offered in the view of *Gibraltar from Algeiras, Spain*. There is no landscapist whose works will better recompense scrutiny in the present exhibition. Mr. J. W. NORTH's *Isle of Avalon*, which is his only contribution, is less restricted in the use of a golden brown, but the figures somehow do not aid in increasing the effect of the trees, which could well dispense with them. Mr. J. FARQUHARSON is still faithful to snow, but in his *Winter's Night* he employs shadows of trees and sheep in such a way as to make the effect become weird. Mr. LEADER has four views this year, all of which give the impression of being hurried in execution. His *Old Manor House* is an attempt to represent HOOD's lines about the haunted mansion, but it must be admitted the painter has not been able to suggest the cloud of fear, the sense of mystery which should belong to the building. Too many of our landscapists are stay-at-home painters, and in consequence we have almost mechanical repetition of certain elements. Some have recognised this, and have tried to attain liberty by coming under the influence of foreign lands. Mr. MACWHIRTER's *Val Maggia, Locarno*, is a capital representation of a torrent which has come down from the heights without being utilised for factories on the way. It would be well if the example he gives were more often followed. Devonshire orchards are familiar to Academy visitors. Mr. L. G. MACARTHUR, in his *Worcestershire*, shows an apple-orchard of another kind, which is no less interesting. This painting, like some others on the walls, comes from a provincial artist, which is a satisfaction.

Mr. HEMY is the most successful with seascapes this year. There can be no question about their vigour, but in order to prevent his waves from growing stereotyped, it would be a gain if he were sometimes to show them under changed conditions. The sea is calm at times, and the colour is affected by sun, moon and clouds. In *A Letter from Over the Sea* the artist has made an excursion inland to a garden, and the fine colour is enough to demonstrate that Mr. HEMY need not limit himself to black, blue and white. Mr. W. L. WYLLIE has also emancipated himself from the Thames and the Tyne. *A Whole Gale of Wind*

is a marvellous example of wave-painting, when "the sea erects itself in ridges white." Mr. EDWIN HAYES has also gone to foreign waters, and we hope his *Italian Fishing Craft off Pianoso* will be a renewal of youth. Mr. COLMAN HUNTER and Mr. PETER GRAHAM are constant to the own precedents.

So much has been said about the portraits, they must by this time be familiar to all readers. Mr. SARGENT shows his usual dexterity in his eight portraits, but they cannot be pointed to as ideals for imitation, for the subjects appear too plainly to be imploring admiration. The examples by other artists which will repay attention are numerous, and among the best of those by outsiders are Mr. PEACOCK's *William Holman Hunt* and Mr. OSBORNE's *Mrs. Little FALKNER*. Indeed, this year the number of pictures in all classes which should not be neglected is greater than usual.

#### THE ROYAL ACADEMY BANQUET.

THE banquet of the Academy was held on Saturday evening, May 3rd, at the Marlborough Hotel. Sir Edward J. Poynter, P.R.A., presiding. Two more speeches deserve to be recorded.

The Prince of Wales in his response referred to art in the Colonies and said:—

Speaking before this distinguished company to-night, might perhaps be expected to say something in regard to art in our colonies. Although our stay at the various places was necessarily of short duration, I think we saw enough to realise that with the development of these young but vigorous communities there is a steady growth of artistic knowledge and love of the beautiful. At Sydney, in the National Art Gallery, there are original works of some of our most distinguished modern painters, and you will be interested to hear that among the most popular of them is the picture, *The Queen of Sheba's Visit to Solomon*, painted by your President. There are also upwards of sixty copies of some of the best-known works of the old masters. At Adelaide I visited the Art Gallery, and had the pleasure of unveiling a bust of the late Lord Tennyson, a beautiful specimen of the work of the late Royal Academician Mr. Woolner. I also unveiled a very fine painting by another of your most famous colleagues, namely, *Love and Death*, by Mr. Watts. In Australia during the last few years a system has been introduced for interchanging the finest works in the galleries of the capitals of the different States, and this arrangement has been of great advantage both to the public and the students. And there is another important point which might mention, and that is that the galleries receive State endowment and an annual grant for the purchase of pictures. There are already a considerable number of students in Australia, but I was given to understand that the majority of them complete their studies in Paris. I am sure our friends across the Channel will not accuse me of jealousy if I ask you, Mr. President, whether it would not be possible for our Academy to hold out some special attraction to induce a few more of those students to break their journey in London and to complete their studies here. The splendid Parliamentary buildings of Ottawa and Victoria, British Columbia, are indeed worth examples of architectural design; and, as a rule, the public buildings in the great cities which we visited can be most favourably compared with those of any of the large cities of Europe. We were also particularly struck with the artistic taste displayed in the street decorations and illumination. You will not be surprised to hear that some of the most effective were the work of the Japanese and the Chinese. Last Thursday I had the pleasure of spending some time among the beautiful works of art which adorn these rooms, and I should like to congratulate, if I may be allowed to do so, Sir Edward Poynter and our kind hosts on what, I am sure, will be considered a most successful exhibition. Amongst the many fine portraits which I have seen, I must mention the very striking one of the King by Mr. Luke Fildes. I understand that copies of it are to be made for the Embassies and Government Houses in India and the Colonies, and I am sure that each of the pictures will be very much appreciated by them, not only as great work of art, but also as an excellent likeness of the Sovereign. Once more I beg to thank you most sincerely for the very kind way in which you have received this toast.

The Lord Chief Justice, in proposing "The Royal Academy," expressed the earnest and fervent hope that it may always be an encouragement to the struggling, an ambition to the successful, and an example and a leader in all that is most noble and pure in art.

The President, in reply, said:—I must thank the Lord Chief Justice of England for the kind way in which he has proposed the toast of the Royal Academy, and I can assure him that the first efforts of the Royal Academy are devoted to that of which he spoke in his concluding sentence—the cause of the best form of art and the best form of education in a



the history of the Royal Academy is not of an eventful kind, besides our annually recurring exhibitions the only events of interest to record are those connected with the changes which take place in our body. We have to regret the loss of some of our members who have departed from among us in the years which have passed since the last occasion on which we returned thanks for this toast. Two of these—Mr. Pickers-  
 formerly, before Mr. Calderon's day, keeper of the Academy, who died at a very advanced age, and Mr. John Faed, celebrated as the painter of touching domestic scenes—had been deterred, the one by blindness, the other by advancing age and ill-health, from exhibiting here in their later years. I had long ago retired from their membership. A third Academician, the veteran Sidney Cooper, who but recently died in his ninety-ninth year, was painting with his usual extraordinary energy until within a short time of his death; some of his pictures done since last spring hang now on the walls of our gallery, and in certain qualities for which his pictures were always famous show few traces of the decay which one would expect to find from his extraordinary age. Besides these, the deeply-regretted and premature loss of another of our Academicians—Onslow Ford, who had come to the front rank as a sculptor—makes a gap which will not easily be filled. Philip Morris, one of our Associates, whose pictures gave such high promise at the time of his election, came gradually incapacitated by ill-health from practising his art, and felt obliged to retire from his position as an active member. John Brett, who sprang into fame in the early pre-raphaelite period by the marvellous truth to nature and accuracy of detail in his work, and whose first exhibited picture, *The Stonbreaker*, I saw at the first Academy exhibition which I ever visited, excited a violent controversy by the novelty of his methods, but soon became established as one of the most original of our landscape artists; he was an unconscious example to many who, no doubt, were not aware of the strength of his influence upon themselves. Latterly ill-health obliged him to limit his work and withdraw to the ranks of our retired Associates. His Royal Highness made some very remarkable remarks with reference to students of art in the Australian colonies, who, it appears, are apt to go to Paris to pursue their studies. I should be the last to say anything against this course, for my own art education was mostly acquired in one of the famous studios in Paris. But times are a good deal changed with respect to art education in England. All the most successful of our younger artists have gone through a course of study in the schools of the Royal Academy, and I do believe there are now better schools to be found anywhere than our own. Whether it will be possible to offer special encouragements to colonial students to come here is a matter worthy of consideration; but these schools are open free of expense to all who can pass our examination, and are liberally, sometimes I think too liberally, supplied with prizes and scholarships. Our exhibitions are, of course, the feature of the Institution of most interest to the public. The summer exhibitions are, of course, the gauge of the state of the arts in this country, and I am delighted to find from what His Royal Highness has said, and from the general opinion I have heard expressed, that the present exhibition is considered to be one of rather exceptional quality. The winter exhibitions do not appeal to so wide a class, and it is a matter for regret that the agencies of preparation for our summer exhibitions require that they should be closed just as the public seem to be becoming aware that they are open. The remarkable collection which we had on these walls last winter would have been impossible but for the wonderful liberality which the owners of great collections display in depriving themselves of their choicest works to meet all the demands which, following the example set by the Royal Academy, so many institutions now make upon them. Such a collection of pictures by Claude Lorraine, that great painter who is the founder of the school of pure landscape, has never before been got together; and the almost more interesting collection of his drawings included, with the exception of those in the public museums and the famous *Liber Veritatis*, which is a bound volume, almost all that are to be found in this country. To mention individual lenders and omit others, were all responded so freely to the requests of our committee, that it would be invidious; but the famous Raphael, which was lent by Mr. Pierpont Morgan, together with a beautiful Vandyke, and a special notice and would alone have commanded a great interest for an exhibition. The collection of early English and Flemish paintings showed those schools in their full light, and the whole exhibition was a source of the most valuable instruction to artists and students of art in the great methods of the great schools of painting, and this I take to be the one prime object, not only of our exhibition, but of our national collections, and one to which all others should be secondary. To the numerous proprietors who gave the Royal Academy this opportunity, not only our own thanks, but the thanks of the whole community of artists are due. Coming within the domain of art and of the limits which I have bound to impose on myself on this occasion is the sub-

ject of the preservation of the famous view from Richmond Hill. This view, so perfect in its arrangement of woodland, river and meadow, is like a precious picture which cannot be touched without being marred. It is known how the most perfect part of this unique picture, the central part with its magnificent timber grouped as a Turner might have grouped it in some ideal composition, was threatened, almost doomed to destruction, by the ruthless invasion of the speculative builder, which had gone so far that the felled timber in the rearward part of the doomed estate was lying in rows on the ground; and it was only by the prompt and immediate action of Lord Monkswell in bringing the matter before the London County Council that the process of destruction was arrested. The owner of the estate met Lord Monkswell and myself most willingly and in the most liberal manner, as soon as the matter was put courteously before him and he was no longer assailed by too energetic correspondents to the newspapers, and within twelve hours stopped all proceedings. I will not detain you with what is a long story; but I think I may safely add that, although we are still short of nearly 4,000*l.* towards the purchase-money for the estate, there is little doubt that this exquisite prospect of world-wide fame is saved for ever for the public. There is much more which I could say on many subjects, but at this late hour the interest which they have for me and for the Royal Academy might not meet with the cheerful reciprocation in your minds which I might think they deserved. I will therefore end by thanking you for the very kind attention that you have given to my words.

#### DISCOVERIES OF POTTERY.

IN the course of laying out new golf links at Sunningdale, near Camberley, on the Ridge Mount estate, an interesting discovery has just been made. The contractors decided to remove a mound 10 feet high by 40 feet across in order to make a teeing-off ground, and this being done the mound was found to contain ancient burial urns. The authorities at the Reading Museum were communicated with, and Mr. O. A. Shrubsole, F.G.S., the curator of the Geological and Anthropological Department of that institution, with the assistant curator went over to Sunningdale and found that three urns had been disinterred, and seventeen in all have now been unearthed and removed, all of them containing calcined human bones. In addition the excavators found indications of two interments of ashes not deposited in any urn. The mound is supposed to be the remains of an ancient crematorium. The urns are all of rude British make, and may be ascribed to pre-Roman times. In the absence of any vestige of a weapon or ornaments the exact age of the burials cannot be determined with certainty, but from the shape of the mound, the care evidently exhibited in the disposal of the dead and the evidence of a village community, it is thought that the remains belong to the age of Bronze, and probably to a late rather than an early date in that age—between 2,000 and 6,000 years ago. Some of the urns are 1 foot 4 inches in diameter. The spot has been visited by many archaeologists. Some of the urns have been sent to the British Museum, the Reading Museum, to Oxford and to the Louvre.

During the excavations in the churchyard of St. George the Martyr, Southwark, in connection with the Long Lane street improvement now being carried out by the London County Council, a very interesting discovery has been made. At a depth of about 9 feet some fragments of pottery and of ornamental terra-cotta work were discovered in a heap, as if they had been thrown together promiscuously. The fragments were exhibited at a meeting of the Society of Antiquaries on April 17. Whilst the pottery is Roman, the terra-cotta work, the ornamentation of which is peculiar, dates from the time of Henry VIII., in whose reign the art was introduced into England. Stow says that "almost directly over against St. George's Church was some time a large and most sumptuous house, built by Charles Brandon, late Duke of Suffolk, in the reign of Henry VIII. which was called Suffolk House." From Antony van den Wyngaerde's "View of London," circ. 1550, which contains the only representation of the house known, it appears that the mansion was built in the style of the Early Renaissance, and it therefore seems very probable that the fragments in question had their origin in Suffolk House.

The President of the Local Government Board having considered the dispute between the Metropolitan Asylums Board and the District Railway Company as to the amount to be paid for closing the ventilator on the head office site, has decided that the Board should pay to the railway company the sum of 3,000*l.*, and also such further sum as shall represent the actual cost of the works necessarily executed by the said company in closing the said ventilator.



## NOTES AND COMMENTS.

SIR JOSHUA REYNOLDS in one of his discourses, when recommending that an artist should employ the works of others as daily food and nourishment, quoted the remark, "Serpens nisi serpentem comederit, non fit draco." It is possible, however, that the consumer may never grow into a dragon, but will resemble its victim. In painting, devotion to one master, ancient or modern, is rarely serviceable, although it may be easier to look as it were through the eyes of another than to see for oneself. Dealers and others do not always complain when two men's styles become identical through the adoption of REYNOLDS'S principle, for a close resemblance may be more profitable than a skill in making copies that are mistaken for originals. In France, where there are more varieties of artistic work than with us, the Courts are able to distinguish between legal and illegal imitation. A case was lately heard which gives an idea of French practice. There was a landscape painter named TROUILLEBERT, who in his lifetime had many admirers. Among them was a clerk in a railway office, who in his hours of leisure studied painting and received advice from TROUILLEBERT. At last the devotion was rewarded by the student's success in producing works that were taken by amateurs as coming from the hands of the master. The painter died, and his widow brought the disciple before the Courts on the charge of counterfeiting her late husband's works. According to the counsel for the plaintiff there is counterfeiting whenever an artist, instead of reading in the book of nature which is open to all, usurps the method of treatment, the lines and the colours of another artist. The counsel for the defendant contended that to make copying criminal there must be a fraudulent intention, such as forging the signature or obtaining a photograph of the original and using it for reproduction. The Tribunal adopted the latter view, saying that it was to be expected that a master should have imitators, but unless the imitation was intended to deceive the public as to the personality of the artist rather than suggesting a similar class of work there was no offence committed. M. TROUILLEBERT'S disciple therefore gained the day.

HERODOTUS several times refers to the riches which were found in the Temple of Didyma, adjoining the ancient city of Miletus. It was dedicated to APOLLO. When the Persians, in the reign of DARIUS, invaded the country, they were able by the use of military engines to undermine Miletus and obtain possession of the city. All the Milesians were brought as prisoners to Susa, as well as all the precious objects which were found in the temple at Didyma. In the course of the excavations by the French explorers in Susa a piece of bronze has been found which helps to confirm the words of the Father of History. It weighs about two hundred pounds, and contains five lines of an inscription stating that the bronze had been offered to APOLLO by two Milesians. There can be little doubt that this piece of bronze was taken from the temple as part of the booty. The old historian says that the Pythian oracle declared that Didyma should see its altars transferred to another place, and the prophecy was fulfilled. The calamities of the Milesians must have been unusual even in an age when mercy was unknown, for the Athenians were so moved by a dramatic poem on the destruction of Miletus they fined the author, and would not allow the piece to be repeated.

AMONG the new buildings in Amsterdam there is not one more interesting than the Ryks Museum, with streets surrounding it which commemorate HOBBEEMA, HONTHORST, PAUL POTTER, GERARD DOU, CUYP, JAN STEEN and other artists. The museum was completed seventeen years ago from the design of M. CUYPERS, and a week could profitably be employed in studying the contents of the galleries and courts. On the first floor are the principal pictures, but it has been found that the lighting is not always satisfactory, and from time to time various alterations are made. The most important and costly is one which is now under consideration and will have to be carried out. For the majority of visitors the greatest treasure is REMBRANDT'S

painting, which somehow has obtained the absurd title *Night-Watch*. The room is dedicated to the painter, and a frieze relating to the incidents of his life is round the wall. The light is obtained from above, the roof being supported by figures of the four periods of the day, which stand up marble columns. Soon after the removal of the painting from the Trippenhuys it was found that it appeared to be less effective. Several artists expressed the opinion that the roof-light was unfavourable to it. In order that the question should be investigated most carefully, a commission consisting of twenty-four painters was appointed. They made various experiments, and at last they were aided unexpectedly towards a conclusion. Four years ago an exhibition of REMBRANDT'S works was held, and the *Night-Watch* was removed from its position in the Ryks Museum to the municipal museum, where it was illuminated by side-light. The advantage was immediately evident. The commission accordingly were able to report in favour of an alteration. It has been decided, that the wall in the Rembrandt room on which the picture hangs is to be taken down, and a recess formed with a south-western light. This will contain the painting. The cost of the alteration will be over 6,000*l.*, but the Dutch Parliament will not shrink from the outlay if more justice can be done to their great inheritance.

MANY of our readers may not be aware of the existence of the London Topographical Society, although it is forty years in existence. It has for its object "the publication of maps, views and plans of different periods, and of all parts of the City and County of London, and the publication of documents and data of all kinds illustrating the history of London in every department." The annual record which has just been published contains papers and addresses which will suggest how far the committee have been able to carry out the intentions of the founders. Mr. NORMAN F.S.A., describes the fragments of the Mediæval building found in St. Andrew's Hill, between Ludgate Hill and Blackfriars, a couple of years ago. He considers that it remains formed part of an oriented crypt or undercroft of the thirteenth century. The changes made in connection with the Strand improvement are dealt with. There is an interesting reproduction of a plan by WREN, dated April 10, 1677, showing premises at Whitehall which were granted to Sir WALTER ST. JOHN and others. Although drawn to scale, WREN is careful to write the dimensions of the ground, which were 140 feet in length northward and 85 feet in length westward. A copy is given of a view of the Strand at the time of the royal procession to St. Paul by Queen ANNE in 1713. There are also illustrations of the Strand and neighbourhood prior to the recent demolitions. The publications of the Society consist of views of London by WYNGAERDE and VISSCHER, made by HOEFNAGEL, PORTER, NORDEN, the latest being a plan of the road between Hyde Park Corner and Addison Road, made for the Kensington Turnpike Trustees by JOSEPH SALWAY in 1811. A plan of Whitehall has been prepared by Sir JOHN TAYLOR, showing the alterations since 1682. It is also proposed to publish a map of London in the reign of Queen ELIZABETH, attributed to RALPH AGGAS; KIP'S prospect of London and Westminster in 1710, and two views of London by HOLLER. An organisation like that of the Society has been long needed, for so many transformations are in progress and contemplated, Victorian London may soon be expected to survive only in detached parts. It is therefore well to have trustworthy records of the streets before they have vanished.

## ILLUSTRATIONS.

18 &amp; 20 KENSINGTON HIGH STREET, W.

WESTOVER, MILFORD-ON-SEA: THE COTTAGE.

DESIGN FOR NEW SCHOOL OF ART, HULL.

DESIGN FOR A COUNTRY RESIDENCE.



# ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The annual general meeting of the Institute of Architects was held on Monday evening last.

## Royal Gold Medal.

On the motion of the Chairman it was agreed, "That, in respect to His Majesty's gracious sanction, the Royal gold medal for the promotion of architecture be presented this year to Mr. Thomas Edward Colcutt for his work as an architect." The Royal gold medal was not awarded last year owing to the death of Queen Victoria. This year Mr. J. F. Bentley, the Council's nominee, died two days before the date appointed for election. The Council, having consulted the King's Privy Council, were unable to recommend the general body of the Institute to present the medal to Mr. Bentley's family, and therefore nominated Mr. T. E. Colcutt.

The report of the Council for the official year 1901-2, after dealing with the removals by death, expressed deep regret at the loss of their old and valued colleagues James Brooks, Arthur Cates, and J. M. Brydon. To Arthur Cates the Institute owed the present development of the examination scheme. James Brooks was always a wise counsellor and loyal friend. J. M. Brydon, taken away in the midst of his work for the Institute as president, and in the early tide of his fame as an architect, before he could see one stone of his life's principal work laid upon another, would always be a memorable and heroic figure.

The present subscribing membership of the Institute is made up as follows:—Fellows, 617; Associates, 1,071; Honorary Members, 44; total, 1,732. During the official year since the last annual general meeting twenty-five Fellows have been elected and seventy Associates. Three hon. Corr. Members have been elected:—Marie Perrin (Lyons), Enrique Mariá Repulles y Vargas (Madrid), M. Alberto de Palacio (Madrid). The usual preliminary examinations were held in June and November 1901. In the last year, there was a steady increase in the number of candidates for each of the examinations. There were eight candidates for the "special" examination for architects in the year over twenty-five years of age and chief assistants over 25, of whom seven passed. The total number of candidates entered during the year was 674, as against 603 in 1900. The number of probationers of the Institute now stands at 100, and of students at 402.

Owing to the death of the donor there were no Arthur Cates prizes available for award as a result of the examinations in 1901. But now the Council, having invested the sum of £10,000 bequeathed by Mr. Cates to the Institute for the purpose of endowing a prize to bear his name, have instituted the prize, the conditions as nearly as possible on the lines laid down by Mr. Cates for the prizes he awarded during his lifetime.

The sum of £1,000 has been invested in Indian Government securities as the nucleus of a building fund, which will be allowed to accumulate practically at compound interest. Without this fund at the present moment, when no specific building scheme is before them, to open a formal subscription list, the Council will beg leave to draw the attention of members to this fund, to the increase of which they would be very glad to receive any donations. The movement towards obtaining new premises has, however, gone so far as this:—A joint committee of the Council of the Institute and the committee of the Architectural Association have met and have reported that it is desirable for the two organisations to combine in one building scheme. The Council have approved this report, and have agreed that while it was desirable that they should occupy one site and have some of the accommodation in common, yet the respective premises should be to all intents and purposes separate buildings.

A rough estimate has shown that the requirements of the Institute will need some 10,000 feet super, and those of the Architectural Association 5,000 feet super. The Council will receive information as to available sites from members. The present premises are leased to the Institute until March 24, but the lease can be determined at Midsummer 1904 by giving six calendar months' notice. The report of the art standing committee stated that, although the whole of their suggestions with regard to London premises were not adopted, modifications in the design had been made on the lines they recommended. As to the decorations of Paul's Cathedral, a letter was written to the Dean of Paul's asking that the designs of the proposed decoration of the drum of the dome might be publicly exhibited before the Council had proceeded with. An acknowledgment of the letter was received, but it unfortunately contained no undertaking that there should be any exhibition of designs.

The following statutory Board of Examiners were appointed for the ensuing year:—Messrs. Lacy W. Ridge, J. Douglass, W. H. Hunt, R. P. Notley, Professor Roger Smith, H. D. Wood, B. Tabberer, T. H. Watson, W. Grellier, W. E.

Clifton, F. E. Eales, F. Hammond. Messrs. James Glen Sivewright-Gibson and Henry William Chatters were elected Fellows, and Alfred Arthur Hudson, barrister, hon. Associate.

The following clauses of the existing form of building contract which have been modified by the practice standing committee to adapt them to the new purpose were agreed to:—

1. The works shall be carried out in accordance with the directions and to the reasonable satisfaction of the architect, in accordance with the said drawings and specification and bills of quantities, and in accordance with such further drawings, details and instructions in explanation of the same as may from time to time be given by the architect. . . . The contract drawings and specification and the priced bills of quantities shall remain in the custody of the architect, and shall be produced by him at his office as and when required by the employer or by the contractor.

3. The contractor shall on the signing hereof furnish the architect with the fully-priced bills of quantities for his use or that of the surveyor appointed as in Clause 13 hereof, and for the purposes only of this contract.

Clause 13—The penultimate sentence to read:—

The variations shall be valued at the rates contained in the priced bills of quantities, or where the same may not apply, at rates proportionate to the prices therein contained.

27. The words "prime cost" or the initials P.C. applied in the specification and bills of quantities to goods to be obtained and fixed by the contractor shall mean, unless otherwise stated in the specification or bills of quantities, the sum paid to the merchant after deducting all trade discount for such goods in the ordinary course of delivery, but not deducting discount for cash, and such sum shall be exclusive of special carriage, the cost of fixing and contractor's profit.

28. The commencement of the clause to read:—

The provisional sums mentioned in the specification and bills of quantities for materials to be supplied or for work to be performed by special artists or tradesmen, &c.

## MALMESBURY ABBEY.

A MEETING in aid of the effort to raise funds for continuing the restoration of the Abbey Church of Malmesbury was held recently in the chapter-house of Bristol Cathedral, the Lord Bishop of Bristol presiding. Funds are urgently needed in support of the effort now being made to preserve this grand and historic building. Only the work actually necessary to effect this object is now being attempted. The work, which was commenced in 1899, is entrusted to Mr. Harold Brakspear, F.S.A., and the contractors are Messrs. Hayward & Wooster, of Bath. The work already done comprises the rebuilding of some of the flying buttresses over the aisles which threatened to fall, the reinstating the destroyed upper parts of their counterbalancing pinnacles, the parapets of the north side, and the renewal of the perished stonework generally, the relaying of all the windows and the renewal of all the gutters and down-pipes, relaying the aisle roofs and making all the roofs watertight. The necessary drainage has also been thoroughly done, and a concrete surface gutter put round the walls. In addition to these works, the missing pillar at the west end of the nave on the south side has been replaced, together with the main arches, triforium and clerestory above, as being the best means of giving the necessary support to the south-west corner of the present church, the state of which threatened ruin to the noble south porch. In planning this new work the main lines of the ancient design have been followed; but full care has been taken to show that it is modern, and to prevent misconception as to its date in the future. For the purpose of continuing the work at the west end it is necessary to enter into a contract entailing an expenditure of about £1,300.

His Lordship said he thought they were quite entitled to say that there were few places in England which could compete with Malmesbury for interest in the earliest times of the Church of England. They associated that great interest chiefly with the name of St. Aldhelm, and the English Church had recognised his importance by putting his day next to the days of two persons whom they always named as of primary importance in their earliest Church history. St. Aldhelm's Day was May 25, St. Augustine's May 26, and the Venerable Bede's May 27. That was a very interesting collocation, for Aldhelm really combined the work of Augustine of Canterbury and Bede of Jarrow—that was to say, he was a great ecclesiastical writer and a great prelate. Malmesbury itself dated its surpassing interest from times before St. Aldhelm. The first time it appeared in the history of the English Church was, he thought, at the time of the interview between Augustine and the Britons, which a former generation used to put at Aust-on-the-Severn, but which he thought all Church historians were now agreed must have taken place near Cricklade. By "all Church historians" he meant all persons who had recently published important works on early English Church history;



he did not at all mean that all archæologists were agreed about it. And the reason why it had anything to do with that was because the British Church was at that time surviving in complete fulness at Malmesbury, and it was not until fifty years after that that the West Saxons isolated Malmesbury as a great British fortress by cutting through the forest of Selwood at Bradford-on-Avon. Then the West Saxon people had become Christian, and so when Malmesbury did fall into their hands the Britons were not massacred. There was no upsetting of their religion at all; the Christian religion went on unbroken in Malmesbury. There were very few, if any, places of which that could be said to be true. There was a very interesting fact with regard to that remaining to the present day. He had said that the Britons remained there undisturbed. Well, if they would look in the scientific accounts of the various skulls of persons in different parts of the kingdom they would find that Malmesbury was singled out as a place where the ancient British skull was remarkably prevalent in the present day, the skull on the average being just the same as the skulls found on Salisbury Plain, the skulls of the prehistoric persons who built Stonehenge, and places of that kind. That was a very unusual proof of unbroken continuity. As soon as the West Saxons got hold of Malmesbury they continued the school under an Irish teacher, which had been going on, and Aldhelm, a cousin of the king, was sent there to be educated, and in the course of time he rose to be Abbot of Malmesbury, 670 or 672. At the division of the great diocese of Wessex, which took place thirty years after that, they chose two Malmesbury persons to divide between them the whole of the great diocese of Wessex. Aldhelm the abbot was made bishop of five-sevenths of the whole, and Daniel, a monk of Malmesbury, bishop of the remaining two-sevenths. So Aldhelm was bishop among other parts of Wilts—the north part of which was now in the diocese of Bristol; also of the whole county of Dorset, the whole of which was in the diocese of Bristol until 1836; also the whole of Somerset—the parts of the north of which had always been in the diocese of Bristol since it was a diocese. Bristol thus had a very close tie with St Aldhelm, and when he (the Bishop) had to find a name for the first mission church built in his time on that side of the Avon, he had it dedicated to St. Aldhelm. Now under Aldhelm Malmesbury became one of the finest schools in the kingdom. It was Aldhelm's principle that it ought not to be necessary for English people to go abroad to be educated in the highest knowledge, the fashion in those days being for English Churchmen—there not being the best and highest teaching in England itself as yet—to go across to Ireland, where ecclesiastical study was very complete indeed, and where people were very learned. Aldhelm withstood that, and provided at Malmesbury the complete teaching which English people required, whether for lay or clerical work. That was an important point. Also, he told them himself he was the first of the English race to study Latin meters, and that Malmesbury was the first school in England where the Latin language was taught completely by a person of the English race. He could go on piling up the interests of Malmesbury. King Alfred was specially devoted to Aldhelm and to Malmesbury. He brought over a very learned Scot to restore the learning of Aldhelm's time, which under the Danes had perished, and of Aldhelm himself he said no country had ever had such an abbot as he was, for he could both write a poem and he could compose a musical air to which it was set, and he could himself sing his poem to his air. He also told them he had remarkable skill with the harp. And William of Malmesbury, who lived after the year 1100, told them the street songs, which were still sung about the streets in the vernacular Anglo-Saxon, were composed by Aldhelm all those hundreds of years before. It did not fall to many men of modern times to write street songs which the people were singing 440 years after the author ceased to be. He might add that Dunstan thought more of Malmesbury than of any place, except his own Glastonbury, and made an organ for Malmesbury and gave it to Malmesbury. The place was interesting on another account—the land of Malmesbury was still held by the commoners on the tenure created by the gift of Athelstan. He had seen a statement in a judgment that it was the oldest tenure they could trace. Whether that was so he was not prepared to say. Just one more fact. When, before the Conquest, it was proposed to recombine the sees of Wilts and Dorset and so on, the bishop who was appointed determined that Malmesbury must be the place. It was the one place in the west part of Wessex fitted for a bishopric. He got the assent of Edward the Confessor; but Earl Godwin opposed it and got it stopped, and the thing fell through. Later on the same bishop was made bishop of the other half, and then the time really came when the two could be put together and put in the most prominent place in the whole of West Wessex. Again Malmesbury was chosen. This time Queen Edith was in favour of it, and also the king, and they both assented; but again, Godwin being dead, Harold got that stopped for local reasons. So, as he was always glad to tell his friends at Salis-

bury, the unfortunate people had to go to a poor second place because they were not allowed to have the one supreme place in the whole of West Wessex—Malmesbury—for a bishopric. But for this opposition he had alluded to the see of Salisbury would have been the greater see of Malmesbury. Besides this, at Malmesbury was reared the man who was always called, and certainly deserved to be called father of English history—William of Malmesbury, whose writings were read with quite as much avidity in these days as those who could read them in the original as Green's "History of the English People," and were quite as interesting, and in all respects, for the time, quite as accurate. He was a very man indeed, and was reared and trained and lived and died at Malmesbury. So they saw St Aldhelm and St. Augustin and St. Dunstan, the three greatest names they could mention many respects, were all specially connected with Malmesbury, and they, curiously enough, were the only three Englishmen who, according to the Use of Sarum, were—their feasts were observed with "ruling of the choir." He did not think they needed labour further the point of the extreme importance of Malmesbury, not only to the diocese of Bristol, but to the English Church at large, and the claims were very high indeed. Now, with regard to the building itself, which the present generation had in charge. He maintained that the present generation had in charge the reputation of this great building. Leyland, in Henry VIII's time, had to visit the places where there were famous libraries, and report to Henry what the contents of the libraries were. In that official capacity he went to Malmesbury, which stood very high among the libraries of the kingdom of that period. Leland said of Malmesbury an abbey church and building, "a right magnificent thing, it must have been very true, although in his time the prominent part of it had fallen. He was always glad to see before the dissolution of monasteries the great ruin of the part came. There was an enormous central tower—a Norman central tower, two arches of which still remained—one that was free and open, one of the most striking things they could see in architecture. At the top of the enormous Norman tower there was a great pyramid, or so elevated that the two put together were 21 feet higher than Salisbury, and instead of standing low down by a river the building stood high up on an eminence. Even the nave remained was a striking object standing up against the sky when approaching it from the north, but when there were towers and spire on the top of that the whole world around there could not help seeing. The nave was of nine Norman bays; then there came transepts; then there was a central tower; then the presbytery of five bays—the church as they would call it now—and then behind that the chapel, and the total length was 332 feet. Except the nave only remained. That was 148 feet by 68 feet, and the bays towards the east were complete, and three bays were roofless. The west front was a very magnificent thing which was 90 feet broad. The whole of the north side of the front was broken away—it was said it fell when the canons were fired for the restoration of Charles II.—and they only the south half of the west front. It was in rather a ruinous condition, that spoiled its effect and beauty, but they straightened it up and make some improvements and alterations there, and that was what they were now desiring to do. There was a porch, which was certainly second to none in the kingdom. It and the porch of the sister church were also Aldhelm. Those were the only two porches which could be mentioned; all others must be mentioned in a different breath. That south porch was one of his chief anxieties when he became Bishop of Bristol, because the whole of it was perilously near falling, and the first fall would have come where the porch was. The porch was quite worth going over from Bristol to see if it were nothing else. There were seventy subjects carved in thirty-eight were on the vousoirs of the arches. Those were from the Old and New Testaments, and thirty-two were on the piers in ovals, such things as the signs of the Zodiac and the operations of the various seasons, the same sort of things they would see in those wonderful capitals at Carlisle. It was an interesting thing that they had a description of those subjects in two very dissimilar places—first, the very unscientific account of a tourist in 1634, who, he must say, made wonderful shots at the subject; and then Mr. Cockerell's famous account in his book on the sculptures of Wells Cathedral. The date of the building of the Norman church there was from 1130 to 1160—a most interesting period of Norman architecture—it was slightly modified and moving on to the architecture of the thirteenth century. The clerestory of the nave was done soon after 1300, and at that time a stone vaulting was put on the roof. This, of course, caused a lateral thrust which the walls had not been prepared for, and that was the reason why the striking flying buttresses were thrown across the roof of the aisles, with counterbalancing pinnacles over the aisle windows, giving a wonderfully picturesque air to the whole building, and giving a grave anxiety to the custodians of the building.



thankful to say those were done. Every one that needed down and rebuilding had been taken down and rebuilt. The upper surfaces of those that were not so bad as that had been made good, and the broken counterbalancing pinnacles had been repaired, so that the whole thing now, he was glad to say, was as trim and square and right as it could be. Another great work that they had done had been to shore up the west front of the present six bays, and that had been done in the very happiest manner, he thought, possible. In the building of a great ugly buttress, they had simply put the parts of the Norman piers, both on the ground and so to speak, and on the triforium; and on the other side they had simply replaced the pillars that were there, and so had caught the projecting half-arches at the storeys where the liability was to fall, and had met and entered the pressure by making the arcade of three perfect and complete. It was an exceedingly happy thing that it had cost less money than building any other buttress would have cost; it was beautifully slightly of being horribly unsightly; and if at any time it was to complete the church, and have the three western bays built, not one sixpence of what they had spent on this could be thrown away. If they had built a buttress, nothing of the expense would have been thrown away, the buttress would have had to be removed. He thought that was quite an ideal way of dealing with a building in description, and he might say that all through, wherever they had replaced, they had left the moulding entirely uncut, so that one could ever say, if the thing stood 1,000 years—no one could ever be taken in to believe that the work they had done in the last two or three years formed part of the original work. They could not deceive anybody. Even if they were proposing to continue the cresting of the pinnacles, though for the satisfaction of the eye the whole was run in a straight line, he had so arranged that the work should be quite different. The ordinary eye would not notice the difference, but anyone who understood architecture would be able to say up to that precise point the old work and the rest might look as old as they liked, but the cusping was different. Great care was taken to have no vandalism and no mutilation. They had spent on this work about 3,600*l.*—a large sum if they knew the circumstances of Malmesbury, still a larger sum if they knew by what serious efforts it had been raised. They wanted 1,200*l.* The circulars sent out showed how much they had done besides what he had added to them. They had acted so cautiously that they had left the whole of their liabilities and still have something in hand, and they were hoping that now they might get some subscription in Bristol, and show that they had done it with this work.

The Dean of Bristol expressed the hope that there would be no difficulty in obtaining the funds required for the work.

## STREET ARCHITECTURE.\*

The street architecture of England can only refer nowadays to the combined effect of the many various and unrelated buildings in our streets. We have no proper street architecture in the sense in which we may be said to have a domestic or ecclesiastical architecture of recognisable quality, possessing certain characteristics born of tradition and new movement. A broader description of civil architecture, including within it the buildings of municipal or semi-public character, will be far more materially our estimate, or permit us to claim for our cities an architecture which we could in any general sense call coherent, traditional or worthily characteristic of national taste and refinement.

Our street architecture, such as it is, cannot help being representative of its producers, and of their ideals or lack of them, and as there is neither lack of enterprise nor self-esteem among us, particularly in the life of our street-building cities, consideration of the external environments of this busy side may assist us in endeavouring to review the causes and effects of our lack of a street architecture, which should rank at least at our dwelling-houses and churches, and direct us to the means which may stimulate desires for improvement, and should ensue upon the consideration of a condition which has been led to admit is unsatisfactory.

### Comparison with Domestic and Ecclesiastical Architecture.

We have premised that our ecclesiastical and domestic architecture has life and artistic value, for any review of the Victorian era exhibits a revival from mere formalism and application of types to vital influences of artistic opinion to purpose with a pleasant reflection of the eclectic of the traditional architecture of England. Education,

culture, refinement and literary taste are evident in the whole movement of the building arts and crafts during this period. The churches of the latter half of the nineteenth century, arranged chronologically and illustrated internally and externally, would present a gallery of architectural designs of amazing versatility and originality, and of quite wonderful beauty, of picturesque dignity and charm of detail, rich in genuine beauty of workmanship and conception.

A similar result will be arrived at, with the exercise of some greater selection in the earlier period, by assembling an exhibition of English houses of all sizes, the homes indeed of the people of a profound peace and of unparalleled domestic prosperity and development. Stately or modest, romantic or homely, the same originality of conception, wide comfortableness, reasonableness and perception of the beauty of domestic life will be generally apparent, while in the details of decoration and furniture, artistic impulse and architectural character have led to a real revival of the handicrafts, and endeavours to make the commonest utensils of home life beautiful to eye and hand, ennobling alike the designer and the user.

It may be remarked incidentally that the manifested vitality of this English architecture has met with recognition at the hands of continental critics, and that in ecclesiastical and domestic art we have an admitted mastery that has produced energetic followers and admirers in different directions.

It must be observed that the two branches of building art upon which we are touching have originated in one class of society, and in very many ways reflect its social conditions and ideals.

The same upper and upper middle class have provided the examples alike of church and house building, and the movements of thought expressed in this architecture are of the refined education and literary taste, let us say, of those who have derived their ideal and sense of culture from university life, and from opportunities of historical study. The breadth of view and freedom of thought, the criticism and eclecticism of the passing day are present in its architecture as in its literature, for all who can read the characters employed in their expression; an easy illustration of this can be offered in the sustained devotion to Mediæval tradition both of the architect and of the ecclesiastic. In all the work of this representative class there is the characteristic of a powerful craving for a sense of style, a self-consciousness foreign to real Gothic art, but as current in the buildings as upon the lips of client and architect, and with this a strong personal note of individualism and independence which, by persistent differentiation both of example and type, have made the architects men who seek for originality without creative matter, and for conformity to style without the opportunity of realising that environment of characteristics upon which completeness of artistic style depends.

The sense of refinement in this architecture has become so much a characteristic quality to be sought for, marked down and expressed, that native simplicity has become replaced by a laborious affectation which has danger in its artificiality, though its note of revolt against the tendency of the world at large to vulgar elaboration of effect is of great value.

### Street Architecture, Commercial.

As our subject is not the consideration of civil architecture, we exclude public buildings, although they form part of many street perspectives, and with some reservations, cannot consider at any length the dwelling-house of the modern street—such streets of dwellings usually described as “parks” or “gardens,” which might suffer in reputation by a more sincere classification—leaving for our discussion the buildings that compose the business quarters or centres of our cities, which may be safely defined as those of the commercial world, wholesale, retail, warehouse, store and shop, together with their necessary manufacturers’, companies’ and insurance offices, banks and accommodation for the professional men who are essential to business life. It is, therefore, the business community which is mainly responsible for, and indeed originate our street architecture, for whose wants it is designed, and by whose ideals it is controlled. This commercial class is the backbone of our national life and prosperity, and upon it depends that measure of wealth without which architecture, as at present practised, could not exist. It has represented until now the pre-eminence of England, and we shall expect to discover, if we have time for analysis and search in its architecture, so much of this part of the secret of England’s greatness as is capable of translation into the terms stone and brickwork expression.

Comparing the architecture of the ecclesiastic and of the country gentleman with that of the business man, we would naturally anticipate finding that the predominating tastes of the one are sentimental and of the other practical or unsentimental. Art is so wholly a matter of sentiment—we might almost say it is pure sentiment of high and noble character, and architecture therefore largely, though not wholly so—that we might without surprise discover that the street

\* Paper by Prof. Beresford Pite, F.R.I.B.A., read at the meeting of the Applied Art Section of the Society of Arts on April 8.



building of our commercial centres was entirely unsentimental, and architectural only in being wisely and designedly practical.

If we could plant a Utopia where, as a condition precedent of existence, subsistence was provided independently of the exercise or practice of art, we would devoutly wish the consummation that buildings only partaking of sentimental character should be designed by architects, and the streets devoted to unsentimental commercialism and its dependents erected by mere surveyors. That these would be ideally beautiful architecture in so far as they were soundly built and truly adapted to purpose without the affectation of sentimental art I for my own part sincerely believe. The practical business man, however, takes the world as he finds it and conforms his labours to his requirements, and we, admiring the truly practical when it is practically true, must accept the street architecture of commercial purposes as it is, and suit our labours to its peculiarities.

The world, as observed by the keen eye of commerce, has a love of beauty—that is, of colour, of variety, of ornament. The Manchester print finds the best market in Africa if gorgeous, and ordinary articles of household use from smallest to greatest sell better if ornamented, just as they sell better if cheap; in fact, it is to be observed that cheaper articles can be obtained having more ornament upon them than costly ones, cheapness and beauty of the commercial sort going hand in hand, what is intrinsically better being extrinsically worse—that is, deemed less worthy of decoration. The commercial world is at present so—its relation to true art anomalous and contradictory; but we hope yet under some preliminary pulsations of conscience upon the subject, at all events in the home market, though radically wrong in its conception of art as such. Art exists practically, and it is therefore grasped by the commercial hand; but its character changes in the touch from a pure sentiment to an advertisement, and in this very different aspect we meet it in our street architecture.

#### *Good Design Compatible with Requirements and Modern Materials.*

It may be well before going further to emphasise the necessary doctrine that good building design, that is, good architecture, is not incompatible with the best adaptation to use, convenience and healthiness of arrangement. No definition of architecture should be allowed that would limit, in the presumed interests of art, for instance, all the access of light that business premises demand, either in the size or position of windows. Should it be necessary to have the entire frontage of a building occupied with window surface, so far as the limit of the law allows, an architect would assume an entirely false standpoint should he declare that this purpose is contrary to art, though if he decides it necessary to limit the openings by constructive considerations he would be unquestionably within the sphere of his proper authority. Even architectural proportion—that subtle and almost indefinable quality of adjustment which gives pleasure—is itself based upon factors of service. For example, the apparently good proportion of a column depends upon a recognition of the substance of its material, for a well-proportioned wooden column would almost certainly become unsatisfactory, of the same proportions erected of stone or brick. The traditional conventions of the so-called orders of Classic architecture had their origin in the refined adaptation of supports to spaces owing to the necessary limitations of length and depth in the stone lintels which connected the columns. There is nothing radically inimical to satisfactory architectural proportion in any necessary acceptance of the large spaces requisite, and recognised as essential, for the window surfaces of shops or showrooms in warehouses upon the street fronts of the buildings.

The frank acceptance of the most serviceable and convenient materials for the peculiar requirements of commercial buildings is not under any circumstances to be avoided as inartistic. In a public building of a quasi-monumental character and of varying use stone columns or arcades would have an architectural value and suggestiveness both in their forms and material. Association and tradition have in such cases much to borrow from ancient historic precedents, and a sheer modernism of idea would probably be alien in spirit to the *genius loci* and associations of the building. But in business architecture the converse is more usually the case, the commercial world can only in rare instances maintain ancient forms or style; the movement in trade of all kinds is to the newest and latest style, and the pressure of the time not only in economy of production, but in rapidity of distribution, is felt in every direction.

The employment of iron and steel fireproof construction for supports and lintels in the front as well as in the interior, the use of large sheets of plate-glass, and the carrying of great masses and weights upon narrow steel stanchions are instances of special treatment, for which a pedantic architecture will not succeed in discovering conformable types in antiquity, though the same principles of truth, to which pedantry is blind, are to be observed if sought for in all genuine architectural forms. A progressive and living art of building has everything to gain

from any new or increased suitability of its materials to its ultimate uses of the building.

We must assume that there is as much honest picturesqueness of true character about a modern warehouse front of iron and plate-glass as in the timber-framed construction of leaded-quarried glazings of its ancestor of the Elizabethan period, then newly erected for the developing woollen trade in England, and similarly occupying whole surfaces of frontage with small quarried glazed windows and a multiplicity of subdivisions necessitated by the overhanging construction—a contrivance designed to increase floor space on a limited site.

The advent of an employment of rolled iron joists in building art, with a latter development of complete framed construction, marks an era upon the threshold of which we now stand. The significance of this new building may be estimated perhaps by reference to the astonishing high buildings of the United States. No architectural history can compare in importance with development since the rediscovery and application of the use of buildings of magnitude by Brunelleschi and Michelangelo at the Renaissance. That sudden and amazing stride into a new domain of construction when building art appeared to have exhausted its own development, is alike in extent and application to the almost spontaneous generation of high buildings in America. The purposes and authors of this class and of the other contrast picturesquely and characteristically enough the evolution of conscious building art, cultivated by lofty ambition to do service to the universal ecclesiastical State policy of Christendom on the one hand, and on the other the indomitable persistency of invention, stimulated and sustained to all utmost developments by the commercial enterprise of a continent of seemingly exhaustless resources. Compare Michelangelo with the "Soaring Bird of Freedom." In our old country, however, the soaring qualities of steel-frame construction are limited by considerations which we need not discuss, for among the advantages of living in a city of tall buildings, world are to be counted an equitable right to the access of light and air within one's building, and in narrow streets involves a limitation of nearly everybody else's right to street building materials, and as the general sanitary condition of the street are affected by the preservation of sunshine, and this has become one of the many cares of "our excellent grandmother."

#### *The Architecture of Iron Construction.*

Iron and steelwork have, however, entered so fully into the marrow of the building construction of our street architecture that walls properly so called are now few, generally the narrow pair of party structures only, the remainder consisting of panels of brick or stone material filled into the framing of metalwork, while the floors themselves have in all important premises ceased to be of wood, and are of iron filled in concrete or terra-cotta. The main problem of all construction—that of the distribution and carrying of weights—is most profoundly affected by steel construction. The section area required in the supports is so limited and the space between the bearing girders so great that the traditional proportions based upon wooden beams and stone arches, which have become almost a second sense of mankind universal, have ceased to be of any value. The change of this essential fundamental factor of constructive proportion must reconceive the visible expression and meaning of the symbols derived from the stone and wooden architecture of the past. The symbols exist in the mouldings, cornices, architraves, capitals and bases and detail of the architectural ordinances of the various so-called styles. The modern architect should emerge from his museum of palæolithic implements and enter upon the age of commercial architecture with a good heart and a new enterprise. The new factors of proportion are as valuable as those that have passed away, and there is the universal sense of what is just and true to insure the appreciation of intellectual motive, and is not itself the sense of the beautiful in architecture? The new "half steel" has exactly the same claim to be interesting first and beautiful afterwards, as its exact forerunner, the "half timber," and it should be studied and applied the same principles of expressive characterisation of its constructive facts. The rivet heads, stiffeners and knees of the iron girder and stanchion work are similar elements to the oak beam bracings and bracketings of our charming old English farmhouse. That has passed away with the sweet forests of Robin Hood, this remains with the black country of the smelting furnace and coal mine, but is as real and more real to us, as true in its use and as noble in service if looked at straightly without the pseudo-Medieval squint of a false æstheticism.

Again, the old English frontispieces are charming to us because, may be, the glazing is all of little pieces connected together by leaden strips, and our modern English warehouses are disagreeable and inartistic, because the glazing is of one more suitable and perfect material of the plate-glass of modern times.



This is an anachronism which illustrates the conflict between current artistic ideas and common sense that has so malevolent an effect upon our business-house architecture. The steel joist and stanchion not only have their principal the general internal construction of modern city buildings concern our subject mainly in their appearance, or we should say non-appearance, upon the street front. The aid the shop window is enabled to extend itself across the site, an advantage the commercial man cannot be to sacrifice for any architectural fancy of the necessity for support for superstructure. It is of no matter to him the architect does with the girder so long as he provides the window space for the exhibition of wares. Its uses are very many, as it dispenses with arches, the weights of which are carried by it with certainty to the floor joists easily, and is so constructed and fixed that the poor architect has to be and accept it. He, however, endeavours to satisfy his conscience with delusions by masking the objectionable stonework and resigning all criticism of the lower beginning his own conception above it. But the iron dogs the artist's steps still, and in window lintels and supports the value and economy of metal over stone and wood less; the wide windows high up to the ceiling and low the floor, perforce, must be spanned too by girders, as so little room for rising arches or other means of construction, and these girders again are covered over with more delicate stone mouldings attached and pinned to the line in an indescribably unconstructive manner. Few have as yet had the courage to work out an iron structure, say with glazed brick, terra-cotta, stone or concrete. There have been stimulating experiments, but the effort of departure from the well-worn conventions of architecture design is apparently too great for the generality of architecture practitioners.

#### Modernism in Design.

The architect may find some difficulty in adapting his taste and his sentiments to business judgment, but ere the sounder ideal of modern common sense in these will be found as enjoyable as that of an old England at the best unreal and imitative, and however charming possible in the circles of ecclesiastical and domestic architecture in the sphere of modern progressive commercial building. The meeting of architectural art and business will not be found upon any ground of compromise that which is ancient and modern, or between that ideal and practical, but in such a practical employment-modern conditions as will lead the way to further usefulness and appropriateness in building.

The whole-hearted acceptance of the doctrine of a frank employment of design and construction in business premises by is sufficient requirement to make of them for the present and growth in our midst of healthy street architecture expressing the movement of the age in its requirements, rejecting the intellectual attitude of trained and artistic applied to a commercial problem in building. The and stupid antipathy that is supposed to exist between the requirements and artistic character should thus, in architecture, cease to be professed, and having the attitude of art to business life we can the more and successfully hope for and attempt the resuscitation once existed in pure and noble beauty, of living art in the commercial world.

The employment of modern materials and the joyful acceptance of current requirements as a means of expressing a pro-architecture will, however, bring the architect into with other ideals than those merely of archaeological or of an antique style, as serious problems in the early all as yet practically unsolved, await him. The upper floors have to be designed over and upon a ground-floor shop, the front part of which occupies all the space between the ends of the boundary or party walls on the one side and the street on the other. It may be taken as a canon of architecture that buildings not only be of a construction that is secure in itself, but be obviously so, for a building, however scientifically constructed, will not be architecturally satisfactory to the eye and will not be safe. Doubtless time is a great conqueror in matters of artistic criticism, and if a sufficient number of examples of a novel method of construction were to be presented to the world to manifest to it that what is apparently perhaps hung upon nothing, is after all perfectly secure, it would be satisfied, in spite of itself, by the relation of the thing to judgment, and the disappearance of that distrust which is a gift of Providence to save men from their experiments.

#### The Shop Window.

It could therefore have become accustomed by this time to great and massive erections of weighty stone and

brickwork poised upon the slender brass pillarettes, lace-like arches, plate-glass fittings and mahogany fascias of shop fronts, but we are, I am sure, suffering artistic discomfort and deriving no pleasure from their carved and ornamental blandishments, owing to the initial hiatus that the system of architectural design employed demands a basement and obvious foundation, and has none. With this difficulty the modern architect wrestles ineffectually; the implements of his trade were all made for buildings with bases, and he knows not how with them to fashion a modern design without obvious support. This difficulty is everywhere self-confessed, and has caused an infinity of interesting and sometimes amusing expedients. The projection of the shop front beyond the general face of the upper storeys of the front, thrown out so to speak as a screen beyond it, is a device only very partially successful; it has a certain sufficiency when the shutters are down, but modern progress is depriving the shop architect of this scrappy resource for architectural effect at close times, and on Bank and half-holidays. The void is there, gaping all the week, with perhaps the flimsiest draperies depending from the ceiling within it, dispelling all illusion as to supporting a very mine of weight overhead. The emphasising of the end piers which mask the party wall ends with the development of a cornice with the shop fascia connecting them to form a horizontal bridge, on which the upper part is carried, is frequent. This should be a more satisfactory method, as it would disregard the shop front and its contents and dissociate the composition of the upper storeys from the lower ones. Failure, however, occurs in that the establishment by this treatment of a factor of architectural proportion integral to the whole front has as yet failed to obtain recognition. The architect supposes that his problem has been solved, and proceeds in designing the floors immediately over to dispose their proportions in the traditional way, employing lintels and openings of ordinary narrowness, each of which is unconsciously engaged in defying the exaggerated yawn of the cavern below, which is spanned by an abnormal member of their own architectural family. It may be more easy to point out than to demonstrate that the system of proportion compelled by the ground storey should be recognised in the design of the upper ones, and though openings above are not required of the extent of that below, a logical symmetry of spacing would take the first factor, and by progressive reduction or systematic subdivision apply the scale and diminish the proportions harmoniously.

(To be concluded.)

#### AN AMERICAN COLOUR SCHEME.\*

THERE can be no doubt that the rare beauty of the Pan-American Exposition—especially its beauty of light and beauty of colour—suggested new dreams, awakened new ideals and aspirations, and did this so broadly that the thrills of its artistic impetus may be said to have reached very far. If disappointment over the Exposition's financial failure was not keen enough to destroy the pride in the artistic achievement, it would be more than natural that, instead of reaction, the Fair's incentive to a demand for lovelier environment would have been felt most strongly in its own immediate neighbourhood, where the daily and nightly beauty had been a constant reminder of what might be, if men would. And this seems happily to have been the case. It is common report that there has been in Buffalo such a rush of civic and public spirit since its close as had not been known before. It is evidenced in a thousand ways, of which the organisation of the strong and large Society for the Beautifying of Buffalo is merely one, of special significance, and the princely gift of a splendid zoological park, with the means to maintain it, is but one other.

From the neighbouring manufacturing community of Echota, however, there now comes report of a development far more novel and striking than these. It is the adoption of a colour scheme for a whole town, the employment of a prominent artist to devise it, its acceptance and the adherence to it—even to its minutest and most unexpected details—by the entire community. This must be something quite unique. The influence of Mr. Turner's successful scheme of harmonising colours for the Pan-American is easily discerned.

Echota is one of those settlements that are marking the immense manufacturing development which has followed the utilisation of Niagara's electric power. It is situated a couple of miles from the city of Niagara Falls and on high ground back from the river, perhaps half a mile. It is purely a residential area, comprising within itself no manufacturing plants; but its 127 houses, with the necessary stores and other buildings, make a village in themselves. One of the big power companies owned the tract, laid it out in rectangular streets, put up the houses in lots of dozens or scores, and rented them to its employes. The houses are two-storey frame dwellings,

\* A communication from Charles Mulford Robinson in "Architects and Builders' Magazine" of New York.



with a pretence of the familiar suburban straining for art and variety. They were, however, uniformly painted yellow with white trimmings, and this had put on the place the unmistakable stamp of single ownership. With the course of time the weather, the wear and dust, aided by the smoke from the busy railroads that skirt the town, had so stained and soiled the original colours that repainting was necessary. The company had outgrown its desire to pose as owner of the tract, and it resolved, before giving the contract for the town's repainting, to employ an artist to draw up an attractive colour scheme that should add to the merit of durability the æsthetic advantages of harmony and variety.

The artist selected was Mr. Reginald Cleaveland Coxe, a painter of widely recognised ability and president of the Buffalo Society of Artists. He made a careful study of the town, found the streets broad and well paved, the houses surrounded by gardens, a great number of young trees set out, and the general aspect of the place—aside from its need of repainting—prosperous and attractive. Then he set to work on his colour scheme. Unlike Mr. Turner, he had no models of the houses, no drawings to work upon; but he had a task that was new, congenial and pleasant, and that by its artistic possibilities enlisted his full interest and sympathy. And to carry harmonising colours in his head was for him no more difficult than for a musician to carry the air of his own composition. In due time he made his report. The company accepted it very creditably without a criticism or suggestion, and gave him *carte blanche* to carry out his recommendations.

The painting was done last fall, and the colour-symphonic town, in the heart of a manufacturing district, now stands for all the world to see—a new sight for Niagara. The contract was let, it may be said, with a regard for material and workmanship that is good evidence that the "sight" will linger, and with a disregard for self interests that fully justified the company's confidence.

In the general effect there is far more variety than one would have anticipated. That is the first and most striking impression, and it is one of the most commendable. Art conceals art so skilfully that the visitor would have to think twice before he realised that not a colour jarred, and so that there must have been collusion or a single underlying scheme. All is restful, beautiful, concordant. For the most part Mr. Coxe has employed a combination of greys and greens, with here and there, to lighten the total effect, a warmer colour bordering on the reds. In a very few cases, as on a house of colonial architecture, he retained the original yellow and white. Some of the most interesting work is at the street corners, where it was necessary to combine the colour schemes of two streets. Thus at one corner there is an engine-house that has been painted a light grey-green, which harmonises completely viewed from any point. But unless your attention was called to this you might miss it, for several houses near by have been treated with richer colours that, by their relative prominence, the difficulty might not appear.

The largest building in the town is the garbage disposal works. This has a background of trees, and Mr. Coxe has had it so painted that it is almost lost in the foliage behind it. Running the united length of all the gardens of the houses that back upon the railroad there is a lattice, in front of which has been planted, for its whole distance, a row of evergreens, which some time no doubt will take its place. This lattice, then, has been painted a moss green, so that its presence is already nearly forgotten. Now and then among the houses a richer colour appears—a salmon, for instance—but it has been approached by such gradations that when you realise it you find yourself turning back to see how it could have been led up to so unobtrusively. The whole scheme is most interesting and instructive. It might well incite imitation on streets or blocks, if not by whole communities.

Not less interesting than the magnitude of this colour scheme is the completeness of detail with which it has been carried out. Not only is every clothes pole treated as an essential part of the composition, but, with the success of the general plan, outside corporations expressed a willingness to do their part in making the harmony complete. The International Traction Company, controlling the trolleys, repainted its waiting-room; the railing along the railroad tracks was given a new coat to bring it into tone with its surroundings; the Bell Telephone and the Home Telephone Companies joined with the Power Company in asking Mr. Coxe to select the colours for the telephone poles, in order that there might nowhere be a single jarring note. The whole result is so successful that the late news that the Mayor of Akron, Ohio, has asked for the appointment of an art commission, whose members should be the arbiters for all outside painting in the town is not as startling as it might once have been.

In closing, it may be said that the colours for Echota were chosen with special reference to the time of year when the town is seen by the greatest number of persons. This is when

the trees are in leaf. Then Echota will offer none of the contrasts so familiar in village landscapes, but with its grey-greens will become a part almost of nature's picture—a study well worth attention.

## DISAPPEARING EDINBURGH.

**A**MID the indiscriminate havoc wrought upon the buildings of Edinburgh, says a correspondent of the *Scotsman*—havoc which threatens speedily to end in utter extermination—a few remarkable houses still remain on either side of the roadway. One is the familiar popularly known as John Knox's House, the other a grand and stately structure of hewn stone which enters from Fountain Close, immediately below the tenement anciently called "Fountain," presumably because the conduit, now transferred to the opposite side of the street, was in earlier times part of the basement wall of the building.

In the days of Queen Mary these two houses were abodes of two notable citizens and burgesses of Edinburgh. They were, each of them, men of wealth, energy and high spirit, who naturally took a prominent part in the civic and national life of the time.

One of the two, James Mossman, was the son of a goldsmith to James V., said to have made the arches which enclose the ancient crown of Scotland. The entire crown worn by Mary of Lorraine, James Mossman inherited his father's business, and so became goldsmith to Queen Mary. He became proprietor of the house at Fountain Close by his marriage with Marriot Arres, daughter and co-heiress of John Arres, of whose considerable estate this building was a portion. In further evidence of Mossman's wealth and importance it is recorded that he purchased from the Hume the lands of Laughermendstone, in the parish of Edinburgh, and so became a laird as well as a burgess. His coat of arms, with his initials and those of his wife are still conspicuously visible in front of the old house which was his proper dwelling-place. Mossman, as befitted his office, was a staunch adherent of Queen Mary, and clung to her through good and evil report to the end of his life. He was executed from the sculptures and inscriptions which adorn his monument he would seem to have been a religious man, but whether Protestant or Catholic is not known.

Adam Fullerton, who occupied the opposite house, was no record of his business pursuits, nor is he known to have practised any handicraft. He was probably a wealthy member of the Merchants' Guild. Fullerton was a zealous reformer. In 1559 we find him stoutly maintaining Protestantism against the alleged encroachments of the Queen-Regent. In 1561 he, being a bailie, appears, along with Provost James Douglas, of Kilspindie, as prosecutor of a poor craftsman, who, being convicted of the heinous offence (in Protestant eyes) of playing Robin Hood, was condemned to be executed, and only escaped execution by a successful uprising in favour of the always formidable Edinburgh mob. Again Fullerton's name recurs in contemporary annals. In 1571, when Edinburgh was besieged by Regent Mar, in the name of the king, we find Adam Fullerton, along with other burgesses, who elected him their captain, escaping from the beleaguered city to join the ranks of the besiegers. In 1572 he, along with other and greater men who stood for the Queen, was condemned and forfeited for high treason. Queen Mary's Parliament held in the Tolbooth of Edinburgh. His house in Fountain Close was promptly taken into possession of and its roof converted into a platform for artillery to reply to Regent Mar's batteries at the Pleugh. Thus matters remained until, in July 1572 the queen, under Kirkcaldy of Grange, evacuated the town and retreated to the castle. Fullerton immediately resumed possession of his house, and now it was the turn of James Mossman to be a fugitive. He took refuge in the castle, and there he remained until the surrender in 1573 to Sir Wm. Drury, commander of the English auxiliaries, who at once handed over his prisoner to the ruthless Regent Morton. Morton immediately executed the gallant Kirkcaldy, his brother, and other leading men of the garrison, among whom was the hapless James Mossman—a martyr for his loyalty to a fallen and hopeless cause.

In the same year, internal quiet being restored, Fullerton carefully repaired the damage done to his house during the siege, and, to celebrate his party's triumph, adorned it with an unusually handsome double door, where may still be read the inscription in which he recorded his victory. The writings are as follow:—

Vincit—Only . be . Cryst . Adam . Fullerton.  
Veritas—Aryse . O . Lord . Marjorie . Roger . 1573.

It only now remains to trace the supposed connection between John Knox and the forfeited Mossman. The Dean of Guild Miller has amply proved that the official



Reformer during his Edinburgh ministry was not the Netherbow, then and for many years later in possession of its rightful owner. But it has been suggested that August, 1572, John Knox, broken in health, returned to Andrews at a time when the upper city, distracted by civil war and danger of the siege, was no fit abode for an old man. It is more probable that the Reformer was in the quietest and safest part of the town, in the deserted dwelling of James Mossman, where he may have remained under the immediate protection of the adjoining post at the Netherbow Port. Here, then, according to tradition, John Knox spent the last four months of his life. From this house he was carried to his last resting-place in the Netherbow Churchyard, and here, it may be, is found the ancient tradition which has so long associated the Reformer's mansion at the Netherbow with the memory and achievement of the great Reformer.

The restored Mossman house, in the hands of its trustees, is present at all events tolerably safe. Would it not be an achievement if in like manner the house of Adam Smith were adequately repaired and protected?

Two tenements would then form a substantial and most interesting memorial of one of the most important episodes in the life of one of the most notable men recorded in our civic history.

## TESSERÆ.

### Greeks and Easterns.

The Western mind dwells chiefly in the present, the Greek in the past and the Eastern in the future. That is why the Greek, the highest type of the lyrical mind, fed upon the past, and the Greek, the highest type of the epic mind, fed upon the future. The Hebrew lived upon prophecy, and the Hebrew, even in their buildings, it may be seen how they looked forward to after ages. The prevailing feature of Hebrew architecture is its massive grandeur, its stability; they built for posterity. Solomon said at the dedication of the Temple, "I have built a house of habitation for Thee, and a dwelling for ever." The only exception to this is the Saracenic architecture, and it is an exception that proves the rule; since, if need were, it could easily be made to conform to the rule. The Moslem faith, which, disregarding a future upon earth, looked upon such a death as might insure a future in the hereafter, amidst the bowers of the Houris. Greek architecture, on the other hand, neither mocked the eye as did the Egyptian palaces by a seeming frailty and contempt of permanence, nor like the heavy piles of Egypt and the East, impressed the idea of strength and of futurity upon the beholder; it rather by marble friezes and other sculptures embodying the past to set the hoary crown of old upon the brow of their temples.

### The Picturesque and the Beautiful.

It is a remarkable fact that the general acceptance of a word is more precise and more comprehensive than any philosophical definition of it that can be given. The picturesque, in the sense of Price's recommendation that it should be detached from painting, never has had any other meaning than "that which is pleasing to the eye, and may be called by the painter's art." It serves to denote any kind of beauty, of any degree of beauty. Man's natural indolence and the laziness of language have brought it into very general favour. Qualitative epithets require thought; the terms to qualify scenery are few, and picturesque may be applied with propriety to the subjects of Hobbeina or Salvator. The only real difference between the beautiful (in its sense) and the picturesque is that which must necessarily exist between the reality and its motionless representation on the surface. There is much of beauty that is beyond the power of art. The picturesque comprises only that part of nature which painting can represent, and, moreover, the word implies that the beauty which it expresses will be found, when closely examined, to be visible beauty addressed to the eye. The tourist in Switzerland does the tourist, after toiling up a steep ascent, come upon some bird's-eye view of immense beauty. The snowy peaks of the Alps indent the blue sky like the teeth of a saw. Below them are spread long intermingling pine-covered ridges. Beneath his feet two or three miles of bright and unruffled as mirrors, gem the surface of the cultivated plain. To represent this, art could do nothing without the mechanism of a panorama. Who would not exclaim, "How beautiful;" and yet is it visible beauty, that so much affects him? The grandeur and beauty of nature, the silence and repose of the scene, the vastness of the landscape, the horizon of snows that have never melted, the creation, thrill him with awe. Yet the colouring

wants richness and variety; there is no air-tint to mark distance; the forms are monotonous by their repetition, and the equality of the masses deprives them of effect. Compare this with some well-remembered scene, where, from the hills in the neighbourhood of Rome, the eye gazes on the plains of the Campagna varied by the richest tints, and bounded on one side by the sea, on the other by the purple Apennines which gradually melt into it by the softest and the grandest undulations. Does not the Swiss view affect us rather by the emotions it excites than the elements of beauty it presents? but when beautiful is applied by mankind to everything that impresses them agreeably, from an epic poem to a pot of beer, can we urge that it should not be applied to an object which gives us such exalted pleasure, and that, too, through the medium of the sight? The word picturesque comes to our relief, and the discussion is closed by admitting that the Swiss is poetical but not picturesque.

### The Corinthian Capital.

The account of the accident which suggested to Callemachus the hint for composing a new capital is known to every one. John Shute, an English architect of the sixteenth century, was evidently pleased with the story, and as it stands in his book it has more freshness and simplicity than the barer narrative of the Roman writer, so we shall repeat the legend in his words:—"After that, in the citie of Corinthe was buried a certaine maiden, after whose burial her nourishe (who lamented much her death), knowing her delightes to have bene in prettye cuppes, and such like conceytes in her lifetime with many other thinges, appertayninge only to the pleasure of the eye, toke them and broke them and put them in a littel prettie baskette, and did sette the basket on her grave, and covered the basket with a square pavinge stone. That done with weeping teares she sayde, 'Let pleasure go wyth pleasure,' and so the nourishe departed. It chanced that the basket was set upon a certain roote of an herbe called acanthus, in French Brankursine, or Beare fote with us. Now in the spring time of the yere, when every roote spreadeth fourth his leaves in the increasing, they did ronne up by the sides of the basket, until they could rise no higher for the stone that covered the basket, which, being square, and castinge his foure corners over the sydes of the rounde basket, constrained the branches of the herbe to draw downwardes againe with a certaine compasse, and so drew to the fashion that Vitruvius calleth Voluta. . . . In this citie one Callemachus, an excellent architectur, passinge or going thereby, regarding the beautiful worke of nature," devised a column and set a capital upon it in imitation of the tomb which he had seen. This story is generally supposed to be no more than an idle fancy, invented or repeated by Vitruvius. Nevertheless, the circumstances related here are probably an indication of the ideas which the Classical architects associated with the third order of columns. Although this pillar is called Corinthian it might appropriately be called Æolic, and represent the third division of the Greek race, since the names Doric and Ionic were given to the preceding orders.

### Assyria and Athens.

Stone, if not in great quantities, was accessible to the builders of Nineveh; nevertheless they built in brick, for their architecture, like all their art, had its origin in Chaldea—that is, in a country where there was no stone, but where, on the other hand, clay abounded for the making of bricks and tiles. Meanwhile the broad and empty surfaces of their buildings, surfaces almost wholly unrelieved by mouldings—for this form of enrichment did not, with such a material, readily suggest itself in so early a stage of art—required profuse adornment to satisfy Assyrian love of splendour and to be worthy of Chaldean tradition. Here stone found its opportunity, and soon colossal monsters, human-headed, but limbed like a bull and winged—types of strength and wisdom—took post at gateways and approaches, whilst long lines of sculptured frieze ran, level with the eye, along the interminable walls. To this enrichment of the ground line of their palaces the use of stone by the Assyrians was limited; above this line another mode of adornment was chiefly used, namely, a casing of glazed and coloured tiles, wherein you see the origin of that marvellous decoration which to this day in the same regions throws its enchantment over fields of wall-space hardly less flat and free from moulded features. For internal embellishment and for detached structural supports Assyria had wood and metal, a combination indeed which lies at the origin of all decorated columnar forms; of such piers or columns material evidence no longer exists, except it be in charred fragments, but other reasons besides structural requirements would suffice to convince us that they had existed. In the first place, as is acutely argued by Mr. Fergusson, it is no doubt of these supports that we see the reproduction in stone in the wholly borrowed art of Persia; secondly, their use in tents and aedicules, and as a decorative feature of windows practically involves their application to a more important function; and lastly, the deep influence on the Ionic art of this amongst many Assyrian forms implies in itself



its large and general use. Thus this architectural feature, which attains its highest beauty of abstract form in the porch of the Erechtheum, has for its first rude ancestor a cedar pole and a curl or two of copper.

#### The Fine Arts Commission.

On November 22, 1841, was issued the Royal Commission of Fine Arts, a preparatory step to which was the appointment of a committee, one of the last acts of the session, to take into consideration the promotion of the fine arts in this country in connection with the rebuilding of the new Houses of Parliament. It was the first recognition on the part of any government in this country that historical painting ever existed here. Mr. Barry, the architect, Mr. Eastlake, Sir Martin Archer Shee and other witnesses gave evidence in favour of the employment of painting, and consequently the royal commission was appointed at St. James's Palace, and dated November 22, 1841, naming as commissioners His Royal Highness Prince Albert, Lord Lyndhurst, the Duke of Sutherland, Marquis of Lansdowne, Lord Lincoln, Earl of Aberdeen, Lord John Russell, Lord Francis Egerton, Lord Palmerston, Lord Melbourne, Lord Ashburton, Lord Colburn, Charles Shaw Lefevre, Sir Robert Peel, Sir James Graham, Sir Robert Inglis, Henry Gally Knight, Benjamin Hawes, Henry Hallam, Samuel Rogers, George Vivian and Thomas Wyse, to which list of commissioners Mr. Eastlake, R.A., was appointed secretary by Her Majesty. The terms of the commission were for its members to "inquire whether advantage might not be taken of the rebuilding of our palace at Westminster, wherein our Parliament is wont to assemble, for the purpose of promoting and encouraging the fine arts in our United Kingdom, and in what manner an object of so much importance could be most effectually promoted," and commanding that any five or more may form a quorum with power and authority to summon and examine any witnesses likely to afford information upon the subject of the commission. The exhibition of the cartoons was opened on July 3, 1843. The sum of 2,000*l.* was voted for the encouragement of art and divided amongst eleven artists; a large sum was raised by the shillings taken at the doors, the attraction being works contributed by a great number of artists at an enormous collective outlay of time and money. Had such a great step to ascertain the state of historical talent been taken in France, the Louvre would have been thrown open free to the public, and any premiums awarded charged upon the national expenses. So rigidly were the shillings exacted at the pay-door of Westminster Hall that the artists themselves, whose works were the point of attraction, had to pay every time they entered the hall until the "free" time had arrived, and had not even a catalogue presented to them. The sum voted by Parliament was distributed in three prizes of 300*l.* each to Messrs. Armistage, Watts and Cope, three prizes of 200*l.* each to Messrs. Horsley, Bell and Townsend, and five prizes of 100*l.* each to Messrs. Parris, Severn, Bridges, Frost and Selous. Some compunctious visitings, however, induced the commissioners of fine arts to distribute 1,000*l.* more out of the proceeds of the exhibition, and accordingly ten cartoons were selected as worthy of reward; those were by Messrs. Pickersgill, Corbould, Howard, R.A., W. C. Thomas, Stephanoff, Claxton, F. Howard, Rippin-gille, J. C. Waller and Sir W. C. Ross, R.A.

#### EDINBURGH ARCHITECTURAL ASSOCIATION.

THE members of the Edinburgh Architectural Association visited on Saturday last the Broch of Tappoch, situated on the summit of the Torwood, about three miles north of Larbert. It is one of the few existing in the south, their chief locality being the four northern counties of Scotland, where they exist in some hundreds, while in the southern counties there are only about six or eight. The Tappoch is one of the strongest of the brochs, having walls about 22 feet thick, and an external diameter of about 80 feet, and its ground floor is absolutely of solid masonry, while it was surrounded by two strong walls, of which considerable remains still exist. All knowledge of this ancient structure was lost till about forty years ago, when its ruins, then a grassy mound, were explored and laid open to view. The period of the erection of the brochs has been assigned to the four or five centuries following the withdrawal of the Roman troops from Britain. After spending nearly an hour at the Tappoch, the party proceeded across the fields to visit the ancient castle of Torwoodhead, built by the Baillies, descended from the Baillies of Castle Cary in 1566, as is shown by the figures on a finely-carved stone found in one of the field dykes. The castle is a very pleasing example of the kind of house erected by a Scottish laird four or five centuries ago, and would even yet, with a few alterations and improvements, make a most charming residence.

Professor William M. Flinders Petrie has been recommended by the Council of the Royal Society for election as a Fellow.

#### GENERAL.

The Postmaster-General has appointed Mr. M. and Major W. A. J. O'Meara, C.M.G., R.E., to be engineers-in-chief to the Post Office.

The Earl of Camperdown has been appointed of the joint committee of the House of Lords and the Commons on the question of the Housing of the Classes. The members will meet to-day (Friday).

M. Pierre Jamier, the Belgian architect, Brussels on the 10th ult. He was born in 1825. He has been engaged in the restoration of the Hôtel de Ville and the Maison de la Ville, and other works in that city.

Mr. J. C. Mansel-Pleydell died on Saturday last, eighty-fourth year. He was the president of the Antiquarian Field Club, and was an authority on the existing in the county.

Sir John Aird has had a tablet fixed to the 18 Howley Place, Maida Vale, in memory of Henry the composer. The tablet, specially manufactured by Doulton & Sons, bears the inscription:—"Henry the Composer, lived here. Born December 24, 1813. Died December 7, 1900. 1902."

Mr. A. G. Temple, the director of the Guildhall Art Gallery, states that last year during the 262 days that the gallery was open it was visited by 369,599 persons, that total in the 305,000 persons who visited the art loan exhibition of Spanish painters.

The Bognor Urban Council have accepted the tender of the Victoria Stone Company for supplying and laying paving in Richmond Road and Lyon Street West.

The Forty-Second Annual Dinner of King's College, London, will be held at the Monico on Monday, June 8th. The chair will be occupied by the Right Hon. and Right Rev. Lord Bishop of London.

Mr. A. Gilbert, R.A., has had a suite of rooms at the Tower of London assigned to him to be used during the time when he is engaged on his statue of the Queen.

A Collection of mezzotint portraits of the eighteenth and early nineteenth centuries is on exhibition in the Gallery of the Burlington Fine Arts Club.

M. Delattre has discovered on the site of Carthage the depth of about 26 feet, a sarcophagus of white marble with sculpture and paintings. A figure of a woman is seated in high relief; her hair is gilded, the eyes are of enamel, and she wears a necklace of fine form.

The Bournemouth Town Council have authorized a committee to report on the erection of a pavilion at the end of the pier, the cost not to exceed 30,000*l.* exclusive of furnishings.

Slindon, in Sussex, is a picturesque village although a few miles from the sea-coast, was once mainly by smugglers. In spite of its attractions, not a single house has been erected in the village for a quarter of a century.

Messrs. George Munday & Sons have obtained a lease from the Court of Common Council to erect a new chill-rooms and other buildings at the Foreign Market, Deptford, for 21,056*l.*

Dr. Rudolf Herzog, Professor Vosseler and Herr H. H. about to visit the island of Cos, in the Grecian Archipelago, in order to undertake excavations which are expected to yield important archaeological discoveries.

The Fifth Art Exhibition of Venice will be opened on April 1, 1903. A sum of 100,000 francs has been assigned for official purchases intended for the International Modern Art Gallery. Gold medals will be awarded for the finest works.

The Princess Mathilde has presented to the Bibliothèque Nationale, Paris, an album containing eighteen water-colour drawings, portraits and studies of her own production.

Mr. Akers-Douglas has stated in the House of Commons that in the widening of Piccadilly sixteen trees were cut down of which eight were in a decaying condition. Forty-eight trees, on the other hand, have been planted either in the Park or on the footways. The expenditure on the work, 8,500*l.*, is borne by the London County Council. Within the park the Office of Works has spent rather over 10,000*l.*

The Prix Fould, of 5,000 francs, for the best work of history of art up to the end of the sixteenth century, has been awarded by the Académie Française to M. Durand for his monograph on Notre-Dame Cathedral, Amiens.

At the General Meeting of the Surveyors' Institution it was decided that the question relating to the title "chartered surveyor" remain in abeyance until steps had been taken for ascertaining, by means of a circular letter, the views of members throughout the country. The next ordinary meeting will be held at the Guildhall, Cambridge, on Thursday, May 22, and the annual general meeting in London on May 29.



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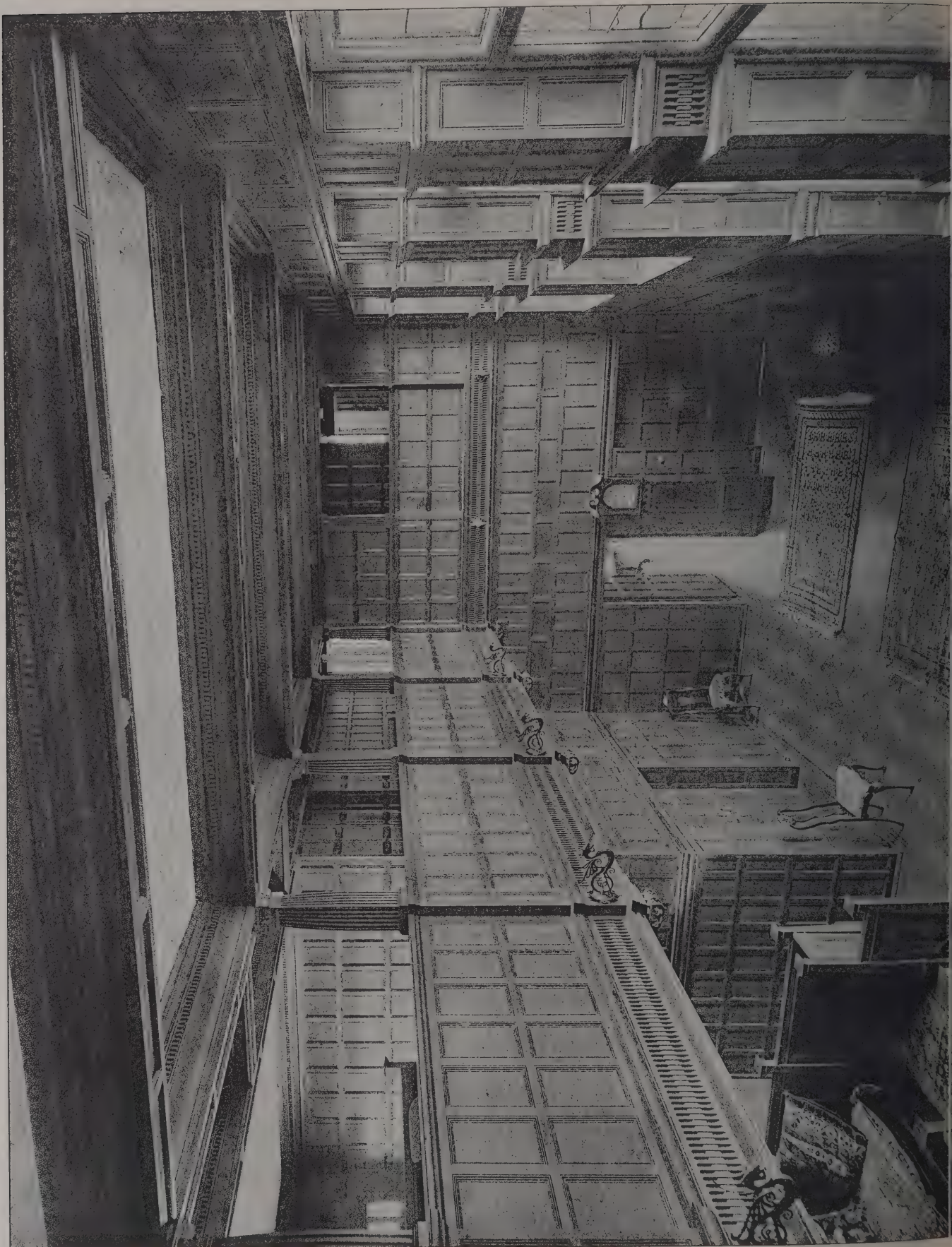




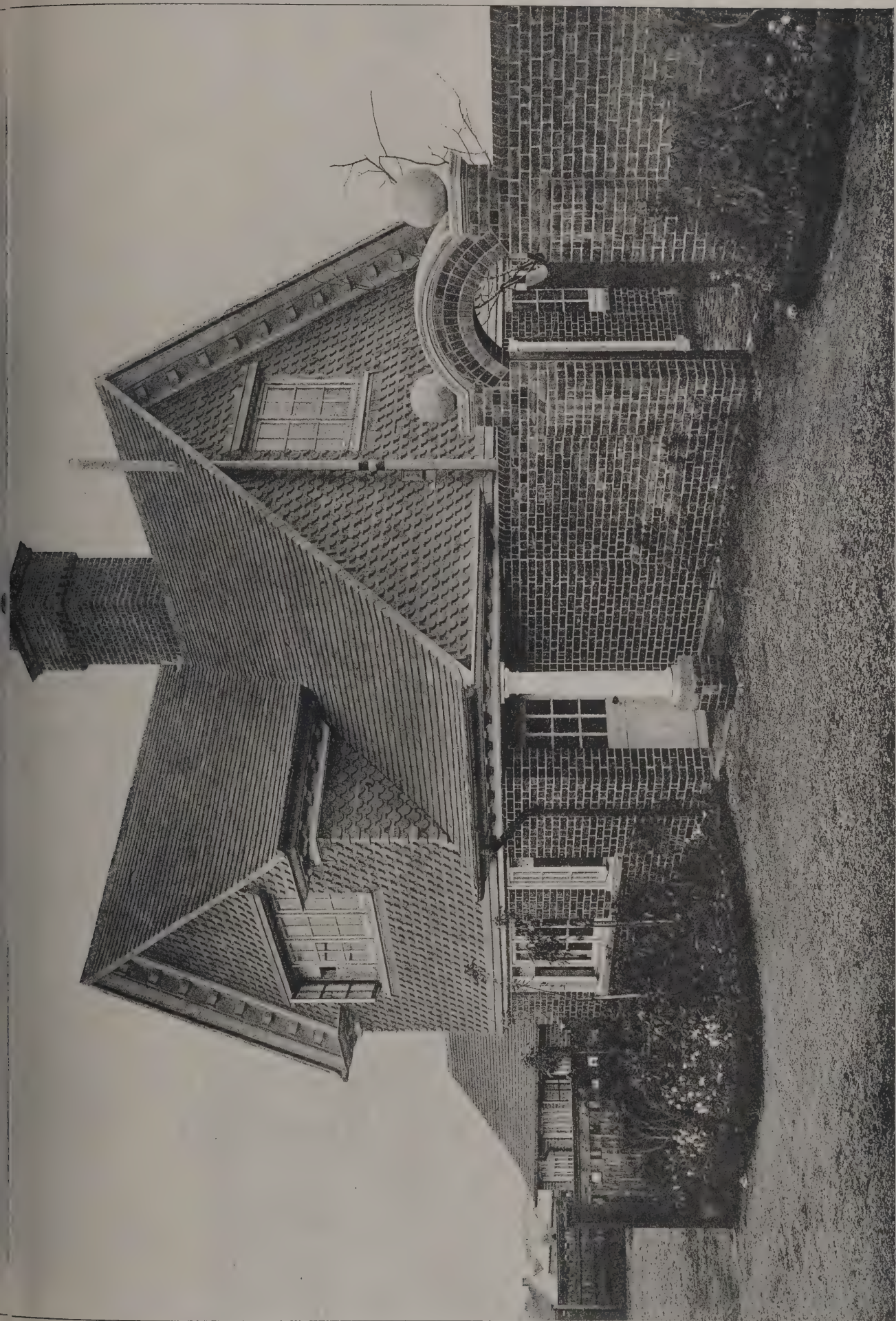
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The Architect, May 9<sup>th</sup> 1902.







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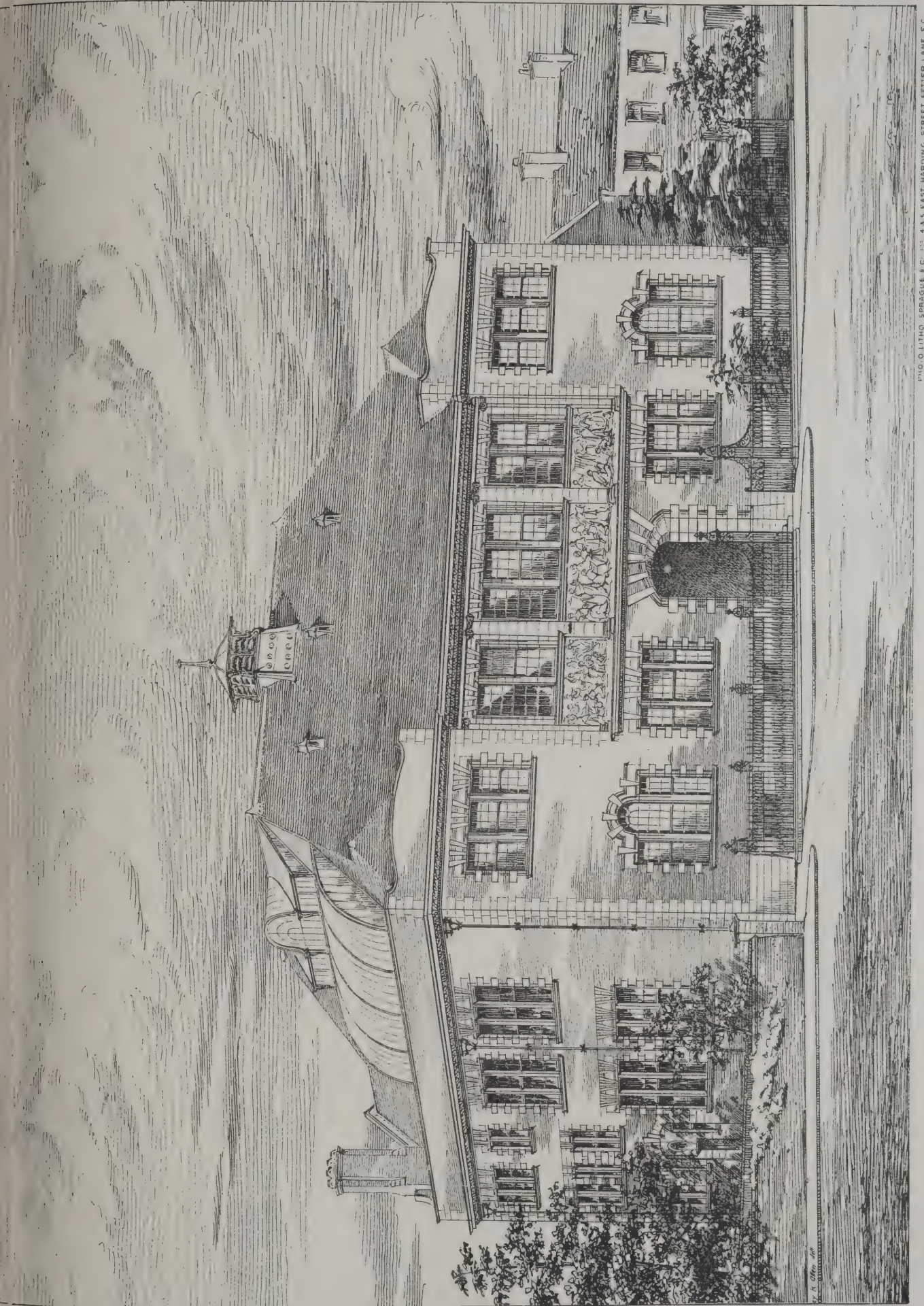
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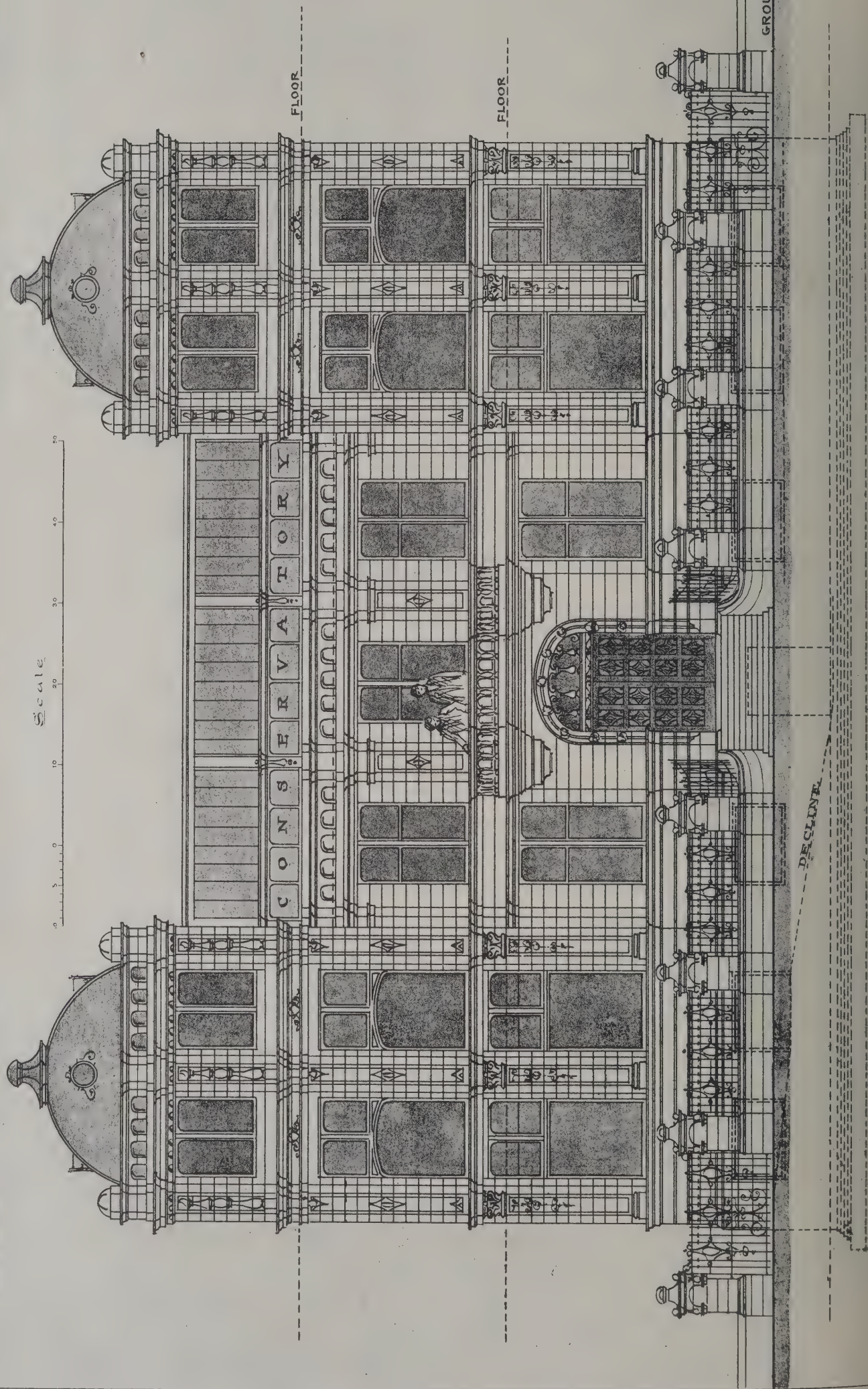
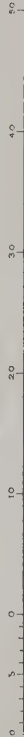






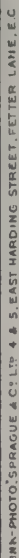
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THE

# Architect and Contract Reporter.

## EDITORIAL NOTICES.

*view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**REWE.**—June 12.—Designs are invited for new municipal and council chamber. The author of the design which is judged best will receive a premium of 50*l.*, and he will be invited to carry out the design; second premium, 25*l.* Particulars will be supplied by the Borough Surveyor, Municipal Buildings, Crewe.

**HARROGATE.**—May 14.—Designs required for a new town hall. Premiums, 150*l.*, 100*l.* and 75*l.* Mr. F. Bagshaw, Municipal Engineer, Harrogate.

**HARTSHILL.**—June 16.—The committee of the North Warwickshire infirmary and eye hospital, Hartshill, Stoke-upon-Avon, invite designs for a home for nurses at Hartshill, Stoke-upon-Avon. Particulars may be obtained on application to Mr. E. Boyce, secretary and house governor.

**KNARESBOROUGH.**—June 1.—The Harrogate and Knaresborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital

at Thistle Hill, Knaresborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**TOTTENHAM.**—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith clerk, School Board Offices, West Hartlepool.

## CONTRACTS OPEN.

**AUDENSHAW.**—For flooring St. Stephen's school, Audenshaw, Lancs, with 1½ inch pitch-pine tongued and grooved boards. Apply to the Vicar, Audenshaw.

**AUDENSHAW.**—For erection of a works chimney at Audenshaw, Lancs. Messrs. J. H. Burton & J. A. Percival, architects, 150A Stamford Street, Ashton-under-Lyne.

**AXBRIDGE.**—May 26.—For erection of an infirmary (about 60 beds) adjoining the workhouse, Axbridge, Somerset. Mr. A. Powell, engineer, 3 Unity Street, College Green, Bristol.

**BARROW-IN-FURNESS.**—May 12.—For erection of a fish market. Particulars will be supplied by the Borough Surveyor.

**BEDALE.**—May 17.—For erection of two semi-detached villas at Bedale, Yorks. Mr. H. G. E. Merrin, South End, Bedale.

**BELFAST.**—May 12.—For supply of one Otto-Crossley high-speed gas-engine of 41 effective horse-power working load, with coal gas, including water vessels and all piping, and to be fixed complete; and one four-pole dynamo, with regulating resistance in shunt winding, giving an output of 420 amperes at 65 volts, complete with slide rails, delivered and fixed on foundations put in by the company, for the Great Northern Railway Company (Ireland). Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

**BEVERLEY.**—May 21.—For erection of a pavilion for 120 patients and for alterations and additions to the administrative department of the East Riding lunatic asylum. Mr. C. H. Hebblethwaite, architect, 10 Waterhouse Street, Halifax.

**BIRKENSHAW.**—May 14.—For erection of stabling and two cottages at Birkenshaw, Yorks. Messrs. Walker & Collinson, architects, Swan Arcade, Bradford.

**BIRMINGHAM.**—May 14.—For erection of flats at Potter Street and Staniforth Street. Mr. John Price, city surveyor, Council House, Birmingham.

**BIRMINGHAM.**—May 15.—For erection of a block for the female merit class at the Birmingham workhouse. Mr. W. H. Ward, architect, Paradise Street, Birmingham.

**BISHOP'S STORTFORD.**—May 12.—For erection of additional buildings at the Bishop's Stortford Urban District Council offices. Mr. Thos. Swatheridge, clerk, Urban District Council, North Street, Bishop's Stortford.

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**BLACKBURN.**—May 14.—For repairing the large chimney shaft at the workhouse. Mr. F. C. Ruddle, architect, Union Offices, Cardwell Place, Blackburn.

**BOCONNOC.**—May 20.—For additions at the school, Boconnoc, Cornwall. Mr. W. Pease, solicitor, Lostwithiel.

**BOSTON.**—June 2.—For additions and alterations to the isolated ward at the fever hospital in Skirbeck, Lincs. Mr. Jas. Rowell, architect, Borough Offices, Boston.

**BRADFORD.**—May 12.—For alterations to infants' entrance and conveniences at Woodroyd Board school, West Bowling, and for taking-down and rebuilding the boundary walls to playgrounds at the Horton Bank Top Board school. All particulars can be obtained from the architect, at the School Board office, Manor Row, Bradford.

**BRENTWOOD.**—May 15.—For erection of twenty-nine cottages for workmen's dwellings at Brentwood, Essex. Mr. C. Edgar Lewis, Town Hall, Brentwood.

**BRENTWOOD.**—May 31.—For underpinning a portion of the chapel at the Essex County lunatic asylum. Mr. Frank Whitmore, architect, 17 Duke Street, Chelmsford.

**BRIDLINGTON.**—May 15.—For erection of a residence. Mr. J. Earnshaw, architect, Carlton House, Bridlington.

**BRIGHTON.**—May 12.—For erection of a boundary wall and extensions to the Corporation tramways car sheds, Lewes Road. Mr. Francis J. Tillstone, town clerk, Town Hall, Brighton.

**BRISTOL.**—May 14.—For alterations and additions to factory, Avon Vale Road, St. George. Mr. Henry Williams, architect, Imperial Chambers, Corn Street, Bristol.

**BURNLEY.**—May 12.—For erection of a Primitive Methodist church and schools, Padiham Road, Burnley. Mr. John B. Thornley, architect, 45 Market Street, Darwen.

**CANNOCK.**—May 26.—For alterations and enlargement to Rawnsley schools, Cannock, Staffs. Messrs. Bailey & McConnal, architects, Bridge Street, Walsall.

**CARLISLE.**—For erection of a lodge at the House of Recovery, Carlisle. Messrs. Oliver & Dodgshun, architects, Carlisle.

**CHARMINSTER.**—May 22.—For erection of a house for private patients on land adjoining the county asylum, near Charminster, Dorset. Mr. George T. Hine, architect, 35 Parliament Street, S W.

**CHELTENHAM.**—May 20.—For erection of a chalet at Essex Lodge entrance to Pittville Park. Mr. E. T. Brydgeton clerk, Municipal Offices, Cheltenham.

**CORNWALL.**—May 20.—For erection of a Wesleyan Sunday school at Lanner, near Redruth. Mr. H. W. Collins, architect, Walreddon, Redruth.

**COVENTRY.**—May 14.—For rebuilding the Salutation in London Road. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry.

**COVENTRY.**—May 15.—For construction and laying removable floor in the gentlemen's first-class swimming-bath the public baths, Priory Street. Mr. J. E. Swindlehurst, surveyor, St. Mary's Hall.

**DARLINGTON.**—May 21.—For construction of a three-gasholder, 140 feet diameter, in the vicinity of the gasworks. Mr. Hy. G. Steavenson, town clerk, Houndgate, Darlington.

**DEWSBURY.**—For erection of car-shed and offices, &c., Savile Town, near Dewsbury. Particulars will be supplied by the Chief Engineer, British Electric Traction Company Limited, 1 Adelphi Terrace.

**DEWSBURY.**—May 12.—For supply and erection of traction switchboard. Mr. R. H. Campion, borough electrical engineer, Bradford Road, Dewsbury.

**DONCASTER.**—For erection of stores, stabling, outbuilding in Sepulchre Gate. Mr. I. R. Dodds, civil engineer, 19 Bax Gate, Doncaster.

**EGREMONT.**—May 14.—For erection of three houses The Villas, Egremont, Cumberland. Mr. J. S. Stout, 36 Lowther Street, Whitehaven.

**EGREMONT.**—May 14.—For erection of a caretaker's house at the Wesleyan chapel, Egremont, Cumberland. Mr. J. Stout, 36 Lowther Street, Whitehaven.

**EXWICK.**—May 16.—For erection of three houses Exwick, Exeter. Messrs. E. H. Harbottle & Sons, architects, County Chambers, Exeter.

**GIRLINGTON.**—For extensions to club premises, Girlington, Yorks. Mr. John Jackson, architect, Barry Street, Bradford.

**GREENWICH.**—May 16.—For alterations and decorative repairs at the lecture hall, Royal Hill, Greenwich. Mr. Frank S. Robinson, town clerk, Town Hall, Greenwich.

**HALIFAX.**—For erection of Palace theatre, Halifax. Messrs. Richard Horsfall & Son, architects, Commercial Street, Halifax.

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**HARROGATE.**—For erection of a pair of semi-detached houses, Harlow Oval, Harrogate. Messrs. Bland & Bown, architects, Harrogate.

**HEREFORD.**—For alterations and additions to the Herefordshire and District Industrial Working Boys' Home, Bath Street. Messrs. James Brooks, Son & Godsell, architects, Face Chambers, Hereford.

**HORLEY.**—May 17.—For erection of a gatehouse, lodge and four cottages at Farmfield, near Horley, Surrey. Particulars may be obtained at the General Section of the Architect's Department, County Hall, Spring Gardens, S.W.

**HUDDERSFIELD.**—May 15.—For erection of a ready-made clothing establishment in Fitzwilliam Street. Messrs. John Kirk & Sons, architects, Huddersfield.

**HULL.**—May 12.—For alterations and additions at the warehouse, Beverley Road, Hull. Mr. T. Beecroft Atkinson, architect, 11 Trinity House Lane, Hull.

**IRELAND.**—May 12.—For erection of twenty-seven labourers' cottages, in three contracts, in the town of Carlow. Mr. James Kelly, town clerk, Town Hall, Carlow.

**IRELAND.**—May 14.—For alterations at Tinahask school, Carlow. Mr. Henry Annesley, 29 Main Street, Arklow.

**IRELAND.**—May 17.—For erection of a temperance hall at Doleer (masonry and brickwork only). Mr. John F. McGahon, architect, Dundalk.

**IRELAND.**—May 19.—For erection of a villa at Donaghadee. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

**IRELAND.**—May 19.—For erection of two houses at Ballymormon, Donaghadee. Mr. William J. Fennell, architect, Wellington Place, Belfast.

**IRELAND.**—May 19.—For erection of additional lecture-rooms at the Marlborough Street Training College, Dublin. Mr. J. F. Fuller, architect, 179 Great Brunswick Street, Dublin.

**JARROW.**—May 14.—For pulling-down and rebuilding municipal buildings, Grange Road, Jarrow. Mr. Fred. Reynolds, architect, 37 King Street, South Shields.

**KEIGHLEY.**—May 19.—For erection of a laundry, dwelling-house and stabling at Riddlesden, Keighley. Mr. Henry Smith, architect, Compton Buildings, Keighley.

**KING'S LYNN.**—For stripping roof of north aisle of St. Michael's Church and re-roofing same. Mr. Louis F. Eagleton, architect, Bank Chambers, King's Lynn.

**KINGSTON-UPON-THAMES.**—May 13.—For erection of a dust-destructor. Particulars on application to the Borough Surveyor, Clattern House, Kingston-upon-Thames.

**LEEDS.**—For erection of a clothing factory, Ingram Road, Leeds. Messrs. Oliver & Dodgshun, 14 Park Square, Leeds.

**LEEDS.**—For erection of the superstructure of warehouse in Wellington Street, Leeds. Messrs. W. Evan Jones, Perkin & Bulmer, architects, 7 Cookridge Street, Leeds.

**LEEDS.**—May 22.—For erection of baths and library fronting to York Road and All Saints Place, for the Corporation. Mr. H. Ascough Chapman, architect, Prudential Buildings, Park Row, Leeds.

**LONDON.**—May 22.—For renewing the floor of Brewer ward and offices attached at the South-Western Fever Hospital. Particulars on application to the Metropolitan Asylums Board, Embankment, E.C.

**LOWESTOFT.**—May 23.—For erection of boys and girls and infants' schools, Beckham Road, Roman Hill, to accommodate 800 children. Mr. R. Beattie-Nicholson, clerk to School Board, Lowestoft.

**MANCHESTER.**—May 12.—For erection of an electricity sub-station at Cheetham Hill, Manchester. Specifications, bills of quantities, &c., at the office of the City Surveyor, Town Hall, Manchester.

**MANCHESTER.**—May 12.—For providing and fixing circular-backed urinal stalls at underground lavatory for males, New Cross, and underground urinals, Clopton Street and Warde Street, Hulme. Apply for particulars to the City Surveyor, Town Hall, Manchester.

**MANCHESTER.**—May 12.—For erection of an electricity sub-station at Harpurhey. Specifications and bills of quantities may be obtained at the office of the City Surveyor, Town Hall, Manchester.

**MANCHESTER.**—May 12.—For erection of an electricity sub-station at Openshaw. Specifications and bills of quantities may be obtained at the office of the City Surveyor, Town Hall, Manchester.

**MANCHESTER.**—May 14.—For pointing stonework, &c., making good to roof and other works at Victoria Buildings. Particulars may be obtained at the City Surveyor's office, Town Hall, Manchester.

**MANCHESTER.**—May 17.—For erection of public baths at Old Trafford. Mr. E. Woodhouse, architect, 88 Mosley Street, Manchester.

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MANCHESTER.—May 27.—For erection of public baths at Old Trafford. Mr. E. Wodehouse, architect, 88 Mosley Street, Manchester.

NELSON.—May 21.—For erection of a galvanised iron car-shed. Mr. J. H. Baldwick, town clerk, Town Hall, Nelson, Lancs.

NORMANTON.—May 12.—For erection of two dwelling-houses in Castleford Road, Normanton, Yorks. Mr. Arthur Hartley, architect, County Chambers, Castleford.

NEWTON ST. CYRES.—May 13.—For erection of a dwelling-house at Ford farm, Newton St. Cyres, Devon. Messrs. Ellis, Son & Bowden, surveyors, Bedford Chambers, Exeter.

PADIHAM.—May 14.—For erection of a court house at Padiham, Lancashire. Mr. Henry Littler, architect, County Offices, Preston.

PONTYPOOL ROAD.—May 13.—For construction of a new transfer shed at Pontypool Road, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

PRESTON.—May 13.—For widening the following bridges in the neighbourhood of Leigh, Atherton and Hindley, in connection with the construction of the South Lancashire Tramway Company's lines:—Bosdane Bridge, Hindley; Bowker's Bridge, Leigh; Small Brook Bridge, Leigh and Atherton; Hindsford Bridge, Tyldesley; Howe Bridge, Atherton; Pennington Mill Bridge, Leigh. Particulars to be obtained at the County Bridgmaster's Office, Preston.

ROCHDALE.—For erection of thirteen houses. Mr. T. Dewhurst, 13 Mark Street, Heybrook, Rochdale.

ROCHDALE.—For alterations to the pavilion at the Rochdale Bowling club. Messrs. S. Butterworth & Duncan, architects, Rochdale.

SALISBURY.—For erection of a residence at Fordingbridge. Mr. Fred Bath, architect, Salisbury.

SCOTLAND.—May 14.—For erection of a dwelling-house at Cathcart Net Factory, Buckie. Messrs. W. Marshall & Co., architects, Buckie.

SCOTLAND.—May 15.—For erection of an electric-light station at Park Foot. Mr. David Ronald, engineer, Burgh Chambers, Falkirk.

STOCKPORT.—May 12.—For erection of glasshouses, &c., at Vernon Park. Drawings, details and specification, &c., may

be inspected at the Borough Surveyor's office, St. Petersburg Stockport.

ST. PANCRAS.—May 13.—For erection of buildings King's Road power station and northern and southern substations. Mr. C. H. F. Barrett, town clerk, Town Hall, Pancras Road, London, N.W.

SHOTTON COLLIERY.—May 17.—For erection of a large number of colliery houses at Shotton Colliery, Durham. Particulars on application at the Colliery Office, Catterick, Eder, R.S.O.

TIPTON.—May 15.—For erection of a greenhouse and propagating pit, with heating apparatus, and the construction of a tool-house, stable and cart-shedding at the Victoria Park. Mr. John W. Waring, Public Offices, Owen Street, Tipton.

TONBRIDGE.—For erection of a school hall and classroom at Fosse Bank Ladies' school, Tonbridge, Kent. Mr. John W. Little, architect, 149 High Street, Tonbridge.

WALES.—For erection of a car-shed and offices, &c., Wrexham. The Chief Engineer, British Electric Company Ltd., 1 Adelphi Terrace, W.C.

WALES.—June 9.—For erection of a higher elementary school at Pentre, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

WALES.—May 12.—For erection of Board school, offices and boundary walls in the parish of Llanbedrog, Anglesey. Mr. Jos. Owen, architect, Menai Bridge.

WALES.—May 13.—For erection of a school at Mynydd cerig, Llanddarog. Mr. David Jenkins, architect, Llandilo.

WALES.—May 13.—For alterations and additions Calvinistic Methodist chapel, Cemlyn, near Amlwch. Mr. J. Owen, architect, Menai Bridge.

WALES.—May 14.—For rebuilding the Harp inn and dwelling-houses at Skewen. Mr. J. Cook Rees, architect, Neath.

WALES.—May 15.—For erection of a chapel at Blaengarw. Mr. Hargest, Strand, Blaengarw.

WALES.—May 15.—For erection of two houses at Abertidwr. Mr. Thomas Jones, 147 Trehafod Road, Haf Pontnydd.

WALES.—May 16.—For erection of a house and shop Well Street, Cefn. Mr. Jno. W. Hughes, architect, Dee House, Llangollen.

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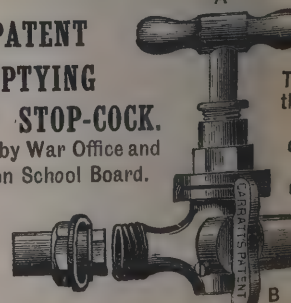
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WALES.—May 20.—For erection of workmen's institute at Nysybwll. Mr. J. Rees, architect, Pentre.

WALES.—May 21.—For erection of vestry, classrooms, organ loft and extension to Jerusalem chapel, Resolven. Mr. Cook Rees, architect, Neath.

WALES.—May 24.—For altering and enlarging Junction Hotel, Bargoed. Mr. A. O. Evans, architect, Pontypridd.

WALES.—May 22.—For alterations and improvements to the Portmadoc Market Hall. Mr. Jno. Jones, clerk to Urban District Council, 20 Bank Place, Portmadoc.

WALES.—May 29.—For erection of fifty-three cottages at Llanerby. Mr. P. Vivian Jones, architect, Hengoed.

WALSALL.—May 12.—For alterations and additions to present schools, Bath Street, Walsall. Messrs. Bailey & Connal, architects, Bridge Street, Walsall.

WALTHAMSTOW.—May 26.—For alterations and erection of new classrooms and cloakrooms in the boys and girls' department of the Higham Hill schools. Mr. T. W. Liddiard, Clerk, School Board Offices, High Street, Walthamstow.

WEST HAM.—May 13.—For the construction of eight transformer chambers. Mr. Fred. E. Hilleary, town clerk, Town Hall, West Ham.

WEST HARTLEPOOL.—May 29.—For erection of hospital buildings in Serpentine Road, West Hartlepool. Messrs. Pye & Bacon, architects, 16 John Street, Bedford Row, W.C.

WHITEY.—May 22.—For erection of dwelling, for signal-house, &c., near Whitby, Yorkshire. Messrs. Corderoy, Selby & Corderoy, 21 Queen Anne's Gate, Westminster, S.W.

WHITWOOD.—May 12.—For erection of a dwelling-house at Whitwood, Yorks. Mr. Arthur Hartley, architect, County Chambers, Castleford.

WINCHESTER.—May 27.—For erection of conveniences in Abbey grounds. Mr. Walter Bailey, town clerk, Guildhall, Winchester.

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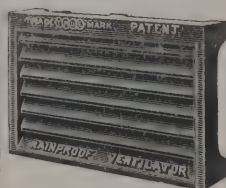
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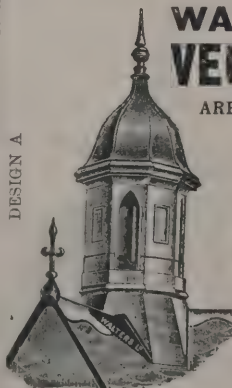


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F. J. Gates	828	0	0
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Lovell & Sons	780	0	0
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Turner & Co.	770	0	0

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C. J. Liddel.	168	9	0
J. Bell	145	6	6
J. Nixon	125	0	0
J. Hodgson.	123	12	10
J. H. REED, Edward Street, Carlisle (accepted)	123	0	0

*Plumber.*

W. H. Carlyle	48	0	0
W. ANDERSON, West Walls, Carlisle (accepted).	45	0	0

*Slater.*

J. Hewitson.	29	0	0
Whitfield	27	0	0
C. J. NANSON, Chiswick Street, Carlisle (accepted)	24	0	0

*Plasterer.*

W. Gannon.	46	5	0
J. Gannon	42	10	0
R. ORMEROD, Close Street, Carlisle (accepted)	39	0	0

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For erection of a block of six cottages, including drainage, paving and fencing, &c., Cheam, Surrey. Messrs. BARRETT & DRIVER, architects, 53 Blomfield Road, Maida Vale, W.

W. MARTIN, Croydon (accepted)	£1,120	0	0
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For reconstruction of Charvill Bridge. Mr. JOSEPH MORRIS, county surveyor, 156 Friar Street, Reading, Berks.

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W. Craig	423	11	0
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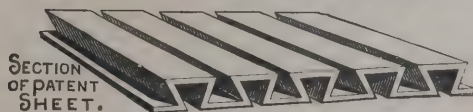
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Crittall & Co.	313	0	0
Beaven & Sons	279	15	0
Paragon Heating Co.	279	0	0
Joel & Potter United, Ltd.	260	0	0
Dawson & Co, Ltd.	260	0	0
J. & F. May	216	0	0
Werner, Pfeiderer & Perkins, Ltd.	214	18	6
WATFORD ENGINEERING WORKS, Watford (accepted)	188	0	0

## LONDON.

For providing low-pressure hot-water heating apparatus water supplies and disinfector at the new casual ward Little Gray's Inn Lane, W.C.

E. E. Pither	£2,265
Dargue, Griffiths & Co.	1,327
J. Esson	1,307
Wolff Dryer Co.	1,300
Slater & Owen	1,278
M. Duffield & Sons	1,204
W. J. Burroughes & Sons	1,120
J. & F. May	1,102
Joel & Potter	1,092
Comyn Ching & Co.	1,082
Herring & Son	1,080
W. Freer	1,035
Werner, Pfeiderer & Perkins	1,020
Wenham & Waters	1,015
Z. D. Berry & Sons	997
BRIGHTSIDE FOUNDRY & ENGINEERING CO., LTD., 28 Victoria Street, S.W. (accepted)	939

## NORFOLK.

For erection of a mortuary chapel, Scottow.

Hook & Sons	£130
W. Laycock	112
R. C. Watts	101
A. J. KEMP, Swanton Abbott (accepted)	99
E. Norgate	99
F. & W. Appleton	68

## NOTTINGHAM.

For erection of villa residence at Plumtree. Mr. F. PARKIN, architect, Prudential Buildings, Nottingham.

J. Walker	£940
J. Brown	920
J. Hutchinson & Son	900
W. Perkins	890
W. Maule	869
T. CUTHBERT, Nottingham (accepted)	868

## ROCHDALE.

For painters' work in Broadfield Park and Slopes.

HILL &amp; THACKWRAY, Tatham Street (accepted).

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ORPINGTON.

alterations and additions to private residence, Orpington, Kent. Mr. G. ST. PIERRE HARRIS, architect, 8 Ironmonger Lane, E.C. Quantities by Messrs. STANGER & SON.

ebbing & Pannett . . . . .	£1,293	10	0
Garrett & Sons . . . . .	1,205	0	0
Knight . . . . .	1,038	0	0
Somerford & Son . . . . .	986	10	0
A. Lowe . . . . .	974	0	0
D. GRATY (accepted with modifications) . . . . .	922	0	0

PADDINGTON.

supply of wood blocks for general repairs for the borough of Paddington during the next three months.

	5-inch blocks per 1,000.	4-inch blocks per 1,000.
Chapman (the Jarrahdale Co.) . . . . .	£13 2 6	—
llar's Karri and Jarrah Forests, Ltd. . . . .	13 1 3	—
me Wood Flooring Co. . . . .	13 0 0	—
H. Palfreman (the Jarrah Timber and Wood Paving Corporation) . . . . .	12 15 0	—
Griffiths & Co. . . . .	12 14 0	£10 12 6
PROVED WOOD PAVEMENT CO. (accepted) . . . . .	12 10 0	10 5 0

supply of 100 seats for the recreation ground of the borough of Paddington.

STWICK GATE AND SHUTTER CO. (accepted) . . . . .	£157 10 0
construction of new road, gates, piers, &c., for the Padding- ton Coroner's Court.	
C. Hamden . . . . .	£198 10 0
Mark (recommended) . . . . .	162 15 0
McCulloch . . . . .	115 0 0
rough surveyor's estimate . . . . .	180 0 0

ST. GEORGE-IN-THE-EAST.

supply of ten sets of bedroom furniture.

MALLIS & Co., Holborn (accepted) . . . . .	£57 0 0
STOKE GABRIEL.	
erection of two cottages at Stoke Gabriel, Devon. Mr. W. F. TOLLIT, architect, 10 High Street, Totnes.	
E. Narracott . . . . .	£417 7 0
COOKSLEY, Brixham (accepted) . . . . .	370 0 0

SCOTLAND.

For erection of a dwelling-house, and additions to and altera-  
tions on the farm offices at Bogheads, South Kilmundy,  
Newmachar.

Accepted tenders.

A. Gibb, Disblair, Summerhill, Aberdeenshire, carpenter . . . . .	£150 12 0
A. Low & Co, Roadside, North Kilmundy, Newmachar, Aberdeenshire, mason . . . . .	83 13 0
S. & W. Christie, Dyce, near Aberdeen, slater . . . . .	51 0 0
J. Stewart & Co., 44 Rosemount Place, Aberdeen, plasterer . . . . .	26 10 0

SHEFFIELD.

For erection of a science and cookery centre and workshops  
in Townhead Street. Messrs. HENSOLL & PATERSON,  
architects, 18 Norfolk Row, Sheffield.

H. BOOT & SON, Moore Street (accepted) . . . . .	£2,830 0 0
--	------------

SUNBURY-ON-THAMES.

For sewerage works in Railway Place, with manholes, &c.  
Mr. HAROLD F. COALES, surveyor.

R. W. Swaker . . . . .	£183 10 0
G. HEBBURN, Hersham, Walton-on-Thames (accepted) . . . . .	181 7 0

SURBITON.

For erection of boundary walls at the lay-by, Balaclava Road.

In cement mortar.

W. & H. Morris . . . . .	£105 0 0
Gaze & Son . . . . .	102 0 0
London & County Builders, Ltd. . . . .	100 0 0
McDonald Bros. . . . .	87 15 0
Lane & Hearley . . . . .	84 0 0

In lime mortar.

W. & H. Morris . . . . .	98 0 0
Scase & Son . . . . .	95 17 9
Gaze & Son . . . . .	93 10 0
London & County Builders, Ltd. . . . .	88 0 0
McDonald Bros. . . . .	84 0 0
LANE & HEARLEY, Surbiton (accepted) . . . . .	78 0 0

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Fungus, Decay, &c.

Solignum

and is a pleasing  
Stain.

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Solicited.

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Estimates Given on Receipt of Particulars.

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Newels, &c.  
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Mill Street Saw Mills, Leeds.

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"PERFECTION SYSTEM"  
PATENT GLAZING  
WORKS: BRIGHOUSE, YORKS.  
LONDON OFFICE: 11 VICTORIA STREET, WESTMINSTER, S.W.



## SYDENHAM HILL.

For alterations and repairs to private residence, Sydenham Hill. Mr. G. ST. PIERRE HARRIS, architect, 8 Ironmonger Lane, E.C.			
J. Bowyer & Co.	£694	0	0
Somerford & Son	674	0	0
J. H. Smith	623	5	0
T. J. MORETON (accepted)	594	0	0

## TENDRING.

For alterations and additions to the workhouse, Tendring, near Colchester. Mr. F. WHITMORE, architect, 17 Duke Street, Chelmsford.			
Kerridge & Shaw	£4,095	5	3
N. Saunders & Son	3,945	0	0
F. Bennett	3,900	0	0
E. West	3,808	0	0
G. Grimwood & Sons	3,692	0	0
H. W. Gladwell	3,599	0	0
A. Suckling	3,478	0	0
F. C. Thurman	3,458	0	0
F. Dupont & Co.	3,375	0	0
J. McKay	3,331	0	0
W. J. Bloxham	3,272	0	0
E. Saunders	3,218	0	0
SMITH & BEAUMONT, Harwich (accepted)	3,208	0	0

## WALES.

For erection of All Saints Church, Windsor Road, Cardiff. Messrs. SEDDON & CARTER, architects, Bank Buildings, St. Mary Street, Cardiff.			
E. Turner & Sons	£2,288	0	0
C. C. Dunn	2,275	0	0
J. Allan	2,247	8	9
S. Shepton & Sons	2,245	0	0
A. Berridge	2,212	0	0
Price Bros.	2,197	0	0
Knox & Wells	2,160	0	0
Cox & Bardo	2,018	0	0
E. R. EVANS BROS., Gwennyth Street (accepted)	1,940	0	0
For erection of a chapel and schoolrooms for Soar Baptist church, Ffrwdamos, Penygraig. Messrs. GRIFFITHS & JONES, architects, Excelsior Buildings, Tonypandy.			
C. JENKINS & SON, Porth, near Pontypridd (accepted)	£4,800	0	0

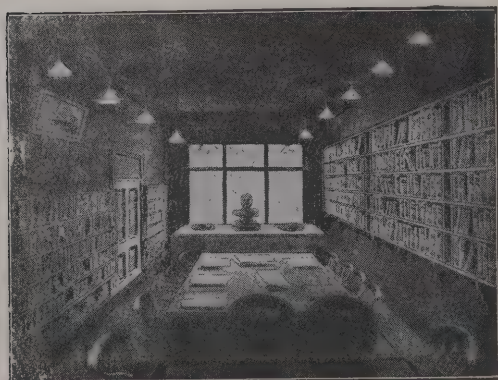
## WALES—continued.

For enlarging St. John's parish church, Canton, Cardiff. GEO. E. HALLIDAY, architect, Cardiff. Quantities by JOHN W. RODGER, 14 High Street, Cardiff.			
Lathey & Co., Ltd.	£2,871	15	
A. W. Cadwallader	2,770	0	
J. Blight	2,705	0	
G. Couzens & Co.	2,700	0	
S. Shepton & Sons	2,675		
F. Couzens	2,590		
C. Beames & Nephew	2,580		
W. T. Morgan	2,445		
C. C. Dunn	2,395		
KNOX & WELLS, Cardiff (accepted)	2,393		
For erection of twenty or more dwelling-houses Maesycwmmwr. Mr. GEORGE KENSHOLE, architect, Station Road, Bargoed.			
E. Williams	£4,000		
H. R. Paul	3,750		
J. & J. Williams	3,590		
W. Ll. Jones	3,560		
J. James & Sons	3,543		
E. Edwards	3,513		
W. Morris	3,485		
W. Williams & Sons	3,440		
J. H. JAMES, Cardiff (accepted)	3,440		
Mills & Co.	3,200		
For erection of a mission-room at Blaina, Mon. Messrs. SEDDON & CARTER, architects, Bank Buildings, St. Mary Street, Cardiff.			
Gaen Bros.	£432	18	
Williams & Sons	419	13	
A. Berridge	395		
M. Jenkins	394		
For taking-down and rebuilding the White Hart hotel, Porthcawl. Mr. A. O. EVANS, architect.			
M. Julian	£2,876		
Williams & James	2,776		
Knox & Wells	2,664		
For decorative work at the Guildhall, Oswestry. Mr. WILLIAM LACEY, borough surveyor.			
F. E. Birch	£93		
G. A. GEORGE, Oswestry (accepted)	88		

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Telephone No 773 King's Cross. Telegraphic Address, "Veneer, London."



WINGATE.

Erection of a Wesleyan Methodist church and school. Mr. H. T. GRADON, architect, Market Place, Durham.

D. D. Hall	£4,000	16	5
Vatt Bros.	2,503	18	6
T. Manners	2,390	0	0
Nicholson & Thistle	2,206	11	8
H. Milburn	2,181	10	0
WRAPER & SONS, Leamside (accepted conditionally)	2,100	0	0
Wade	2,046	0	0

NEW CATALOGUE.

Messrs. P. & R. FLEMING & Co., Argyle Street, Glasgow, be congratulated on the businesslike appearance and lucid nature of their new illustrated catalogue, which, in spite of its multitudinous forms, comprising agricultural implements, gates and grilles of every description, collapsible gates, shutters, boring tools, tree and other guards, girders, benches, garden furniture, stable and farm fittings and utensils, corrugated and other buildings, wind and other machines, &c.

DURESCO, DECORATIVE AND PRESERVATIVE.

Mr. CRICHTON BROWN, in an interesting address delivered on the 24th ult. at the jubilee meeting of the Manchester Sanitary Association, gave a sombre picture of the pall of smoke and soot which is the common environment of cities. His picture was not overdrawn, and if anything can be done to mitigate and obviate the evil, his address will be done good. Apropos of this it occurs to us that it may not be amiss, in view of the general furbishing-up which is going on in the Metropolis in honour of next month's festivities, to remind our readers that "Duresco," which is manufactured by the Silicate Paint Company (J. B. Orr & Co., Ltd.), of Charlton, has a well-deserved reputation as either an invisible or a decorative dressing for the preservation of stone and brick from the deleterious influences to which they are subjected owing to the atmospheric conditions of this and other

large towns. Many buildings are now in process of being scraped, cleaned, pointed and generally rehabilitated, and the result for the time being is eminently satisfactory; but, unfortunately, we know only too well that the improvement is only temporary, and soon the stone or brick has reassumed the grimy tone which we are too much accustomed even to note unless our attention is drawn to it by the contrast afforded by the brightness of an adjacent newly erected building. A dressing of "Duresco," however, has a lasting effect owing to the indurating effect it exercises on the wall to which it is applied, which consequently it renders much less susceptible to the corrosive effects of the acids with which the air is always more or less impregnated.

ROADS AND HOUSING.

THE Hon. A. Stanley, M.P., has placed the following important notice of motion upon the agenda paper of the House of Commons:—"To call attention to the entire suspension of road building activity in England and Wales since the abolition of the Turnpike Acts; to the congestion of traffic and of population in the large towns by reason of the fact that no new trunk roads through and out of them have been constructed for several generations; to the growing difficulty and increasing cost of transporting goods by road and their serious effect upon the industrial efficiency of the nation; and to move that in the opinion of this House immediate steps should be taken to facilitate the construction of new trunk roads, both by private enterprise and public authorities." The Leader of the House of Commons is being approached with a view to the Government granting a public inquiry into the existing system of highway administration, with special reference to its bearing upon the housing and transport questions. The view is gaining ground that "tubes" and trams are more or less expensive and unsatisfactory substitutes for broad trunk thoroughfares. No new main roads out of London, for example, have been built for many generations, although population and traffic have increased many times.

THE conversazione of the Institution of Electrical Engineers will be held in the Natural History Museum on Tuesday, July 1. The Metropolitan District Railway has promised to open the subway from the South Kensington station to the grounds, for the benefit of guests travelling by their line.

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GOLD AND BRONZE MEDAL AWARDS ~ HIGHEST AWARDS AT FIRE TESTS

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**IRON CONSTRUCTION**  
WOOD CONSTRUCTION

**REVER PLASTER ONE COAT**  
SIMPLY AND RAPIDLY ERECTED  
6 ft 8 in - 10



## TRADE NOTES.

OAKLEY GRANGE, Shrewsbury, has been fitted with the latest improved hot-water heating apparatus by Messrs. John King, Limited, engineers, Liverpool, employing their "Rahnee" radiators and "Rex" radiator valves.

MESSRS. MATHER & PLATT, LTD., engineers, of Salford Ironworks, Manchester, have been instructed by the Metropolitan Electric Supply Co. to install a second plant for softening and purifying water by the "Archbutt-Deeley" process for an output of 10,000 gallons per hour. This, with the apparatus installed by them previously, makes a total capacity of 20,000 gallons per hour. They are also instructed by the General Electric Supply Co. to provide similar plant of a capacity of 23,000 gallons per hour for Grove Road station. In addition to the above the same firm have orders for water-softening apparatus on hand for the Great Northern Railway of Ireland, Messrs. Belliss & Morcom, of Birmingham, and others.

## ELECTRIC NOTES.

THE "Savoyarde," the big bell in the Basilique du Sacré Cœur on the heights of Montmartre, is henceforth to be rung by electricity.

THE Little Woolton Urban District Council have approved a scheme for the lighting of the roads of the district by electricity. At present oil lamps are used, and, of course, occasion much inconvenience in keeping clean and well filled, and in lighting and extinguishing. The change will necessitate the laying of a special cable over nearly eight miles.

THE Bill for the confirmation of the provisional order under which the Urban District Council of Tipton are seeking Parliamentary power to light their district by means of electricity came before Mr. Symons Jeune, one of the examiners of petitions for private Bills, for proof of compliance with the Standing Orders of the House of Lords. The Bill was duly certified and the order was confirmed.

AN inquiry was held at Bath, on the 1st inst., by Mr. Bicknell, a Local Government Board inspector, into an application by the Corporation for a loan of 25,000*l.* on account of the electric lighting. The sum was made up of two amounts, 11,195*l.* being excess of expenditure over loans previously sanctioned, and 13,000*l.* for new plant and alterations in the

system of working immediately required to be expended enable the works to be carried on during the next winter if breakdowns of last winter are not to recur. Mr. J. A. Sin conducted the case for the Corporation, and Mr. E. Manly gave expert evidence.

## BUILDING AND BUILDERS.

A MASS meeting of Glasgow operative plumbers was last week in the Waterloo Rooms to consider the situation regard to the overtime dispute, it was reported that 75 firms employing 600 men had conceded the terms demanded, and only about 300 men were still on strike.

PLANS by Mr. W. P. Gibbings, on behalf of the Carlisle Estates Company, Ltd., for the erection of over ninety shops in Botchergate, Carlisle, have been passed by the coronation committee. The site of the proposed shops is that of the St. Cuthbert's vicarage and garden, including a piece of ground now occupied by Algie's Circus.

THE improvements committee of the Leeds Corporation had before them last week the recommendations of the Local Government Board with regard to the local by-laws. It was decided to fall in with the views expressed by the Board on the matter, and to submit for the consideration of the local authority the by-laws in an amended state.

THE foundation-stone of new schools in connection with All Saints Church, Marple, was laid on the 3rd inst. by Mr. Edward Chapman, M.P. for the Hyde division. The schools are arranged to accommodate 300 children, the contract being carried out by Messrs. Robinson & Sons, of Hyde, from designs by Messrs. James Hunt & Son, architects, Stockport.

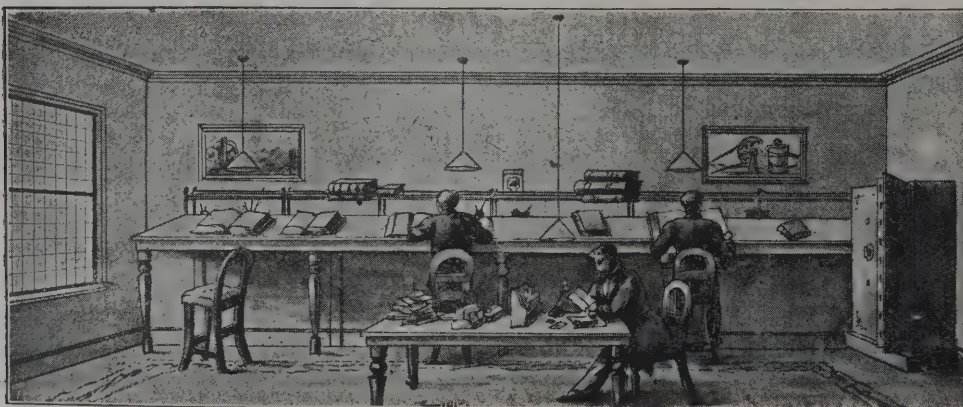
SOME time ago the master bricklayers of Edinburgh proposed a reduction of the operatives' wages from 9*d.* to 8*d.* per hour. The matter, however, has been satisfactorily settled. At a recent meeting between representatives of the employers and of the Operative Bricklayers' Society it was mutually agreed that the present conditions should continue for another year.

A STEEPLEJACK named Thomas Howarth, aged forty, died at Bolton Infirmary from shocking injuries on April 1. He was putting a new top on an ironworks chimney when he missed his footing on the scaffold, and had a fall of a hundred feet. In his descent he grasped the scaffolding rope, but

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The above illustrates an office where the light coming from the sky falls on to the floor and is absorbed, thus leaving the back part of the room dark. The illustration below shows the same room with WILSON'S PATENT MULTILUX WINDOW fixed. This refracts the rays of light and throws them horizontally, thus preventing them falling on to the floor, and lighting up the whole room.



## PRICE

5/- per foot surface

Wilson's Patent  
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Lights prevent slipping

Wilson's "DIOPTER"  
Pavement Lights.  
an improvement on  
the semi-prism at  
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18 & 20 KENSINGTON HIGH STREET, W.

WESTOVER, MILFORD-ON-SEA: THE COTTAGE.

DESIGN FOR NEW SCHOOL OF ART, HULL.

DESIGN FOR A COUNTRY RESIDENCE.

and Howarth was precipitated through the roof of a house, and was dreadfully injured.

COLONEL A. C. SMITH, R.E., held a Local Government inquiry at Southport into an application by the Corporation to borrow 2,500*l.* for the purpose of erecting a bridge across the L. and Y. Railway at Oak Street, and 2,000*l.* for the construction of open-air swimming baths at Crowlands. In respect to the latter, it was stated that the water would be heated by steam from the destructor.

THE foundation-stone of a new mission church for Five Ways, Heath Hayes, Cannock, was laid recently by Mrs. Hanbury, who was accompanied by her husband, the Right Hon. R. W. Hanbury, in the presence of a large gathering. The new church is to be dedicated to St. John the Evangelist, and will accommodate about 400 worshippers. It will cost 24*l.*

THE building committee of the Talbot Lane new chapel at Southport met on the 29th ult. to adjudicate on competitive plans which had been prepared by four architects. These included Gothic and Classic designs. The names of the authors were not disclosed. After a long and careful examination the committee proceeded to vote by ballot, when it was found there was a majority in favour of the Gothic design by Messrs. Hey & Son, of Bradford. The second place, according to the programme, was assigned to the Gothic plan of Mr. J. E. Knight, of Manchester. The third in order of preference was the Gothic design of Mr. J. Smith, of Sheffield. At a meeting of the committee and congregation on the following Thursday evening the accepted plans were submitted for inspection, and were generally and heartily approved. During the meeting the Rev. W. Slack briefly referred to the attempts which had been made to obtain a new site, to the delay caused thereby, and to the final decision of the committee to utilise the old site. In

order that full scope might be given for the erection of a beautiful and commodious church the trustees had agreed to have the cottage property at the south side and at the rear of the old chapel removed. From the west side of the town the building will be a very prominent object. The estimated cost is 6,800*l.*, but this amount will be exceeded by some improvements which would be effected in the Sunday school.

## VARIETIES.

MR. E. HARDING PAYNE, architect and surveyor, has removed from 28 to 11 John Street, Bedford Row, W.C.

THE Murphy memorial hall which has risen at the corner of Gurney Street, in the New Kent Road, was formally opened on Saturday afternoon.

THE Cairns memorial church, which occupies a prominent position in the Gorgie Road, Edinburgh, was opened for public worship on the 3rd inst. It is a substantial structure, cruciform in shape, and is seated to hold over 800 people.

MR. H. W. RISING, architect and surveyor, announces that he has dissolved partnership with Mr. Shoebridge, and that hereafter he intends to carry on his profession at 30 Great James Street, Bedford Row, W.C.

MR. FRANK DETHRIDGE, town clerk of Paddington and the doyen of London town clerks, has been granted a retiring allowance of 600*l.* per annum, in consideration of the "valuable services he has rendered to the ratepayers of London in general and of Paddington in particular" during nearly half a century of active official life. Mr. Dethridge ceases to be town clerk next Christmas, and will be succeeded by his chief assistant, Mr. J. A. W. Russell, secretary of the Metropolitan Municipal Officers' Association.

WE regret to announce the death on the 30th ult. of Mr. T. P. Lilly, the proprietor of the Chilmark Stone Quarries, which he had worked for the last forty years, in addition to which he took an active part in the construction of the Salisbury to Yeovil branch of the London and South-Western Railway, as well as of railways in Belgium and other places on the Continent; he was also possessed of considerable skill as an architect. The business of the Chilmark Quarries will be carried on under the management of his executors, Messrs. S. H. Stephens and Harry J. Lilly, and its title will remain undisturbed.

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THE drainage and other sanitary arrangements which were carried out at Buckingham Palace by the officials of His Majesty's Office of Works a few years ago have been thoroughly inspected and tested by Professor Corfield, M.D., the consulting sanitary adviser to His Majesty's Office of Works, who has reported "that the drainage arrangements have been very well planned and carried out, and reflect credit on all concerned with them." He has, however, suggested a number of improvements in the sanitary arrangements generally, the most important of which have been already carried out under his supervision, and to his satisfaction. The remainder, which consist chiefly of certain rearrangements, will be carried out in the autumn.

CHEAP tickets available for eight days will be issued by the Great Eastern Railway Company to Brussels May 14 to 17 inclusive and May 19, *via* Harwich and Antwerp. Passengers leaving London in the evening reach Brussels next morning, after a comfortable night's rest on board the steamer, for visiting The Hague, Amsterdam, Utrecht and other parts of Holland, the Rhine, North and South Germany and Bale. For Switzerland special facilities are offered *via* the Great Eastern Railway Company's Royal British Mail Harwich-Hook of Holland route, through carriages being run to Amsterdam and Berlin, Munich, Cologne and Bale. Restaurant cars are run on the North and South German express trains. The General Steam Navigation Company's fast passenger steamers will leave Harwich on May 14 and 17 for Hamburg, returning May 18 and 21.

#### LIVERPOOL UNIVERSITY COLLEGE EXTENSION.

TO-MORROW (Saturday) will witness the opening by Sir Wm. Thiselton-Dyer, F.R.S., of the handsome block of botanical laboratories which have been presented to Liverpool College by Mr. W. P. Hartley, of Aintree. This new addition to the educational resources of the college occupies a convenient site of about 3,000 square feet, with a frontage of 35 feet to Brownlow Street and 85 feet to Danzie Street, the whole of the land and the old buildings thereon having been purchased outright by Mr. Hartley. The great advantage of the aspect to Danzie Street is its north light. Both externally and internally the object has evidently been to meet the demands of utility by appropriating every available yard of space rather than to strive after architectural adornment, and the result reflects credit upon the architect, Mr. F. W. Dixon, of Manchester, and Professor

Harvey Gibson, who collaborated in the preparation of plans. Corridors have been entirely eliminated, all the apartments opening off a central hall, and one main staircase. The basement is divided into four parts as a storeroom, heating chamber, lavatories and coal stores, while the ground floor contains a workshop, a museum preparation-room, and a museum, which is approached direct from the entrance Brownlow Street. The museum is 45 feet long, 34 feet wide and 22 feet high, and is equally divided into an upper and lower section by means of a gallery which has been placed at a height of 11 feet. A spiral staircase communicates with the gallery, and it is also reached from the first floor. The lower portion of the museum will be open to the public during college hours. Twelve large specimen cases are arranged at right angles to the eight windows, so that light will shine sideways upon the glass and enable the specimens to be more readily examined. Sample cases are fixed on the walls and the window-sills, ample accommodation being thus provided for an extensive collection for teaching and exhibition purposes. One section will be devoted to specimens illustrative of the subdivisions of the vegetable kingdom, another to those illustrative of morphology and the adaptation of structure to function, while another will contain plants of service to humanity with their medicinal uses indicated.

An important department of the new building is the herbarium, located on the first floor. Here are stored about 100,000 dried herbs, including 50,000 specimens given to the college by the late Mr. T. Comber, and the collection of the late Mr. Lomax of the Northern Hospital, purchased by Mr. Hartley and others. Altogether there are about 200,000 general species, and almost a complete collection of British plants. Storage is provided for quite 200,000 plants. Already the collection will compare favourably with any provincial herbarium. Adjoining the herbarium is a classroom for advancing students, the library, the professor's private laboratory, an office, and a commodious lecture theatre seated for 100 students, and, when necessary, accommodation could be found for over 200. About 700*l.* has been expended on special movable fittings alone for the benefit of the professor and his pupils. The top storey of the buildings is occupied by five rooms, a research experimental physiology laboratory with dark room attached, an anatomical research laboratory, advanced and elementary laboratories, and a demonstration private room. Sixty-five students can operate simultaneously in the elementary and twelve in the advanced laboratory.

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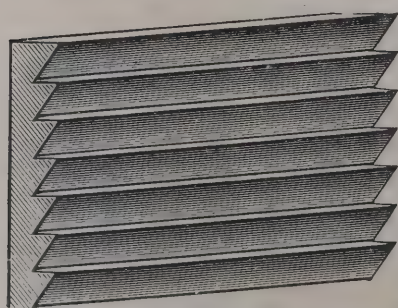
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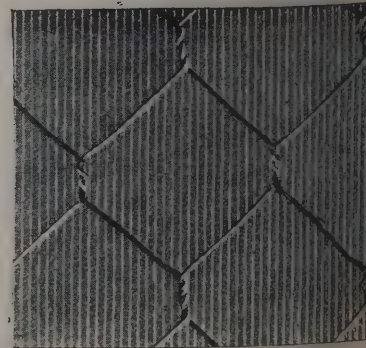
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### THE SURVEYORS' INSTITUTION.

The annual dinner of the Surveyors' Institution took place  
 Wednesday evening at the Holborn Restaurant, Sir John  
 Rolleston, M.P., presiding. Among the guests were Earl  
 Beauchamp, Mr. Walter Long, M.P., Mr. Jesse Collings, M.P.,  
 W. T. Thiselton-Dyer, Lieut.-Col Sir G. A. Leach, Sir  
 John Wilson, Mr. H. G. Howse, Sir W. Pollitt, Mr. W.  
 E. P. Squarey, Mr. C. J. Owens, Mr. E. P. Squarey, Mr. A. Buck,  
 A. Vernon, Mr. L. R. Vigers, Mr. R. Vigers, Mr. T. M.  
 Kman, Sir Walter Peace, Mr. Howard Martin, Mr. A. R.  
 King, Sir Ernest Clarke, Mr. A. Murray, Mr. W. B. Rogers,  
 and others.

After the loyal toasts, Mr. E. P. Squarey, vice-president,  
 proposed "The Houses of Parliament."

Mr. Walter Long said that he was sorry to interrupt the  
 dinner with his remarks. Members of the Government, how-  
 ever, had to be in their places that night, because some  
 members of the House of Commons had ventured to challenge  
 the conduct of the Speaker. One member of the Government  
 would defend the Speaker, and it was only left to the others to  
 show their opinion that the conduct of the Speaker was right,  
 the attack upon him unjust, by being present and recording  
 their votes to endorse what he had done. As business men  
 would endorse what had been done by the House of  
 Commons in putting its affairs on a business footing. They  
 were anxious the work should be done without undue delay,  
 their latest change was to make the House of Commons  
 a gathering of talking men but a business assembly. On  
 whichever side they were, he believed the members tried to do  
 their duty, and if the electorate were not satisfied, they had the  
 remedy in their own hands.

Earl Beauchamp also replied.

Mr. Arthur Vernon proposed "Agriculture," to which  
 T. H. Elliott, secretary to the Board of Agriculture,  
 replied.

Mr. Howard Martin gave "The Bench and the Bar,"  
 Freeman, K.C., replying.

The Chairman responded to the toast of "The Surveyors'

Institution," mentioning that it was established in 1868, and  
 incorporated by Royal Charter in 1881. It had a membership  
 of between 3,000 and 4,000 of all classes, and had a large  
 branch in Ireland. The Society had recently erected a hand-  
 some building in Great George Street, Westminster, at a cost  
 of between 30,000l. and 40,000l., and it possessed a valuable  
 library and museum.

### PRINCIPLE AND METHOD.\*

BOOK upon book has been written upon the historical  
 development of architecture, but always regarding it as a  
 historical document. The sequence of styles is perfectly  
 established, but to whom is it of real use except to historians?  
 Architects value books on the subject chiefly for their illustra-  
 tions, and use them, not for the purpose with which the book  
 was written, but to help themselves in some way to design  
 modern work. In other words, every man, unconsciously or  
 half unconsciously, makes for himself, according to his light,  
 rules founded upon the principles of beauty, that is to say, the  
 causes of attractiveness, in the buildings he is studying, in  
 order that he may bring into being, not the same design,  
 which he knows to be impossible (if he is experienced), but  
 the same attractiveness, and for the same reason, in his  
 own work. It is needless to say how slow this process  
 is, and how ineffectual in many cases, where, never-  
 theless, the beauty of the building studied obtains full  
 appreciation. A mind capable of conception is very often not  
 strong in analysis. It wastes time and energy in feeling its  
 way to the results. What is necessary to enable it to work  
 rapidly and surely is a framework of principles and method  
 supplied from without. This is the real use of the architecture  
 of the past to the architects of the present—as architects—to  
 supply models from which the causes of beauty may be deduced.  
 It is only upon some such scientific basis of design that it is  
 possible to invent with ease. No man can mass design by  
 accident, and it is in massing that design really consists. As  
 all design consists in this, all ages supply matter for its illustra-  
 tion. Yet how little has been said about it. We learn in  
 works on architecture that the Greek pediment was low in  
 pitch, that the Romans pitched their pediments higher, and the

\* From a paper by W. A. Langton, architect, Toronto, in the  
*Canadian Architect*.

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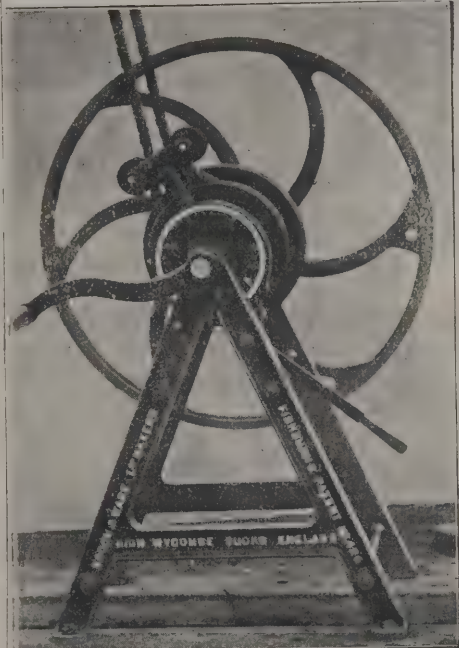
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This is not much to show for a faithful study of architecture. There must be more to be got out of it than that; the lesson of the history of architecture should be, not what the past designed, but how it was designed. The beauty of every great example has a reason. To return to the three classes of gables: there is reason, as shown by John Beverley Robinson, for the varying pitch. The Greek front, solid, widely spread, is suitably finished with a low pitched gable, while the Roman, more slender and vertical, naturally cocks it up, and the Gothic more again. This is the kind of truth we should learn from the history of architecture. To know how to be Greek or how to be Roman or Mediæval is merely to put one's self in fetters. To know why all three were good is to give one's self the freedom of design in any age—even in our own.

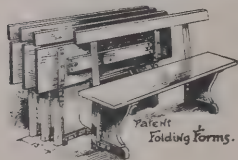
Mr. H. G. Wells, who is so fond of carrying his scientific observations into the future, has, in his new book of "anticipations" about the state of the world in the year 2,000, some speculations about the conditions of building. He is, of course, heartlessly scientific, and says (I quote at second-hand) that he expects the engineers of the future to be the great men of their time, but the architects to be opposed to progress, because they are "too highly cultured and not sufficiently educated." By "cultured" he evidently means trained in precedent, and by "educated" trained in science. Making allowances for his scientific point of view, and the probability that his idea of an architect's education is limited to a study of the properties of iron and concrete and sewage, the accusation, whether it is likely to be justified or not, gives a judicious pointer as to the need of more scientific education for architects in the future; an education which shall be scientific in all

directions, in design as well as in construction. The constructor has become inventive; the designer must become inventive too. I am well aware of the horror of lean iron for and of the necessity of forming new ideas of beauty, that idea of architectural invention brings before a well-regulated mind. But surely to study the principles of design is the way to prevent the realisation of this horror. There cannot be more than one set of principles of beauty in this world, even if it is possible to conceive of there being another set in any world. It looks, therefore, as if to take Mr. Wells's advice and devote ourselves more to "education" and less to "culture" the surest road to making beauty keep company with necessity that is coming to us of keeping design abreast with construction in our own times.

But a new departure in design is not what this article is about. It is clear that principle and method are the only road to such a departure when it becomes necessary. Culture, Mr. Wells's sense, has already met a Waterloo in the tall buildings of New York. In their case it is not until the dusk comes on to obliterate their architectural treatment, that a consciousness of their greatness is not obscured by a perception of their littleness. It must be possible to make more of such opportunities than that, and it is clear from the failure of the early efforts in this kind of building that Vitruvius is out of fashion at this time. A study of the principles of design is particularly necessary for these problems, which therefore bear essentially upon the argument; but the purpose of this article is to advocate the acquisition of familiarity with principles and facility of method for the purposes of ordinary design. All design requires it, the simple as well as the stylish, and the more affectionate adaptation of old work would be better done if the principles at the bottom of the original were open to the designer as well as the result.

Where then are these principles to be found that we may acquire them? That, unfortunately, is the difficulty in the matter. That is the want spoken of above, in the literature of architecture. They exist; there is enough evidence to show that. And the definition of many of them exists, too, scattered here and there through the works of writers on art. Every architect has found out some for himself, and if he turns his attention particularly in that direction will find out more. Gwilt enters into the elusive question of proportion. So do Viollet-le-Duc in his "Lectures on Architecture." One can hardly come out of a study of these investigations without some serviceable addition to method in setting up a design.

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THE GLASGOW EXHIBITION BUILDINGS.

It is a year since the Glasgow International Exhibition was opened, and about six months have passed since its gates were finally closed. A goodly part of the buildings, however, still stand, and remind one of the glories of Glasgow's great show of 1901. The *Glasgow Herald* says they form rather a melancholy reminder. Dome and minaret and white walls that shined in the opulent sunshine of last summer bear traces of the unkindlier winter through which we have passed. Not a speck of gilt remains on the domes and minarets, and the white walls are seared and smirched. True, viewed from the heights of Gilmohrhill the graceful lines of the main buildings make still an appeal to the eye; but the condition of the buildings suggests some great palace in decay. The rusty domes, the soiled white of the walls and the faded red of the roofs form a depressing picture. The feeling is pretty general that the buildings have too long encumbered Kelvin-grove. Indeed, complaints have been rife, especially among those to whom Kelvingrove Park offered a short respite to their homes, that there has been undue delay in clearing away the buildings. The inconvenience has been partially removed; at least one pathway through the park—formerly occupied by buildings—having been reopened. Beyond that the casual passer-by may see little indications of the work of demolition. The Sandyford frontage of the buildings is still intact; so also is the imposing elevation within the park. The promenade in front of the grand entrance seems in as good order as when it was thronged with the gay crowds of last summer. That is how the condition of things strikes an observer from the outside, and he is prone to marvel at the delay in razing the "palace." But the hand of the destroyer is very evident within the buildings. If the work of destruction may appear tardy in its progress, it should be collected that the erection of the buildings occupied about a couple of years, and that the work was of no shoddy kind. It is doubtless easier to pull down than to build up; but in such a case as this the process of demolition has to be gone about in an orderly way and with care.

The buildings were handed over by the Exhibition Executive to the parks and galleries committee of the Corporation, and the latter commissioned Mr. James Laird, of Messrs. Laird & Son, auctioneers, West Nile Street, Glasgow, to see to the removal of the structure. A similar task was allotted to Mr. Laird in the case of the first Glasgow Exhibition. Then

he got possession of the buildings in January, and the work of removal was started in that month. In the present case he was unable to get the work properly commenced until little over a month ago. There were several reasons for the delay, not the least being the difficulty of settling the measurements. A start having been made, the work of demolition has been vigorously prosecuted, as an inspection of the interior shows. All the buildings east of the Grand Hall have been taken down. Among the first to go were the picturesque pavilions that formed the Russian village. Their removal was accomplished with a celerity in striking contrast to the leisurely methods with which they were erected. The less ornate pavilion wherein the products of the industrial enterprise of Canada were displayed has also disappeared, as well as the model farm, which stood near it. The "Irish Squireen's House," and the delightful garden that surrounded it, have been swept away. The part of the park where those buildings stood is being rapidly restored to its former state. The grand hall and the restaurant adjoining still stand, reminding one of the luxuries of music and of banqueting that are past. On the hill the restaurants also remain, though the teetotal establishment has been partially removed; and the other buildings where innocuous beverages were dispensed have been entirely demolished. The northern part of the grounds on the eminence overlooking the Kelvin, and popularly known as Machinery Street, has been almost entirely cleared of buildings. The Grand Avenue has been demolished. It was in the neighbourhood of the art galleries, and the ground hereabout is being rapidly cleared, both within the park and on the Dumbarton Road side. Things are so far advanced that within a week or so it is expected that the permanent approach to the galleries from Dumbarton Road will be opened. The bridge leading from the Grand Avenue to the Machinery Hall remains almost intact, and little save the removal of the boiler-sheds has been done within the Machinery Hall. The reason of this is that it has not yet been decided whether the machinery buildings are to be a permanency or not. We may take leave to add that if they are retained, though they may prove useful, they will scarcely add to the architectural features of the neighbourhood. The work of taking down the Industrial Hall is now proceeding. So far the operations are confined to removing the glass in the roof—of itself a big job. Meantime the place has not been robbed quite of its familiar features. The colossal statue of His Majesty the King still stands under the great dome. But the

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giant limbs have become badly dilapidated, and the sceptre has got broken. The sitting lions on the piazza also remain, but the dignity of their poise has suffered; they have fallen into an attitude suggestive of anything but the bearing of the monarch of the forest. When the demolition of the Industrial Hall is completed, the work of taking down the outer walls of the main building will be begun. Two or three months will yet pass before the ground approaches its pristine condition. Meantime the building, which but a short year ago was the scene of so much gaiety and social enjoyment, is given over to solitude, and the dust of dissolution clings to every wall.

### SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on Monday evening, May 5, Mr. Percy Griffith, president, in the chair, a paper was read on "Recent Blast Furnace Practice" by Mr. Brierley D. Healey.

The author dealt seriatim with the plant and machinery of an ironworks from the blast furnace to the pig-bed and slag-removal appliances, and drew comparisons between old and new methods of working, showing what great advances had been made during the past forty years in blast-furnace practice. For instance, the average output of British furnaces forty years ago was about 200 tons of pig-iron per week, but now it is not difficult to obtain 200 tons per day, and as much as 305 tons has been smelted in one day, and 1,735 tons in one week at a modern works. The author pointed out that the production of pig-iron in Great Britain in 1901 was 7,385,198 tons, whilst in the United States during the same year it was 15,878,354 tons. In the year 1885 Great Britain produced 7,415,469 tons and the United States 4,044,526 tons.

The author described the latest improvements in blast furnace plant, including the Ford and Moncur and the Stevenson and Evans hot blast stoves; the Giers and Harrison temperature equaliser; the Thwaite-Gardner blast-furnace gas engine and gas treatment plant; the Foster tuyere cooling system; the author's furnace hoist and charging hopper; the Thwaite blast-furnace bell-top; the Hawdon pig-casting machine, and the Dewhurst slag ladle.

He then made some very practical references to the need for utilising the by-products, and particularly to the use of the gases from the blast-furnaces for driving gas-engines for

blowing purposes and for electric lighting and power for the minor machines. He mentioned a case where the gases would not burn in the steam boilers without the help of solid fuel, but which were used in the gas blowing engines at the same work without any difficulty whatever.

The author showed the importance of securing a uniform temperature for the hot-blast by use of equalisers, and of increasing the output of strongly-built existing furnaces by slight alteration of crucible, and an increased volume of blast obtainable from their own gases. He stated that the gas from a 1,500 ton per week furnace working on coke, after allowing seven-twentieths for heating the blast, 900 indicated horse-power for gas-driven blowing engines, and 100 indicated horse-power for charging the furnace and clearing away the slag, left a surplus of 5,000 indicated horse-power for electrical energy. That would be more than sufficient to drive the whole of the machinery of an adjoining steel rolling-mill of equal capacity to the blast furnace output, and also to provide for lighting the works, offices and workshops.

From calculations submitted by the author it was assumed by him that six indicated horse-power per hour was obtainable for every ton of iron produced per week in coke-fed furnaces. From the total power thus ascertained, provision has to be made for heating and compressing the blast and for working the plant, as shown in the 1,500-ton example. He stated that designs were being prepared for the rebuilding of one works in Staffordshire, where a very special feature will be the absence of steam boilers, the power obtainable from the furnace gases being fully utilised.

### THE INSTITUTION OF CIVIL ENGINEERS.

At a special meeting of the above Institution on April 23, Mr. Charles Hawksley, president, in the chair, the tenth "James Forrester" lecture was delivered by Sir William Roberts-Austen, K.C.B., F.R.S., Hon M.Inst.C.E., the subject being "The Relations between Metallurgy and Engineering."

The lecturer stated that this was the subject with which the Council had requested him to deal in his lecture, but it must not for a moment be imagined that the metallurgic art was not included in the wide range covered by the Institution, which had from its earliest days given prominence to the work of metallurgists. It was not easy to fix the period in industrial history at which the metallurgist began to give the engineer



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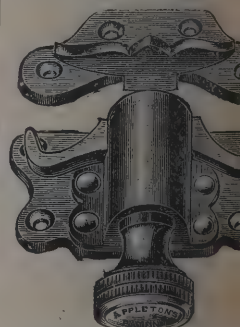
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al assistance. If in this country Stonehenge were taken starting-point, the architect-engineer who designed that example of neolithic art could not have received any assistance from the metallurgist. That stately structure arose in the plain at a time when bronze tools were known but not in general use, and this period had recently been traced by Mr. Gowland at about 2000 B.C. In another phase of engineering work it was known that Rome, in the days of her greatness, trusted to the metallurgists of our country to supply the lead which was so extensively used in the City. The fourth-century wrought-iron column, discovered in India, and the girders and beams of the Orissa temple, rendered it necessary to exercise great caution in the period at which iron was used in construction. The magnificent efforts as those given were, however, maintained, and no widespread or continuous records of metallurgists' contributions to early constructive work have been presented. On the other hand, the civil engineer can quote the Charter of the Institution, "advanced metallurgical science and directed the great sources of power in the use and convenience of man," for ages before metallurgists rendered more than incidental service. As the progress of great engineering works into the construction of iron and steel entered, the lecturer referred to and gave illustrations of the primitive cantilever bridges of pine trees across mountain torrents in Savoy. The interesting fourteenth-century cantilever bridge made up of 20-foot beams in the note-book of Villars de Honnecourt was also mentioned, as was a bascule bridge of the Middle Ages. The bridge of Milan Cathedral, as designed by Leonardo da Vinci, the great Tuscan painter, engineer and architect, was also mentioned as an example of a structure in which metal was not used. The employment of cast-iron from the time of Queen Elizabeth to the present day was then dealt with, and the progress of cast-iron bridge of 600 feet single span, by Telford and others, was referred to, and it was pointed out that in the nineteenth century metallurgists, by creating the age of steel, had atoned for their somewhat tardy and intermittent use of iron to supply engineers with suitable materials. As regards the use of cast-iron and malleable iron, the progress of Watt in developing the steam-engine was traced, and it was admitted that the necessity for pumping water out of the cylinders was the main factor in the evolution of the steam-engine, and in turn the development of British metallurgy of iron and steel dated from the time when the steam-engine of

Watt enabled air to be readily pumped into the blast-furnace employed for the production of cast-iron. It was then pointed out that more than half of the last century had elapsed before the "age of steel" began, and that towards the end of the century great attention was devoted to considerations connected with the molecular structure and properties of steel, and to enforcing the action of carbon, the element which gave steel its properties, by the addition of other elements than carbon in very small proportions. With regard to the slow growth of confidence in the qualities of steel, the opinion of successive Presidents of the Institution, as expressed in their Addresses, was quoted; Sir John Hawkshaw, Sir John Fowler, Sir Frederick Bramwell, Mr. W. H. Barlow, Lord Armstrong and Sir George Bruce being specially alluded to. In 1887, when Sir George Bruce delivered his address, the merits of steel had at last received recognition, and as regards the crowning triumph of the age of steel—the Forth Bridge—Sir George exultingly exclaimed:—"At the Menai Bridge the total quantity of iron was 11,468 tons; at the Forth Bridge there will be 50,000 tons of steel and iron." No one had done more than Sir Benjamin Baker to insist on the importance of phenomena which engineers used to consider "mysterious" in connection with the behaviour of steel, and his warnings and example were at last being regarded and followed. The lecturer pointed out that when metallurgists gave engineers mild steel they provided a cinder-free solid solution of iron and carbon. All subsequent advance had been due to the recognition of this fact, and to the gradual study of the properties of metallic solid solutions. Sir John Hawkshaw, in his presidential address to the Institution, delivered in 1862, had said that if the strength of iron could be doubled, the advantages might be equal to the discovery of a new metal more valuable than iron had ever been. The lecturer contended that this was exactly what metallurgists had done with regard to steel. By suitable thermal treatment and by suitable additions of comparatively rare metals, they had doubled the strength of steel as it was known in its early days. The nature of solid solutions was then explained and the importance of allotropic modifications of iron was dwelt upon, this portion of the subject being illustrated by some difficult experiments. The question was then asked, Could the past molecular history of a mass of steel be traced by microscopic examination of the solid metal? Some very beautiful experiments by M. Osmond, Mr. Stead and others, were appealed to in evidence of the possibility of this. It was then demonstrated that solid metals might even reveal, by their structure, the

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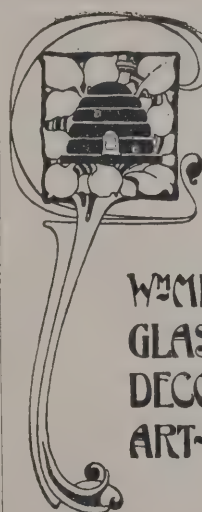
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vibrations to which they had been subjected, and Sir Benjamin Baker had constantly insisted on the importance of such vibrations. In making this clear, Vincent's experiments on the beautiful wave-structure that might be imparted to the surface of mercury by the aid of a vibrating tuning-fork were then exhibited, and it was demonstrated that the surface of solid lead which had been subjected to similar vibrations, possessed a similar structure to the vibrating surface of mercury.

Finally, with regard to the efforts metallurgists were making to study the influence of rare metals on iron and other metals, the reducing power of aluminium on metallic oxides was shown. Very high temperatures of 3,000 degs. C. and over were attained, and brilliant light was produced during the reduction of chromium, cobalt, nickel and other metals from their oxides.

In conclusion, the lecturer appealed to the new Alexander III. Bridge at Paris as showing the need for the careful measurement of high temperatures in connection with the treatment of large masses of steel. In the construction of the bridge 2,200 tons of cast steel had been employed, and a peculiar molecular structure was imparted to the steel by rapidly cooling it in air from a temperature of 1,000 degs. C. to 600 degs. C; this gave the metal certain mechanical properties which it would not otherwise have possessed. With reference to the aid given by metallurgists to engineers in connection with ordnance, reference was made to the address delivered by Mr. T. Hawksley, the father of the President, in 1872. He said that "In no way" other than by the study of such questions "could the Institution" of Civil Engineers "serve its country better, or better promote in the interests of peace, the advancement of practical science, and its application, if events should order, to the purposes of protective warfare." The use of copper, aluminium and other metals in electrical engineering was referred to, and the lecture ended with an appeal for the more extended study of the physical properties of metals.

At the annual meeting of the Institution of Civil Engineers, held on Tuesday evening, Mr. Charles Hawksley, president, in the chair, the result of the ballot for the election of officers was declared as follows:—President, Mr. J. C. Hawksley, M.A.; vice-presidents, Sir William White, K.C.B., Mr. F. W. Webb, Sir Guilford Molesworth, K.C.I.E., and Sir Alexander Binnie; other members of the Council, Mr. J. Barton (Dundalk), Mr. H. Bell, Mr. B. H. Blyth (Edinburgh), Mr. C. A. Brereton, Mr. J. Brown (Cape Town), Mr. R. E. Cooper, Colonel R. E. B. Crompton, Mr. C. W. Darley, Mr.

G. F. Deacon, Mr. W. R. Galbraith, Mr. E. P. Hann (Montreal), Mr. G. H. Hill, Mr. J. C. Inglis, Mr. G. R. (Birmingham), Dr. A. B. W. Kennedy, Sir W. T. L. (Cardiff), Mr. J. A. McDonald (Derby), Mr. W. Matth C.M.G., Mr. W. Shelford, C.M.G., Mr. A. Siemens, Mr. Stanley (Brisbane), Mr. J. Strain (Glasgow), Mr. J. I. Thcroft, Professor W. C. Unwin, Mr. F. R. Upcott, C.S.I., Sir Leader Williams (Manchester).

## NEW INDUSTRIAL SCHOOL AT PORTSLADE

THE substantial pile of buildings at Portslade which have erected by the London and Brighton School Boards at a cost of upwards of 30,000*l.* as an industrial school is now nearing completion, and will, according to present arrangements, be opened by Lord Reay on the 14th of next month.

These new buildings, which front the rural road which leads from Upper Portslade to Mile Oak, occupy an elevated situation and command splendid views of the surrounding country. They are in red brick and surround a large quadrangle, which is asphalted, 140 feet long by close on 120 wide, and upon which open the doors of most of the principal departments of the school. It will be used as a playground, drill-ground, &c. As far as the position of the main building is concerned, it might be more correct to describe it as shaped like a rather wide letter H, for the buildings round the north half of the central quadrangle, which are limited to one floor, chiefly consist of the offices and workshops. The main entrance to the school, a doorway of mixed classical design, approached by a short flight of stone steps, faces south in the middle of the crosspiece of the H, the two lower limbs of which represent short south wings, comprising, on the ground floor, the dining-hall and a schoolroom, and on the upper floor, a couple of large dormitories. There are altogether four large dormitories and one small one. Adjoining each of them is a bedroom of an assistant master, who is able, by means of a small glazed shutter in a corner of his room, to keep an eye on the proceedings in the dormitory. As many as 120 boys can be accommodated at the school.

Immediately to the right of the main entrance are the superintendent's quarters in what is practically a separate house. Though included in the main block of the school buildings, and communicating with the school on each of

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ors, these quarters are quite separate so far as privacy is  
ned.  
the left of the main entrance is the greater part of the  
residential portions of the school. These comprise  
rooms for the male and female teachers and bedrooms.  
ady teachers, by the way, have all their apartments  
ctly together. The school also includes an infirmary  
fine southern outlook, an isolation dormitory and a  
room for the resident nurse. Water is laid on to the  
building from the Brighton Corporation mains, and there  
ndant lavatory and bathroom accommodation. As a  
tion against infection, the boys' lavatories are not  
ed with basins, but the water, hot or cold, is run on from  
ber of sprays, the waste being immediately carried away  
nnels underneath. Another important feature is the  
ing bath, a handsome little bath, 40 feet by 20 feet,  
ed with white tiles, and ranging from a depth of 3 feet  
es to 5 feet 6 inches. In connection with the water  
may be mentioned the boiler-house. The boilers,  
have been tested during this week, will do all the work  
ting the baths, cooking and working the machinery of  
ool laundry, which is of a very up-to-date pattern. The  
ooms, sitting-rooms, &c., will be heated with stoves, and  
ole school buildings will be lighted with gas from the  
mpany's mains.

## NATIONAL REGISTRATION OF PLUMBERS.

annual meeting of the District Council of the National  
ration of Plumbers for Edinburgh and the East of Scot-  
as held in Dowell's Rooms, George Street, Edinburgh,  
1st inst., Sir James Russell, the honorary president, in  
air. Mr. James Marchbank, S.S.C., the secretary, sub-  
the annual report, from which it appeared that the  
il were hopeful that the Plumbers' Registration Bill  
be passed through Parliament before the end of this  
a. The report of the treasurer, Mr. John K. Paterson,  
etires at this time, showed a balance at the credit of the  
il of 33*l.* 2*s* 9*d.* The Chairman, in moving the adoption  
reports, after referring to the loss the Council had  
by the death of Councillor Pollard, the president and  
J. J. Henderson, secretary of the Dundee district com-  
said he thought the Council were likely to be correct  
forecast about the passing of the Plumbers' Registra-

tion Bill, a measure which was not merely for the benefit of the  
plumbers, but for the benefit of the public health. How the  
Bill had been opposed so long he could hardly understand.  
It showed how self-interest, and perhaps vested in-  
terest, was called forth to do wrong to the country.  
It looked as if some people opposed this Bill because  
they were afraid they would be relegated to a second  
place in the eyes of the public by the mere hall-marking of  
other people. After all, the Bill consisted simply of one thing  
that no man might call himself a registered plumber unless he  
was a registered plumber. He hoped Parliament, in its  
wisdom, might see that it was in the interests of the nation  
and in the interests of the public health to disregard any  
opposition to the measure which might be made before its  
final passage. Councillor Purves, in seconding, remarked that  
while they might not be a very large body, they were a deter-  
mined body. They had gone on steadfastly fighting this  
registration movement, and they had now come to a point  
where they thought Parliament's recognition was assured.  
The Bill had passed its second reading, and they only required  
to stand steadfastly together and show that they were working  
for the public benefit and for that alone. They had no selfish  
object, and were pursuing no course of self-aggrandisement.  
It was recognised that the trade they pursued rendered it  
absolutely necessary that the work entrusted to them should  
be carried out in an efficient manner. The reports were  
adopted. Sir James Russell was re-elected hon. president,  
Councillor Lang Todd was appointed president; Councillor  
Purves, vice-president; Mr. James Marchbank, S.S.C., secre-  
tary; and Mr. J. K. Rutherford, jun., treasurer.

## ELECTRICAL ENTERPRISE.

The committee appointed by the Institution of Electrical  
Engineers to hold an inquiry on electrical legislation have  
issued their report.

The committee met on eleven occasions and heard the  
evidence of a number of representative experts. The witnesses  
were practically unanimous in their conviction that electrical  
enterprise had not attained its due position in this country.  
A joint select committee of the two Houses of Parliament in  
1898 reported that the law should be amended as regards the  
veto exercised by local authorities, but no steps have been  
taken to give effect to that recommendation. The opinions of

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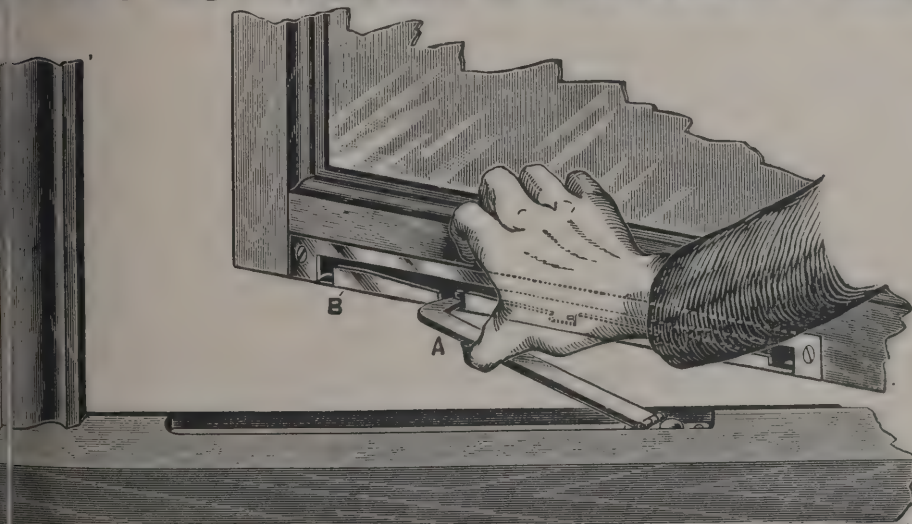
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the committee are embodied in resolutions to the effect that, notwithstanding that our countrymen have been among the first in inventive genius in electrical science, its development in the United Kingdom is in a backward condition as compared with other countries, that the cause of such backwardness is especially due to the restrictive character of the legislation governing the initiation and development of electric power and traction undertakings, and the powers of obstruction granted to local authorities; that local boundaries have usually no reference whatever to the needs of the community in regard to electric supply and traction, and that the selection of suitable areas should be dealt with on the basis of economic principles and industrial demands; that the development of electric power and traction undertakings offers the most favourable means of relieving congested centres; that it is expedient in the national interests that the Electric Lighting Acts, 1882-88, the Tramways Act, 1870, and the Standing Orders relating to special Acts for tramways should be amended in so far as they enable local authorities to veto or delay the carrying out of electric supply and traction projects of which the utility can be shown, and that effect should be given to the recommendations of the Joint Select Committee of Parliament, 1898, on "Electrical Energy—Generating Stations and Supply;" that while this committee fully recognises the ability of the technical officials of the Government Departments concerned, it is of opinion that the staffs of those Departments, as at present existing, are wholly inadequate having regard to the great industrial interests involved, and that it is essential that these Departments should be put into a position enabling them to keep in touch with all developments in engineering matters, both in this country and abroad, and that a sufficient sum should be provided annually by Government to enable them to employ and pay a proper staff for such purposes; that the adjustment of departmental regulations to engineering development should not be delayed until the industrial interests concerned are seriously hampered, and that, with a view to preventing any such delay, the Institution of Electrical Engineers should be willing to take part in revising such regulations from time to time; that this committee recommends that the Institution should memorialise the Prime Minister to receive a deputation for the purpose of urging the removal of the present disabilities and restrictions which prevent electrical engineering from making the progress that the national interests demand, and attaining at least the same level as in America, Germany and other industrial countries.

### THE PROPOSED BANGOUR ASYLUM.

THE special committee of the Edinburgh District Lunacy Board appointed to consider the Bangour Asylum scheme have prepared their report. The report mentions that the committee, besides visiting various asylums, had consulted outside parties, such as Mr. George T. Hine, architect, London, the well-known authority on asylum construction, and the Commissioners in Lunacy for Scotland and England. The Bangour (861 acres) was purchased in 1897 for 13,000*l.*, and was necessary to acquire certain other items, bringing the total up to 21,455*l.*, and the acreage up to 922. There was no wonder that difficulty after difficulty had arisen as to how to properly adapt and utilise the purchase. The difficulty in finding a site for the buildings was so great that the chosen was the best piece of arable land on the property, and the Board's valuator had deducted 225*l.* from the farm rent of 550*l.* for 187 acres required for the site, leaving 325*l.* as rent for the remaining 674, or equal to 9*s.* 8*d.* per acre. Groutlays would be entailed for excavations, retaining walls, a foundation under building, and the foundation would be of an unusually expensive character. On July 27, 1898, Mr. Hippolyte Blanc was appointed architect, and the estimate he submitted was for an asylum for 600 patients, 173,537*l.*, and 61,720*l.* additional for 1,000 patients, or a total of 235,257*l.* Messrs. Lawrence & Co. in July 1898 reported on the probable cost of nine designs submitted in competition by architects, and stated that the probable cost of Mr. Blanc's scheme, according to the calculation, was 291,453*l.*, as against the architect's estimate of 173,537*l.* for 600 patients. Before the architect was appointed it was thus evident that on the surveyor's estimates the Board was face to face with a scheme which, if not modified, would involve for buildings alone for 1,000 patients 400,000*l.* thereby. The architect, according to the minutes, was newly instructed as to the cost his plans must not exceed. In November 1898, on the recommendation of the architect, it was agreed to construct a railway, which it was estimated would save in cartage of material therefrom, which, including payments to the Road Trustees for exceptional traffic and the extra cost of maintaining private roads during building operations, he estimated at 22,000*l.*, and later 31,000*l.*

The report states that owing to the hilly nature of the selected site at Bangour, it would be a very expensive one for building, &c.; taking into account the difficulty in finding within its limits satisfactory foundations, a change of site was suggested as desirable. It was to be regretted that no site

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pointed out which would be thoroughly suitable, the estate being hilly and damp. The committee admired the excellent plans and arrangements of the asylum, they were decidedly of the opinion that they were prepared on a scale much more costly than any lunacy board should authorise. To put down the cost of the present designs in items here and there would not be effective if it was absolutely imperative that a radical change of elevations and specifications should take place. The committee recommended that brick harled be mainly used in the construction of the asylum. The carpenterwork could in many places be modified. Plaster-moulded arches and panelled ceilings, beams and cornices should be dispensed with. In the interior, marble divisions and gunmetal fittings were not necessary. There was throughout a lavish use of glazed bricks and tiles. It appeared extravagant to put in a cottage with a chimney at 17. per superficial yard. There was no department where economy could not be practised. The homes should not cost more than 100. per bed, including branch roads and pipes, electric wiring, grates and painting. Objection was made to the size of the recreation-hall, and the committee recommended that the superintendent's house should cost no more than 4000. There was no need, in the opinion of the committee, for the mortuary being an elaborate building. It was recommended, the committee state, that their examination had been allowed to proceed before the cost of preparing the plan was incurred, as this expense was absolutely of no value in connection with the proposed reduction. In connection with the contracts the committee recommended that the buildings be grouped into several divisions, and that the schedules be prepared on this footing, and estimated for each group, and not block by block only. Summarising the results of their inquiry, the committee recommended that the total cost of the asylum for 1,000 patients, including interest during construction, should not exceed 400,000. Instead of 642. per bed, which they believe would be reached under the present scheme. The following are the recommendations:—(1) The daily supply to be reduced from 100 gallons to 60 gallons per bed; (2) the Board to consider the question of change of the higher plateau north of Bangour Knowes; (3) the buildings to be mainly erected of brick harled and otherwise of good material from the estate; (4) the size of some of the buildings to be reduced, such as workshops, recreation-hall and medical

superintendent's house; (5) the homes to be enlarged to hold sixty patients and to be fewer in number, the whole to be erected for 100. per bed; (6) group the building contracts into sections; (7) while retaining most of the arrangements as shown on plans, a number of alterations are required. All the elevations and sections must be redesigned, the specifications greatly modified and the schedules prepared anew, in order that the buildings and their furnishings, &c., in place of costing 446,000., shall cost 250,000.

In concluding their report, the committee say that in submitting their report and recommendations they had only to add that in proposing an approximate saving of 240,000. they had kept steadily in view the erection of an asylum substantial in its structure and adequate in its equipment.

### THE SUN-DIAL.

Of all ancient inventions there is none more interesting than that of the sun-dial. We read in the thirty-second chapter of Second Chronicles that when Hezekiah was sick he prayed to the Lord, and "He gave him a sign;" what that sign was is particularly told in Isaiah, chapter thirty-eight, verse 8: "Behold, I will bring again the shadow of the degrees, which is gone down in the sun-dial of Ahaz, ten degrees backward. So the sun returned ten degrees, by which degrees it was gone down." This was about 700 years before the Christian era. The Chaldeans were among the earliest astronomers, and the first of all sun-dials of which we have any certain knowledge was the hemicycle or hemisphere of their astronomer Berosus, who probably lived about 540 years B.C. It was a concave hemisphere, similar to a basin, with the hour lines traced on its concave surface, and a globule suspended or fixed in any way at its centre cast the shadow. This was the most simple and natural of all sun-dials, and therefore must have preceded the others. It, however, required no mathematical theory for its construction; a distinct notion of the spherical motion of the heavens was sufficient. The hours indicated by this dial were from its nature unequal, and varied from day to day. This defect was not of much consequence when there were no machines for dividing time; a knowledge of geometry would have served to construct the dial so as to divide time equally, but at that remote period geometry was not known to science.

It is doubtful whether the Chaldeans had any mathematical theory for their dial, although it was of great simplicity. The

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facility, however, of its construction has probably made it the best known. Four have in modern times been recovered in Italy; one was discovered in the year 1746 at Tivoli. It has been supposed that this belonged to Cicero, who in one of his letters says that he had sent a dial of this kind to his villa near Tusculum.

We have so far treated of the earliest form of sun-dial, and may now take a modern one made by the old-established firm, Messrs. Francis Barker & Son, 12 Clerkenwell Road, London. This firm have constructed some elegantly-designed sun-dials suitable for any architect to place in grounds or on new buildings which he may be designing. One of their latest



examples is a horizontal one called the "Coronation" dial. It was designed to commemorate the coronation of King Edward VII., and is remarkable for design, engraving and finish. It is shown in the accompanying illustration, and is of particular interest, being an unique specimen. One can see at a glance the time at London, Cape Town, Montreal and Melbourne. The equatorial plate is arranged in columns, the spaces between which are filled with flowers appropriate to each month of the year, and outside this table there is a border of scroll-work. If desired, in place of this a motto can be graved.

Messrs. F. Barker & Son's new illustrated sun-dial list is well worth perusing; copies will, we understand, be sent to any of our readers on application.

Another dial which came under our notice was one giving the time of the place where it is fixed, and engraved on the plate around the centre were thirty-two principal cities of the world, with their latitude, longitude and the difference of time between the place where the dial is placed and each city.

#### EXTENSION OF CORPORATION STREET, BIRMINGHAM.

THE estates committee of the Birmingham Corporation have prepared a report on the proposed extension of Corporation Street. Concerning the improvement, the Town Clerk in January last year said that the Corporation, having acquired the whole of the lands for the execution of a definite scheme, the Corporation are under the obligation to carry the whole into effect as soon as practicable, unless the scheme be modified by

a provisional order of the Local Government Board duly affirmed by Parliament. If such modification be obtainable, considerable financial adjustment will be necessary. The subject of the extension of the street was also pressed on the attention of the committee in connection with objections to the renewal of a number of licenses, seven of which are on the area affected by the proposal. The committee report details of negotiations with the Birmingham Property Company respecting the transfer to it of certain licenses. The committee have at present in hand fifteen licensed houses, including a group of houses to be leased to the Property Company for twenty-one years with the option of surrendering them on payment to the Corporation of the following sums in respect of them:—King's Prussia, Newton Street, 800*l.*; Racquet Court, Bath Street, 900*l.*; Rose and Crown, Weaman Street, 400*l.*; Coal I. Tavern, Loveday Street, 300*l.*; Anchor, John Street, 1,000*l.* and the Stores, Lower Priory, 400*l.* The committee have agreed to a lease of five other houses—the Black Horse, Britannia, Cooper's Arms, Dog and Pheasant, and Horse Jockey, with power to surrender, on the justices allowing substitution of two new licensed houses, to be built on the site leased to the Property Company on the line of the Corporation Street extension. The latter condition necessitated the question of the extension being now decided. The committee urge that such extension is further necessary for the purpose of opening up the district and remedying its sanitary defects. The estimated cost of constructing the street is 13,000*l.*, and will involve the demolition of buildings from which there will be a loss of rental of about 1,200*l.* per annum. The widening of the canal bridge in Aston Road will cost about 1,200*l.*, and the committee put the entire cost of the scheme for interest and sinking fund at 1,873*l.* per annum, which will be reduced year by year by enhanced rental receivable until it falls to 1,082*l.* in the eleventh year from the formation of the street, 555*l.* in the seventeenth, and 116*l.* in the twenty-second and following years till the expiry of the loan. In their general estimates of the improvement scheme for the current year the committee record that 13,000*l.* would have been a sufficient contribution from the rates but for the circumstance that the Local Government Board have intimated that they will no longer allow sinking funds on loans to be accumulated on a higher basis than 3 per cent. This character involves the necessity of asking for an additional sum of 1,700*l.*

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# The Architect.

## THE WEEK.

London County Council on Tuesday voted for the sum of 3,500*l.* for the decoration and illumination of Westminster and Waterloo Bridges and the Thames Embankment and Embankment gardens. The sum considered large, especially when it is in connection with the national rejoicing at the Coronation. What will be held to be the most notable part of the project is the decoration of Westminster Bridge by the students of the Royal College of Art, South Kensington. They have proposed to set up along each side of the bridge busts of the kings and queens of England, those of VICTORIA and Queen ELIZABETH occupying the central positions. The busts are to be placed upon pedestals of foliage hung from poles. The students intend to supply the models, together with shields and other emblems which will be fixed to the pedestals. The Council will have to arrange for the provision of the pedestals and for the provision of the festoons, as well as for casting the models. The expense of realising the students' plans will be more than 500*l.*, and the ratepayers are not likely to be attracted to the patronage of art on so modest a scale. It is remembered that the students of the college gave to the celebration of the relief of Mafeking, and it is hoped to encourage them in their manifestations of interest in art affairs, from which unfortunately art and artists have hitherto kept away.

A DECISION given by Judge COVENTRY in the Lancaster County Court differs from the precedents relating to the measurement of the height of a building. According to the Workmen's Compensation Act there are two classes of buildings within the Act. One consists of buildings exceeding in height which are either being constructed or are being erected by means of a scaffolding. The limits which are to be taken for the measurements are not announced, and the court has to discover them as it has given employment to judges in the past. In the Court of Appeal the decision given in *WYATT v. NEWTON, CHAMBERS & Co.*, viz. that the height is to be taken to the top of the roof, was affirmed. In the London Building Act height means the height taken from the level of the footway in front of the face of the building, or from the level of the ground before excavation to the level of the top of the external wall, or the base of the external wall. External and party walls are to be measured from the base of the wall to the top of the topmost storey. Judge COVENTRY has gone a step further, for he has decided that the measurement is to be taken to the top of the roof if it should be higher than the roof. In the case of *WYATT v. NEWTON* it was argued that as the building was not within the Workmen's Compensation Act did not matter, but by taking the measurement to the summit of the roof the height became 31 feet, and the employer of the workman was held to be responsible.

ELECTRIC traction seems to be making its way in London. Arrangements are now being concluded for it to be run on steam on the line of railway between Athens and Piræus. It is expected that trains will be able to run between the city and the port every quarter of an hour. The electric power will be generated at the new electric station which will shortly be completed at New Phalerum, and the preparations are being made for the installation of machinery which will collectively have some 7,000 horse-power. This station will also supply the electric light for the city and Piræus. Prior to the Persian wars there was a harbour for Athens, which was called the Piræus. THEMISTOCLES was the first to recognise the advantages offered by Piræus, and Phalerum, of which the Piræus is not quite certain, subsequently was disused. The Piræus and the Piræus were connected by a line of walls which was the great carriage road. The town of Athens was laid out by HIPPODAMUS, of Miletus, with straight streets crossing each other at right angles. The Piræus was quite unlike the crooked and narrow streets of

Athens, which amazed visitors by their meanness. He also erected a market, which, in consequence, was always known as the Hippodamia. According to an inscription, a part of the portico was used to preserve archives. The market must at one time have presented a most picturesque appearance, for the productions of every country known to the Greeks were gathered there, and it was stated to be the general emporium of all Greece. Beside the market was a theatre, and a tablet has been found which recorded that a crown had been awarded to CALACRATIDE for having raised the prices of the seats—a novel kind of service to render. HIPPODAMUS also formed five porticoes in connection with one another near the sea. They constituted "the long portico," and served as a bazaar for goods which had to be sold when removed from the vessels. The five porticoes had a temple at one end and a tribunal at the other, which corresponded with our Admiralty Court. HIPPODAMUS, as became an architect, appears to have been in favour of progress, and who knows whether his ghost may not rejoice at the utilisation of electric power for the benefit of Athens and Piræus?

THE late CHARLES EDWARD DAVIS was so prominent in Bath after forty years' service, his death on Saturday last from bronchitis must leave a void which will be perceptible. In other English towns and cities there was no architect or surveyor who exercised so much dominion. At one time collisions between himself and some of the members of the Corporation were constant, and whenever he was defeated it was by numbers rather than by argument. Since, however, the acceptance of the design of the late Mr. BRYDON for the reconstruction of the public buildings his combativeness was subdued. He had set his heart on accomplishing that work, and it could not be said he was fairly treated when he found himself superseded. His services were manifold, and it was through his explorations that Bath was revealed as an important Roman city. All the world knew about the connection of the Romans with that station, but it was not demonstrated how highly it was valued. It was no easy work to trace out baths and underground arrangements through a dense soil in which water seemed to be percolating all round. But having taken up the investigation CHARLES DAVIS stuck to it with amazing pertinacity, regardless of the indifference of those who should have most earnestly supported him. Nor was he only concerned in archæology. It was through his energy the baths for invalids became comparable with those in the most frequented health resorts on the Continent. He did not confine himself to municipal works; he was the architect for several private buildings in the city and in other places, but his name will be always associated with improvements which testify that Bath merits its name.

THE Uganda Railway has claimed its victim, for it has caused the death of Mr. BAASS, the superintending engineer, in his forty-first year. A trolley in which he was travelling came into collision with an engine at the Lumbwa station, and from the injuries he sustained Mr. BAASS died three hours afterwards. In his report to the Foreign Office Mr. RAWSON, chief engineer, writes:—"I need hardly say how deeply the death of so respected and popular an officer as Mr. BAASS is regretted by all the members of the staff of the railway. He was one of the first party of engineers who arrived in this country in December 1895, and the services he has rendered towards its completion are too well known to the committee to render it necessary for me to recapitulate them here. Beyond two short periods of leave he has worked continuously for upwards of six years, and his death, coming at the very termination of his engagement with the railway, is much to be deplored. By it I lose an officer who has always rendered me the very greatest assistance, and one whose zeal and ability it would be difficult to over-estimate." Although a young man, his experience was varied. He was for several years employed on road, water and railway works throughout Australia. Seven years ago he went to Mombasa, and having completed the operations for which he was engaged, he was asked to remain for a longer time. He was about to return to England, after his supplementary service, when he met with his fatal accident.



## THE NEW GALLERY.

THE exhibitions of the New Gallery are supposed to be a continuation of those in the Grosvenor Gallery, or, in other words, they give opportunities to display a departure from the beaten tracks of painting, of which the goal is the Academy. We all know there are artists who are born innovators and, regardless of the sacrifices they may be compelled to make, must be faithful to what they consider as inspirations. For them the Grosvenor Gallery seemed to be a fostering power. There are other men of a plastic nature who, without having any peculiar way of representing life, find little difficulty in the imitation of what is novel in other representations. In the present exhibition of the New Gallery the second class is more largely installed than the first.

All lovers of art must rejoice to see no diminution of power in the vigorous hand of Mr. G. F. WATTS, who is the principal survivor of the revolution. His *Love Steering the Boat of Humanity* recalls TITIAN by the modelling, the waving scarfs of red and yellow, the great billows, and by the simplicity of the composition. It is an allegory which all can understand. His *Sunset in Surrey* has also the breadth which characterises Titianesque landscapes. It is easy to trace Mr. WATTS's influence in the *Cider Press* of Mr. FRANK BRANGWYN. The spirit of the operations is suggested not merely by the figures of labourers, or the nude children, but by the richness of the colouring and the abundance of fruit which is scattered around. It is not a picture that is adapted for reproduction in a Guide to the Orchard, but it serves to reveal the poetry of one British industry. The picture is also remarkable as another effort of Mr. BRANGWYN to try his power in a variety of tests, and its completeness is as satisfactory as any of his scenes on sea or in Moorish towns. Mr. WATTS could also claim to have a lien on the *Haymakers* of Mr. T. AUSTEN BROWN. The subject has been treated by countless painters, but here we have a largeness of style which is not usual. The intensity of the colouring should also be recognised. There are only two figures of a man and a woman, but they are as expressive of operations in summer as would be a dozen figures dispersed over a field.

There are other pictures in which we can trace an indebtedness to Mr. WATTS. Several are also reminiscent of pioneers who have passed away, the late Sir E. BURNE-JONES being one of the most influential. It must be said that the works by those who would claim to be his disciples are wanting in many of the qualities which redeemed that artist's numerous shortcomings. Attempts to treat scenes in the style of primitive artists are also common. All those works now excite a sense of insincerity on the part of the artists who produce them, for it is not possible to look on life in the same way as men who existed four or five centuries ago. That assurance of encountering an excess of imitativeness we believe to be one of the causes of the growing indifference to the exhibition. The ordinary visitor has discovered that borrowed styles are as absurd as borrowed plumes.

In the rooms there are however many works which deserve attention. The dozen of examples which are painted in tempera form an interesting experiment, especially as a demonstration of finesse. Among them Mr. J. D. BATTEN's *Danae and the Shower of Gold*, an effort to treat a myth in a style that cannot shock the modest; Mrs. STOKES's *Snowdrop*, an illustration of the fairy tale depicting the princess in her glass coffin and lamented by gnomes, not altogether Germanic in type, and her *Franciscan Scholars*; Mr. WALTER CRANE's *The Wind in the Trees*, an allegory in a decorative spirit showing how all the winds of the world play upon the one of love; and Mr. HENRY RYLAND's *Oleander* are the most successful. Mr. SOUTHALL's *St. Dorothea*, another of the series, is spoiled by its excess of archaicism.

The portrait of *Professor G. D. Liveing*, by Sir GEORGE REID, P.R.S.A., gives an impression of being characteristic; but, like the portrait of a Professor which was seen a couple of years ago at the Academy, it suggests a suspicion of students. The portrait by the same artist of Sir JOSEPH W. PEASE is, however, of a manly man of English type. Mr. SHANNON's *Mrs. Neligan* is painted in a quiet manner that suits the subject. His bravura effects

are rightly reserved for younger sitters, like his *Lady*, who is shown against a boldly ornamented curtain background, and *Miss Dorothy Chambers*, who seems a flower queen. Mr. JAMES CHARLES, in *A Pastoral*, utilises the luxuriant gorse which is found in parts of the county. In *The Pool*, by Mr. W. H. BARNES, children are bathing on a bright day. His *Pollock off Arranmore, co. Donegal*, is a scene of a dramatic character which he has already made familiar, for it depicts toil-worn Irishwomen who are carrying loads on the coast that is marked by savage beauty. *The Wild Trees*, by Mr. ADRIAN STOKES, is a bold attempt to sent what at first sight looks like a revolt against the organic system followed by nature. *The Dancing Lesson*, by W. H. BYLES, is a classic scene showing Greek girls on a terrace, and is graceful throughout without any artificial logical pedantry. Lovers of English literature will be attracted by Mrs. STILLMAN's *In the Garden of the Landor, Florence*, although it is amateurish in parts. A great writer believed it was the place where BOCCACCIO told his famous stories. Her *St. Francis Blessing the Pigeons* has *Liberated* is at least pleasing in sentiment, but a common error has been made of clothing the saint in a brown habit. Originally grey was the colour of the Order. Mr. FRANK DILLON's *Sphinx* at *Midnight* supports the argument of those who believe that the ruin is not fit to be portrayed under a garish eye, and a lighted fire at the side indicates the mystery of the colossal form, and dispels the monotony of the desert. The *Lamia* of Mr. C. F. M. CLEGG recalls KEATS's poem, for the unhappy being crouches on the ground, and in her robes the colours of the serpent's skin have been utilised. *Mount St. Michel*, by Mr. DONALDSON, is a careful representation of a view in art and nature have been happily combined. Mr. EDWARD PARTON, in *The Tangled Wild Wood*, introduces trees that may be called delicate, and almost every inch has a special character.

Mr. HERBERT DRAPER has for once abandoned his favourite water-nymphs in his *Midsummer Night*. A modern cart would by itself suggest a transcript from a book, but near it PUCK is seated. A little more and the picture would serve as an illustration of the sprite's words, "with weary task foredone." Mr. BERNARD F. GRIBBLE has also changed his subjects, and his *A Good Day for a Turn* is an eighteenth-century scene with two equestrians, a lady, and a gentleman, in a wood. The expression on the lady's face is not altogether satisfactory. Mr. C. E. HALL is a careful painter, and his three pictures emblematic of a woman's life will no doubt be popular, but the excessive labour mars their effect as works of art. We prefer *Water Carrier*, which is a brilliant canvas. It is necessary to say that Mr. REGINALD BARRATT's *Cornfield* at *St. Mark's, Venice*, shows an appreciation of detail which is not customary in views of the famous building. *The Lock* is so effective as a faithful transcript from nature, that, in fact, so full of CONSTABLE's spirit, it will excite doubt whether Mr. JAMES ORROCK has acted wisely in devoting so many years to the production of small drawings and pictures, although they are of such excellent quality. There is no faddism or attempt to make nature an ornament or a wailer, and on that account it almost seems out of place in the room. *Between Summer and Autumn*, by MISS MOFFAT LINDNER, shows some daring; the work does up to the title, although in parts spottiness has been carried to excess. *The Cobweb—Hesitation*, by Mr. C. E. PERUZZI, as usual with the artist, shows a scene so spick and span that seems improbable that a spider would select such a place and paling as auxiliaries to a trap for flies. Why does a girl hesitate? Is it through womanly fear of a spider? Apprehension that her passing outside will be detected? Mr. COUTTS MICHIE has a vigorous portrait of Sir JAMIN BAKER, but the designer of the Forth Bridge may well be contented with everyday dress, and leave red robes to aldermen and others who need trappings to gain distinction. *Salomé*, by M. BENJAMIN CONSTANT, is of a more savage than is usually selected, although French painters are partial to the subject. She is no more than a barbarian with fiercer eyes than are seen in a tiger's head, and such a woman would have no qualms in serving as an office of executioner. Sir J. D. LINTON in *The Vision* shows



who is engaged on a picture of the Madonna and when a vision appears before him. The expression is effec-  
 ficient, while the robes and drapery have the richness  
 ment which is only found in Venetian pictures.  
 the North Gallery. *Dear Lady Disdain*, by Mr.  
 COLLIER, is an attempt to realise SHAKESPEARE'S  
 CE; the dress is rich green, with sleeves em-  
 ed in gold and a red mantle. She carries a fan of  
 feathers in her hand. It is not an easy task to  
 ke, for everyone has his own ideal of the characters  
 dramas, and in this case the figure seems to be less of  
 on than a portrait of a lady. Mr. G. P. JACOMB-  
 shows a Satyr's family, the children dancing to the  
 which the father plays on a pipe; it is a joyous scene,  
 e more welcome because humour in every form is  
 d from the gallery. Is the perpetuation of the frailties  
 at man becoming in a painter? Mr. H. SCHMALZ  
 St. AUGUSTINE exhausted by debauch lying on a  
 whilst his mother is wrapt in prayer at his feet. There  
 outh the saint wrote a book of confessions, but men  
 lass are disposed to exaggerate the misdeeds of their  
 and the saint may not have been as black as he  
 himself. Besides, an artist should remember that  
 TINE wrote a large treatise on beauty, which at one  
 appears to have been valued. *The Decadence of the*  
 s was painted by COUTURE as much from a desire to  
 against Imperialism as from any other cause, but to  
 uth, intellect and genius stretched brutally on a  
 is not an edifying spectacle, especially when we  
 at the Christian bishop atoned for the defects of the  
 student. Mr. ALFRED EAST'S *Morning Song* is a  
 pe with bare trees, and having the subdued tones  
 re characteristic of his style. The *Fra Angelico* of  
 INDOR FRY is a subject which has been several  
 ainted. In this case the Dominican artist is sup-  
 to be at work on his *Coronation of the Blessed Virgin*.  
 the figures sketched, and the nimbi, which are more  
 ere lines, have been laid on by a gilder. The  
 is engaged in prayer before commencing the day's  
 ons. Altogether the picture must be considered as  
 eful both in selection of incident, composition and  
 nt. A semi-religious picture is Mr. THORNHILL'S  
 rine, a woman placing flowers before a triptych. Mr.  
 t's *Children of A. Wertheimer, Esq.*, is another  
 portraits; it would be more correct to say a quinary,  
 e are two dogs who are also posed. Like the larger  
 is in the Academy, children and dogs are shown  
 towards the spectator as if demanding admiration.  
 he boy, who is wearing an Eton suit, seems to say,  
 a pessimist, and is it any wonder when I think of the  
 ss of the poor creatures before me?" Yet while we  
 o the disposition, which is especially unsuitable for  
 t, we must express our commendation for the amazing  
 main by which so much effect is produced by hasty  
 apparently formless strokes. Mr. GLAZEBROOK'S  
 lmer corresponds with the popular notion of an  
 rator who is competent to perform onerous and  
 able duties. Mr. STUART DAVIS in his *Charybdis*  
 ited the syrens not as they are usually represented  
 ern artists, but in the ancient manner, as birds with  
 heads. They are hovering near the fatal pool,  
 as depicted must be regarded as irresistible. In  
 on *Sunset* Mr. MACWHIRTER appears to have  
 a scene in Westminster, although from its darkness  
 d to make out its position; but it is one of those  
 that are proofs of the picturesqueness of the  
 polis.  
 w statuettes have been introduced with effect in the  
 but the central hall, where works of sculpture used  
 ies to be seen, is now occupied with a collection of  
 e examples which are for sale. The majority of  
 e on a small scale. They all seem to belong to a  
 en no attempts were made to transform native art  
 to please European customers who were incom-  
 to appreciate the qualities which were prized in  
 The examples in ivory carving, lacquer, enamelling  
 sine as can be seen anywhere in Europe. They  
 our admiration for a race who found enjoyment  
 reproduction of created objects, and in that way  
 d a reverence for nature far beyond people in other  
 o claim the possession of a higher morality.

## THE ART OF SIENA.\*

THERE has been at all times a tendency towards unity  
 which seems to have its origin in a philosophical  
 or theoretical spirit. It is so compulsory it declines to  
 observe many important considerations. For centuries it  
 inspired visionaries with the hope of an united Italy. A  
 slight knowledge of the country would have shown that  
 although in Roman times the whole Peninsula was regarded  
 as if it were occupied by people who resembled one another,  
 yet a great many varieties were to be found within its  
 limits. There was as much difference between them as if  
 they were separated by long distances. The history of art  
 by itself is enough to reveal the strength of the peculiarities,  
 Rome as the capital and as the great encourager of art  
 during many centuries might be expected to uphold its  
 supremacy by the works of native artists. But the so-  
 called Roman school, until the period of the deca-  
 dence, consisted of men who should be classed as  
 foreigners, for they belonged to other parts of Italy. The  
 unity consisted in the power of bringing them together.  
 The schools of Florence, Milan, Bologna, Verona, Ferrara,  
 Umbria, Padua, Brescia, Venice had all special character-  
 istics which must be ascribed to the several idiosyncrasies  
 of the peoples. An attempt was made in a period of  
 decline to form an eclectic school for Italians, but it ended  
 in failure. To combine the drawing of MICHEL ANGELO  
 with the colouring of TITIAN and the grace of RAPHAEL  
 might be a desirable attainment; but in the proposal no  
 thought was given to that personal element which is so  
 essential in art. The characteristics of great artists must  
 be attributed in a large measure to racial power, and it is  
 absurd to suppose it was owing to no more than a defective  
 elementary education that MICHEL ANGELO was not as  
 enjoyable a colourist as TITIAN. It is possible, no doubt,  
 to compel young artists of many races to subject themselves  
 to an uniform course of training, if men are contented with  
 results like those of our Science and Art Department; but  
 wherever there are artistic elements provided by nature it  
 is best to allow her to have her own way and to foster  
 inborn peculiarities, although they may produce a variety  
 of schools.

The common phrase "The Italian School" is there-  
 fore one of those indefinite expressions which satisfy only  
 those persons who are contented with having hazy notions on  
 the subject. There was too much native power in Italy,  
 too many able men to permit of determinate qualities which  
 were to be common to them all. To understand Italian art  
 it is necessary to understand the works of many indepen-  
 dent schools, and to examine not only the productions of  
 kingdoms or principalities, but at times the works that were  
 executed in towns so small as to resemble villages. As an  
 example we may take Siena. Some years ago a book was  
 produced which obtained unusual attention in France: it  
 was a history of Christian art by M. RIO. But the part  
 which was most relevant to the subject was simply an account  
 of some Siennese painters. The conclusion to be drawn  
 was that in the author's mind Christian art was identified  
 with the works which came out of the studios of Siena.  
 There were strong reasons for M. RIO's belief. Siennese figures  
 possessed characteristics which were unlike those found in  
 the works of other schools, and bore a peculiar relation to  
 Christianity. Is it possible to explain their existence?

Siena was one of those towns which through accident  
 rather than purpose were long neglected. Although in  
 Etruria, it does not appear to have attained importance in  
 its early days. Subsequently it became a Roman colony,  
 but from its position on top of a hill it was reputed to be  
 difficult to approach. It was the seat of a bishopric in the  
 sixth century, and probably in a much earlier age. It was  
 allowed to be independent, and in the Government plebeians  
 as well as patricians took part. In the wars of Guelphs  
 and Ghibellines it was not inactive, and from the fourteenth  
 century life in Siena was as uncertain as in any of the other  
 Italian cities.

From its remoteness we can comprehend how easily a  
 style or manner when it had once taken root in Siena would  
 be fostered as if it were incomparable. Duccio in the  
 beginning of the fourteenth century executed the wonderful

\* *Siena: its Architecture and Art.* By Gilbert Hastings. (London: The De La More Press.



altar-piece in which gold was liberally used. There was a proverbial expression that as many good painters came from his workshop as warriors from the wooden horse which was brought into Troy. But it was not for painting alone Siena was renowned. A school of sculptors was formed at an early date, and one of the members is said to have spent no less than nine years on a bronze tabernacle for the cathedral. Pope PIUS II. was a native of the city, and he exercised his influence for its benefit. But there was a self-reliance among the painters which enabled them to dispense with courtly favours. The Siennese artists, unlike those elsewhere in Italy, were not simple academicians or members of a religious guild; they formed a corporation which sometimes supplied the first magistrate to the city. The custom in Italy was for painters to be under the control of the Church, but in Siena no control was exercised except that of the Government. Before Duccio's time there were painters, and it is believed that works exist that were produced in the twelfth century.

So renowned a place is not likely to be forgotten by those who investigate the history of art. Siena is fast coming into favour. One of the latest books on Siennese work is by Mr. GILBERT HASTINGS. It seems to us, however, that he has judged the inhabitants, and especially the artists, by the standard of our time. Everybody now seeks a reputation which will extend beyond the place to which he belongs. It may seem incredible that artists lived in Siena who were satisfied with local renown, and did not covet the applause of cities which to them were foreign. But their contentedness should not be looked upon as an indication of weakness of spirit, although to many it will have no other signification. Mr. HASTINGS says:—

It cannot be claimed that the story of Siena presents us with the most important or the most complete of these separate developments. She never rose to a leadership in Italy, and her art, in spite of its century-long charm, and its three or four names of first-rate eminence, could never have done for Europe what was achieved by the more virile and scientifically-minded Florence, or the wealthier and more sensuous Venice. Except at one moment when she sent her painters across what is now the fertile Val di Chiana—then a swampy marshland towards Perugia—and gave the school of Umbria at its start that tendency towards a quiet grace of action and of feature to which later men added a pietistic touch not always sufficiently removed from the lackadaisical, her work was self-contained and led to very little outside her own walls. While her neighbour Florence was raising a breed of men to change the world—painters like Giotto, whose link with his predecessors, considered in relation to the amount which he invented anew, is extremely slight, and whose career as he passed from place to place in Italy, superseding the elder and by no means always dying schools, and founding a new art dynasty in their place, was as effective as Napoleon's in altering the face of things—Siena proceeded by a slow development to create out of archaic beginnings a manner of painting in which a delicately pretty type, beautiful colour, and an exquisitely rich and varied ornamentation provide an ample satisfaction for the searcher after loveliness.

In Siena conservatism was potent. At an early time Byzantine artists or Byzantine works found their way to the city, and the principles they represented were afterwards steadfastly upheld. Some of the artists occasionally emigrated, but when in difficulties they realised there was no place like their own city. This is suggested by the history of PERUZZI, the architect. If he had remained in Siena his name might have been as unknown as that of his master, but he made a journey to Rome and there he was honoured. He succeeded RAPHAEL as architect of St. Peter's. But after the sack of Rome he was glad to return to Siena, where he was pensioned and given charge of the fortifications. He pined for more success and went back to Rome, and there it is believed he was poisoned. The artists of Siena did not claim to be more than ordinary citizens. It is known, for example, that there were at least four painters who were called UGOLINO, but it is impossible to discriminate between them owing to the want of biographical information. GIROLAMO DEL PACCHIA was also esteemed in Rome as a painter, but he preferred the humbler life in Siena. NICOLO DI BUONACCORSO's works are now extremely rare, and this is the more remarkable, as in Siena he held the offices of Gonfaloniere and Capitano del Popolo; but to the people his administrative powers were not enhanced by his art, nor the value of

his works increased by his appointments. The Siennese clung to their own opinions, and whatever may be the character of their art it was, at least, consistent; they aspired to become eclectics. The Siennese and Bolognese are at opposite poles in the history of Italian art.

It is not easy to trace the conservatism of the Siennese in architecture as far as is desirable. The Hospital of Santa Maria della Scala is said to date from 832, but whether any part of the early buildings exists is not known. The most important architecture is of the thirteenth and fourteenth centuries, and it could only have superseded an earlier style through unusual influences. The Palazzo del Pubblico was erected between 1295 and 1308, and the beautiful tower which attracts the admiration of LEONARDO DA VINCI was completed in 1344. The cathedral, which is no more than a portion of the building that was contemplated, dates from the fourteenth century. Owing to the plague Siena suffered, and the people were too poor to erect a cathedral that would be worthy of the city. The black and white marble in the walls and in the pavement becomes monotonous, but the Siennese would never give up half-measures. The two colours were also dignified in the eyes through their heraldic interest. The pavement is of the features of the cathedral which excites most interest. The Romans had pictorial mosaic floors which were used upon without hesitation, but in a Christian church a congregation was supposed to kneel, and the intention was no doubt, to enable people while in that position to read the sacred history. Men's thoughts will wander, and it is better to have them attracted by scriptural scenes than by worldly matters.

The importance of pictorial art in Siena is not to be estimated by the slight value attached to an occasional wall-decoration in one of our public buildings. Even the French and the Germans look on wall-paintings simply as ornaments. In Siena, as we have said, the painters took their share of municipal affairs, and it was allowable for them to conclude that their art could be made to subserve the purposes of government by suggesting the difference between order and anarchy. The Siennese were difficult to rule. MONTAIGNE declares from what he saw during his visit that Siena was governed with more foolishness than any other city in Italy, and that at all times it was dominated by some faction. The hall assigned to the cross-bowmen in the Palazzo Pubblico was adorned with paintings by AMBROSIO LORENZETTI, which were intended to mark the contrast of good government with bad. Mr. HASTINGS gives the following description of the subjects:—

One side of the room was covered with a representation of the results of good government, both in town and country. Various sorts of profitable occupations are being carried on within the walls of the city—trading, teaching, building, and by no means least, dancing in a ring; while in the country-side with hunting, hawking and secure travelling can be perceived. On the opposite wall exhibits what may be expected to happen when what probably did happen, under an evil administration, divided one. Murder, outrage and theft throng the streets of the unfortunate city, its own citizens destroy its defences, and the friends of every imaginable kind hover about it. It may be readily conceived that such subjects lent themselves to the delineation of action and of passion, and Ambrosio Lorenzetti did not show himself altogether unequal to it. A more difficult task, both in art and in philosophy, was set the painter when he had to represent on the cross-wall which connected the two a series of mentioned pictures, not the effects of good or bad government, but the causes of them. The complicated allegory is redeemed by the charm of feature and delicacy of pose which characterise the numerous virtues who are assisting and counselling the majestic figure, draped half in white and half in black, to the colours of the city's banner. He represents the embodiment of the Commune, and sits surrounded by Peace, Fortitude, Prudence, Magnanimity, Temperance and Justice, while Concorde removed holding one end of a rope which binds together the twenty-four governors.

In other public buildings of Siena apposite ideas are expressed by the painter's pencil. Similar works were found on the exterior of buildings. Art exercised a sway over the city to a greater extent than is now believed, owing to the indifference of the people to preserve records of their actions with painters, sculptors and architects. On account of this it is well to have as many books as possible of the history of art in Siena, and Mr. HASTINGS's can be recommended to travellers who are about to visit one of the most interesting of all the Italian cities.



## A PROBLEM IN RESTORATION.

HERE are various systems of restoration, which can, however, be grouped into two great classes which may be called the French and the English. The French system, which originated with the Historic Monuments Commission, allows opportunities for the exercise of imagination on the part of the restorers. It is assumed that in dealing with a building it is best to treat it as the original architect would have done if he lived at the time of the restoration. In that way it becomes permissible to employ many modern devices. Sometimes a plain building is changed into a gorgeous structure, and occasionally one that is simple is made to assume a still more primitive character.

That mode of interpretation of ancient work is, however, in keeping with the French disposition, and is appreciated abroad as a more rigorous and reverential method of conducting restorations. It corresponds with the French manner of translating foreign works. SHAKESPEARE, to take a case in point, is supposed at one time to be little better than a savage who tried to write plays without having the least knowledge of rhetoric. He resembled, therefore, one of the Mediaeval architects who might have been a genius but had not passed through such courses as were dictated by the Academy of the Arts. Subsequently, the English dramatist came into favour with the French, and in order to manifest their esteem for him his works were translated; but as in the case of buildings, they were believed to be improved in the process. Even a *bon enfant* like ALEXANDRE DUMAS, who made no pretence about being a superior person, produced a version of "Hamlet" which was so peculiarly French as to become ridiculous. But it must be said that the translation was as logical as many of the restorations which were controlled by the Historic Monuments Commission.

We cannot deny that during long years Gothic buildings were operated on in England in a manner which was worse than that followed by the French architects. The French innovations, although they may not be in keeping with the original works, are at least interesting, if they should be considered independently. But throughout England churches are to be seen which are not only full of anachronisms, but anachronisms which are vulgar and ugly. It was not to be expected, when local builders were employed to make changes without having sufficient supervision, that the spirit of the original artists would be appreciated and respected. It must also be allowed that the desire to have cheerful churches in which all parts would be as bright as possible has been fatal to much work. The efforts of the clergy to secure and retain crowded services could not in many places be impeded by considerations of archaeology. But while all this has to be admitted, it cannot be disputed that the endeavour of English architects has been to show regard for the original design, and if alterations are necessary to keep them as far as possible in unity with the old work. However careful a restorer may be, he will sometimes find himself at variance with other architects, who may draw different conclusions about the course which should be followed.

A case of the kind has just arisen in Scotland. It is proposed to execute some restorations in the beautiful church of St. Michael's, Linlithgow, in commemoration of a new reign. The plans for the purpose have been prepared by Messrs. JOHN GORDON & BENNET DOBSON, of Glasgow. It is not necessary for us to describe all the recommendations. Among the contemplated works are the rebuilding of the part of the tower which is 45 feet above the eave, the restoration of the crown on the tower, the reslating of the aisle roofs, &c. But, according to the abstract of the report which has appeared in the papers, there are to be certain "improvements." The most costly of these is the construction of a groined roof over the nave and of no less than eighteen flying buttresses. A French architect would no doubt rejoice at the adoption of the latter proposals, but we must say they are not in keeping with English practice. There is no denying that the stone roof and flying buttresses are innovations. This is admitted by Messrs. GORDON & DOBSON, for in the abstract of the report it is said:—

In the construction of the triforium and clerestory walls there is no internal indication that the nave has ever been

roofed with stone, neither is there any external indication of there having been at any time flying buttresses to resist the thrust of stone vaulting. It may be that the walls at this part (which are 3 feet 4 inches thick) are strong enough to resist the thrust of stone vaulting, without the aid of flying buttresses. The absence therefore of external indications of flying buttresses is by no means conclusive evidence against a stone roof having ever existed. At the same time, had there ever been such a roof, we feel confident that there would have been some kind of internal indication thereof. However this may be, the fact that both aisles are roofed with stone inclines to believe that the original intention of the architect would be to roof the nave in the same manner as the aisles, and that this intention was probably abandoned through lack of means or otherwise. Should the heritors resolve to complete the design as originally intended, we would strongly recommend, for both structural and æsthetic reasons, that flying buttresses should be introduced, however practicable it may be in this case to construct a vaulted roof without the aid of these features.

In courts of law whenever suits arise which are connected with the intentions of an individual who is no longer living, the utmost jealousy of an exercise of imagination is observed. Who can determine what takes place in the mind of a man when he is performing any act? The only way out of the difficulty is to assume that an action performed by him of which there is undoubted evidence reveals correctly his intentions. If a man leaves money for building a church it would be held absurd for a counsel to argue that the defunct was a believer in the efficacy of schools, art galleries and theatres, and the money should be appropriated to one of those purposes. Chaos would come again in human affairs if we declined to accept actualities and substituted speculations about "original intentions" which a thousand people might interpret in a thousand conflicting ways.

It would be doing a great injustice to the architect of St. Michael's to assume that his building was unlike his plan. If he desired to have a stone roof, which was not universally adopted in Scotland, we may be sure that means would be found to realise his intentions. Linlithgow, it is well to remember, was no ordinary town; it was a royal burgh, with a palace of architectural character, as may be judged from the ruins. The conditions were therefore likely to be favourable for the construction of a vaulted roof if one were thought necessary. Whether the architect ought to have introduced one in order to perfect his building we need not discuss. A French architect would think there was nothing incongruous in now adding one of the most developed varieties; but, as we have said, the French system of restoration has not been approved in England, and we hope that it will never be accepted among us.

If the stone roof is unnecessary the flying buttresses must vanish with it. We cannot consider the proposal as in keeping with the Scottish manner, and we regard with grave concern the possibility that such innovations should be tolerated. Scotland has been in a close relation to France, and this is shown by many features in northern architecture. But whatever might have been the case in the past, we trust it will be no longer possible to imitate Frenchmen in disregarding the character of a building and substituting their own devices, on the plea that they are realising the original intention of an architect who lived several hundred years ago.

## MOUNT VERNON HOSPITAL, NORTHWOOD.

ON Tuesday afternoon Princess Christian laid the foundation-stone of this building. Her Royal Highness, who was accompanied by her daughter, Princess Victoria of Schleswig-Holstein, and attended by Lady Agneta Montagu and Colonel G. G. Gordon, C.B., drove over from Lord Ebury's seat, Moor Park, arriving at the site at about 3.30.

The chairman of the reception committee, Mr. B. A. Lyon, made a short speech of welcome, and some two dozen purses were presented to the Princess, after which, assisted by the architect, Her Royal Highness laid the foundation-stone. The hymn, "Now thank we all our God," was sung by the choir of Northwood Church, accompanied by the band of the Grenadier Guards. The Bishop of Kensington closed this part of the proceedings with a benediction. The new building is designed to extend the work of open-air treatment of consumption so successfully carried on by the parent hospital at Hampstead. It provides accommodation for 100 patients—fifty males and



fifty females. The wards are arranged in linear series, all facing south, with a spacious cross-ventilated corridor on the northern side, off which the lavatory blocks are placed and connected to it by another cross-ventilated corridor.

The administrative block is placed between the two wings proper to each sex, and contains doctor's and matron's rooms, dispensary, library, recreation-rooms, and on the top floor accommodation for servants; two isolation wards are provided.

The nurses' home, kitchens, doctor's house and secretary's offices are all separately placed at some distance from the main patients' block, and connected to it by a wide corridor. The patients' dining-hall, which is common to both sexes, is also detached.

Pathological-rooms, mortuary, laundries and electric-lighting station will also be provided. Great consideration has been paid to the general planning and design of the buildings by the committee and architect, who, indeed, have spared no pains in endeavouring to erect a sanatorium that shall fully meet all the modern requirements of the open-air cure for consumption.

Five well-known architects were invited to compete for the design, the plans of Mr. Frederick Wheeler, F.R.I.B.A., of 6 Staple Inn, W.C., being selected, and it his design which is now being carried out by Messrs. Holland & Hannen.

The design for the patients' block is in the Royal Academy Exhibition.

An anonymous donor has given £120,000 towards the erection and endowment of this hospital.

### WESTMINSTER ABBEY.

THE First Commissioner of Works, having been asked by Mr. Talbot, M.P., what precautions have been taken against fire, in view of the large amount of woodwork which now surrounds Westminster Abbey, in addition to the large amount collected within the building, states that an excellent arrangement of hydrants exists in the Abbey. The hose is kept fixed and ready night and day. The police on duty and the Abbey firemen have careful instructions as to the use of appliances and fire-calls. The Abbey has been inspected by the officers of the Metropolitan Fire Brigade, and they have not at present given any sign of dissatisfaction. Mr. Akers-Douglas has asked Captain Wells to let him know should anything be required additionally to safeguard the Abbey. He is informed that the insurance company which insures the fabric for the Dean and Chapter has not required any premiums to be paid for extra risk. Mr. Akers-Douglas has warned the authorities of St. Margaret's to provide for the safety from fire of the stands which are being erected in proximity to the Abbey upon land not within his control.

### TESSERÆ.

#### The Duomo of Turin and its Chapel.

THE Duomo at Turin was built by the Cardinal Domenico di Rovere in 1491. It is said that he ordered his architect, who, according to some, was Bramante, to make a beautiful building and to spare no expense; but that the artist, from some pique against his employer, complied with the latter direction, but not with the former. One may believe his treachery against his employer, but hardly that against himself—at the same time everyone acknowledges that he has not made a beautiful building. Above the altar an arched opening exposes the chapel of the "Santo Sudario," in which is kept the shroud, or imitation of one, which recently was made the subject of some comments. Entrance is gained by a dark staircase of black marble to the chapel, which is considered the masterpiece of Guaini. Black marble is used throughout except the capitals of the columns and some other ornamental portions of bronze. In these capitals the crown of thorns is appropriately introduced amidst the leaves of the acanthus. The pavement is composed of a dark blue marble, also inlaid with bronze. The plan of the building is circular. In the centre is the altar of black marble, upon which is placed the shrine, brilliant with gold, silver and precious stones. The first and lowest divisions of the chapels are composed of arches. Above rises a most singular dome, if, indeed, it can be so-called, formed of arched ribs, on chords of the circle, from the summits of which other similar ribs spring in succession. To describe the building minutely is impracticable, because, although it professes to be in the Italianised Roman style, the members are so varied and combined that they cannot be really designated by any of the acknowledged terms of the vocabulary of architecture. The workmanship of the whole is excellent. The building seems cast at one jet.

### The Italian Eclectics.

The school of the Caracci has been often described merely imitative, but perhaps this has arisen rather from the well-known and professed objects of its institutors and followers than from a particular evidence of that object in their productions. If a certain resemblance of manner, whatever it derived from, characterise the masters, it may be admitted that no school presents so much variety as is to be met with in the works of their disciples. This, it must be confessed, cannot be said of the followers of Michel Angelo and Raphael. The example of an eclectic style may thus lead to a more original style, whereas the example of an original style, if it cannot be surpassed, can only end in a weaker copy. Yet assuming that the Caracci were as independent of the spirit of their age as we are free to choose their path as their biographers would lead us to suppose, had they endeavoured to follow up the feeling of Francia (not to return to Lippo Dalmasio or to Giotto) they might have succeeded in connecting the highest effort of the school with that earlier, national or local style which, as we have seen, was nipped in its growth before it was fully developed, partly perhaps because Francia devoted himself late in life to the art, and thus still adhered to the incomplete, and, as it were, preparatory mode of imitation when the perfect one had already been introduced. The merit of this pain as one of the characteristic Italian masters should not, however, be forgotten, and his style is not the less interesting for being connected with that original school of Umbria, distant from the Florentine, which was remarkable for purity of expression, and which had so much influence on the education of the genius of Raphael.

### Polychrome Sculpture.

A passage occurs in the thirty-fifth book of Pliny, which has received a different translation from the one most obvious and directly supporting this practice of colouring accessories of statuary. He wrote:—This is that Nicias (Athenian painter), concerning whom Praxiteles said, who asked which of his works in marble he most approved those which Nicias has applied his hand to; so much Praxiteles attributed to his tinging, "circumlitio." This last word may be rendered, adorning with paint, doing over, or, as its sense is more exactly supplied in the German, *umschmieren*. The work of Sir Charles Fellowes on his discoveries in Asia Minor has thrown light on the earliest history of Grecian painting. An inscription was found by him at the ancient Aphrodisias in Caria, to this effect:—"That Callias, grandson of Zeno, son of Eudamus, an honourable and good youth, whose conduct was virtuous and worthy of all praise, be honoured with the greatest and fairest honours, and that there be put up his statues and sculptures and images, painted in golden armour, in temples and public places, whereon there are also to be inscribed his honours fair, and befitting and becoming family and the conduct of his life, and that these words and inscriptions be likewise placed on his tomb, in which his brother Zeno also is buried." According to this inscription the temples and public places of Aphrodisias were decorated with statues in painted or gilt armour, for EIKON GRAPHE (the phrase employed) is a painted statue or image of personage to whose honour the tomb was erected. In the literature and art of Greece that the last century has possessed, is adduced to bear the same testimony. To my satisfaction I received, says the author, on my return to Athens, in renewing my acquaintance with the justly-celebrated Professor Müller, has made me more aware of the immense influence Europe has sustained by the death of one of her greatest scholars, in all the vigour of life. On seeing the colour drawings of this tomb (the author speaks of one he had covered in Myra, a city of Lycia, the walls of which were surrounded with reliefs entirely coloured), he expressed the following opinion as to the mode of colouring adopted by the Greeks in their works of art:—The ancients painted their reliefs, they only tinged their statues, tinging the drapery leaving the flesh part uncoloured; (2) the wounds and blood were stained and the earrings and ornaments gilded. The temples were left white, but parts of the frieze and architectural ornaments were coloured, but very minutely. Their temples of coarse materials were plastered and entirely coloured. The Parthenon frieze was coloured, all the backgrounds of the bas-reliefs were painted. This was his opinion at Athens. In June 26, 1846. In further corroboration of this were discovered in the excavations at the Count Lozzani's villa, near the Porta Pia, Rome, the three large sarcophagi which are now in the Gregorian Museum at the Lateran Palace, and whose reliefs, as well as the walls of the tomb containing them, were entirely coloured on their first exposure, the wreaths of flowers on them with all the hues of nature, the Orestes pursued by the Furies and other groups, all in well-preserved tints. Since the removal to the museum, from whatever cause, these have almost entirely disappeared.



### The Bushnell Family.

John Bushnell was an admired statuary in England during the seventeenth century. He was a scholar of Burman. He spent England, stayed two years in France, and from thence went to Italy. He lived some time at Rome and at Venice; in the latter city he made a magnificent monument for a Procuratore di San Marco, representing the siege of Candia, and a naval engagement between the Venetians and Turks. He came to England through Germany by the way of Hamburg. Some of his first works after his return were the statues of Charles I. and II. and Sir Thomas Gresham at the Royal Exchange. His best were the kings at Temple Bar. He carved several marble monuments, particularly one for Lord Ashburnham in Essex; one for Dr. Grew's wife in Christ Church, London; one for Lord Thomond in Northamptonshire, Cowley's and Sir James Fairborn's in Westminster Abbey, and cut a head of Sir Talman. He had agreed to complete the set of kings at the Royal Exchange, but hearing that another person had made interest to carve some of them, Bushnell would not proceed, though he had begun six or seven. Some of his provision asserting that, although he was skilful in drapery, he could not execute a naked figure, he engaged in an Alexander the Great, which served to prove that his rivals were in the right, at least in what he could not do. His next whim was to demonstrate the possibility of the Trojan Horse, which he had already treated as a fable that could not have been put in execution. He undertook such a wooden receptacle, and had the dimensions made in timber, intending to cover it with stucco. The head was capable of containing twelve men sitting round a table; the eyes served for windows. Before it was half completed a storm of wind overset and demolished it, and though two vintners, who had contracted with him to use the horse as a drinking booth, offered to be at the expense of erecting it again, he was too much disappointed to recommence. This project cost him 500*l*. Another, of vessels bringing coals to London, miscarried too, with deeper cost. These schemes, with the loss of an estate that he had bought in Kent, by a law-suit, quite overset his disordered brain. He died in 1701, and was buried at Paddington, leaving two sons and a daughter. The sons, of whom one had 100*l*. a year, the other 60*l*., were as great humourists as the father; they lived in a large house fronting Hyde Park, in the lane leading from Piccadilly to Tyburn, which had been built by the father, but was unfinished and had neither staircase nor floors. Here they felt like hermits, recluse from all mankind, sordid and imitatable, and saying the world had not been worthy of their her. Vertue in one of his MSS., dated 1725, begins thus:—"After long expectations I saw the inside of John Bushnell's house, his sons being abroad both." He describes it particularly, and what fragments he saw there, especially a model in plaster of Charles II. on horseback, designed to have been cast in brass, but almost in ruins; the Alexander and the finished kings. Against the wall was a large piece of his painting, a triumph, almost obliterated too. He was desirous of the particular notice of a bar of iron, thicker than a man's fist, broken by an invention of Bushnell.

### The Cathedral of Pisa.

The honour of taking the lead in the development of manesque architecture belonged to Pisa. She had become the most considerable maritime power of Italy. Her fleet of galleys was employed with much success against the Mahomedan pirates who infested the coasts of the Mediterranean, and she acquired great renown in 1063 by a brilliant and successful expedition, in which Sicily was freed from the Saracens, and a vast amount of treasure and six richly laden vessels were carried off from Palermo. The Pisans thought they could not better than devote this booty to the erection of a cathedral, which in size and magnificence would rival St. Mark's at Venice. The name of the architect, Buschetto, has been preserved on his tomb, and he must rank among the few men of original genius who have inaugurated a new epoch in architecture. Who does not number among his most cherished memories of Italy the grass-grown old Piazza of Pisa, with the cathedral, the leaning tower, the baptistery and the Campo Santo—a group rivalling in fascination the Piazza of St. Mark at Venice? And not the least lovely element in this lovely whole is the façade of the Duomo, with its four storeys of delicate arcades piled above each other, and prolonged in fantastic richness under the sloping roof. Kügler rightly esteems the Cathedral as the most noble as well as the most important building of its age, but Fergusson is of a different mind. While acknowledging the separate beauty of the details, he characterises the style of ornamentation as false, clumsy and less, adding that the subdivision into five orders is more open to criticism than the two orders of our own St. Paul's. The orders of St. Paul's are objectionable, not because they lack its height, but because the upper order is a sham, hiding the true structure and suggesting a false one; whereas there is no such fraud in the Pisa arcades. It is certainly not a

principle universally true that minute subdivision takes from magnitude. We judge of the size of a building from a combined impression of the size of the part most in view, and the number of parts. The arrangement of Pisa façade, similar in idea to that of the campanile above described, is about the most effective that could be devised for producing the impression of height. There is no break till the wall has reached an elevation too great for the eye to measure it, and beyond that point every additional division adds to the apparent height. The upper arcades are completely subordinated to the lower one, and as the basement arches are not recessed, their extreme richness does not take from the general character of solidity. Buschetto's style and model was adopted in a numerous family of churches at Pisa and Lucca, in which the singularly storeyed façade repeated in the Luccese churches with far more richness of ornament.

### Roman Tombs.

The ancients considered a tomb in a much more important light than we either can or ought to do. So feeble, indeed, were their hopes of living in another state of existence that they generally looked forward to this honour as the only blessing that awaited them after death. Hence we so frequently discover on monumental inscriptions the anxiety the individual had during his lifetime to provide a place of burial for himself and his dependents free from incumbrances and intrusion, and we cannot wonder that the rich under those circumstances should have bestowed so much wealth in erecting their private monuments, and the warrior so much care and toil in gaining this as a public honour from his country. The argument which Cicero uses in his "Tusculan Questions," to show that great men who exist no more on earth are still to be accounted happy, is that their proud monuments perpetuate their fame to posterity, and announce their glory to every passing traveller. In placing their tombs, moreover, by the sides of the public roads the ancient Romans accomplished two objects respectively adapted to flatter their pride and support their renown. The foreign ambassadors, in approaching the city, were struck with the splendour and public spirit of the commonwealth, and the Roman youth, in having those immortal honours always before their eyes, aspired to emulate the valour of the illustrious dead. "When thou hast gone out of the Capena gate," says Cicero, "and beholdest the sepulchres of Calatinus, of the Scipios, of the Servilii and the Metelli, canst thou deem the buried inmates wretched?"

### The Dawn of the Renaissance.

Brunelleschi and Alberti were the first Italian artists who, in the beginning of the fifteenth century, studied the ruins of ancient Rome; they made the earliest essays in the renaissance of Classic architecture. Now, if these artists had discovered in these ruins (as the first Christian builders did at Spalato) a new principle of construction, capable of indefinite expansion in the wider fields of the new civilisation, instead of an order of architecture, a more or less inflexible dogma of proportion, and if Francis I. had carried that principle back to France with the spoils of his first Italian conquest, instead of taking with him a crowd of Italian artists, the guardians of the ancient formula, we might have witnessed the phenomenon of another impersonal art like that of the Mediæval period, to the development of which, in the course of time, the genius of the great French Renaissance masters, Philibert de Lorme, Pierre Lescot and the Mansarts would hardly have been necessary. If, on the other hand, at the end of the Romanesque period in the twelfth century a certain form and proportion of vaulting and abutment had been invested with such peculiar sanctity that it would have been impious to vary from it henceforth in any essential particular, decoration would have at once assumed the first instead of the subordinate place in the architecture of the thirteenth and fourteenth centuries, and, instead of a series of nameless masons and master-builders, we should have had a catalogue of individualities as illustrious and specific as that which confers its peculiar personal interest on the history of the Renaissance. As to the evidences of the personal character of Renaissance art, although the Classic formula was set up and accepted as absolute authority in the fifteenth century, although it has been used with veneration for nearly five centuries up to the present time, and although every architect since Palladio designing in the style of the Renaissance has intended above all things to be correct in the use of this simple style and to build according to the Italian taste, the result has been, not monotony, not cold and colourless uniformity, but a variety of expression elsewhere unknown in architecture. In studying these variations as they are exhibited in the buildings of the Renaissance up to the present day we shall find they are not capricious or accidental; there was one class of variations in France, one in England, one in Germany, one in Spain, one in Holland, one in Italy. These distinctions of class are easily recognisable; they follow natural laws, they interpret national temperament or genius by a visible demonstration.



## NOTES AND COMMENTS.

WE have referred to the discontent of the Australian builders in regard to the extravagance and unwisdom of the Government of the Colony in finding employment for workmen with liberal wages for an insignificant amount of labour. The master builders recently met at Sydney and adopted the following resolution:—"That this federation of the Master Builders' Associations of Australia strongly protest against the action of the various State Governments in encouraging a system of employing direct labour in carrying out its public works at a much greater cost than it could be done by contract. We, therefore, request that the members of the various State Parliaments be asked to request their respective Governments to appoint a commission to inquire into the cost of all or any Government work done under the day labour system." The instances which were mentioned as showing the system that prevails were extraordinary. One builder said that every carpenter in the railway department in Victoria had a labourer to attend on him. He had seen a labourer holding the nails for the carpenter, and in other cases a man handing a paint brush to the painter. Seven or eight men had been found to be driving piles with a hand winch, and each of them received 7s. a day. Another builder related that his workmen left him, although he was paying 7s. a day, because the much easier occupation on Government works at 6s. 6d. a day was preferable. There is, however, only a slight hope of reform because the day-labour system is supposed to be kept up by politicians of all parties. But, meanwhile, the master builders desire a commission in order that the defects of the Government practice may at least be revealed to the people of Australia.

PHOTOGRAPHIC surveys are now being formed in several of the English counties. Surrey is the latest to adopt the process of recording existing scenes. It is proposed "to take and preserve permanent photographs of the scenery, geology and natural history, antiquities, buildings, streets, social life and public events of the Surrey of to-day, as well as the reproduction of old prints, maps and records of the Surrey of the past." A more interesting occupation is not easily to be discovered. A meeting has been held at the Public Library, Croydon, to elect executive officers, frame rules and transact other business. The chairman was Mr. W. W. WHITAKER, F.G.S., and Mr. GOWER, of Croydon, acted as honorary secretary. The provisional committee consists of gentlemen who can be useful as advisers, but when the council is formed we hope some architect's name will be found on the list. If old or modern buildings are to be photographed it is not wise to keep architects at a distance.

ONE of the works on which the late JULES DALOU was engaged within a few days of his untimely death was the monument of GAMBETTA which is to be erected in Bordeaux. As the work was not completed, it has been necessary to make arrangements for that purpose. M. FORMIGÉ, who is the architect of the monument, will, as the representative of the family, have the chief control of the execution. M. CAMILLE LEFEVRE will finish the group of the *Defence* with which the late sculptor was occupied. He will also have charge of the practitioners who will reproduce the remaining models in marble. M. LEFEVRE, who has assumed so onerous a responsibility, has already gained a reputation as a sculptor, and it was the last wish of JULES DALOU that he should take his place in carrying out the commission. DALOU's stoicism during the last week of his life was amazing. He made all the arrangements for the accomplishment of his numerous commissions with as much calmness and intelligence as if he were undertaking a holiday, during which he desired to be undisturbed by any casualties.

A CASE is now before the Edinburgh Court of Session which, when decided, is likely to affect the position of municipal engineers. It relates to a claim of 10,000*l.* by the widow of the late JOHN COOPER, burgh engineer, of Edinburgh, being the amount of commission owing for his services as joint engineer for tramways. In 1895 he was appointed with Mr. W. M. COLAM. A letter was addressed

by the town clerk to Mr. COLAM, which stated that the magistrates and Council had agreed to appoint him, with Mr. COOPER, as engineers, the commission to them jointly being 5 per cent. on the outlay. Mr. COOPER continued to serve as burgh engineer until 1901, when his health broke down. He wished his commission to accumulate, and drew no part of it. After Mr. COOPER's death the town clerk stated that 600,000*l.* had been expended, and that Mr. COLAM had drawn 15,000*l.*, his share of the commission. Assuming the representatives of Mr. COOPER were entitled to a sum, it would be necessary to deduct between 8,000*l.* and 9,000*l.* which had been paid to Mr. COOPER's assistants. It was stated, in reply, that 5,000*l.* was a sufficient sum for that purpose, and the balance, 10,000*l.*, is sued for. The Corporation deny liability, one of the grounds being that the terms of his appointment as burgh engineer Mr. COOPER was bound to devote his whole time to the office.

## ILLUSTRATIONS.

PUBLIC BATHS, ALLOA, N.B.: SIDE BLOCK.

18 &amp; 20 KENSINGTON HIGH STREET, W.

CATHEDRAL SERIES.—RIPON: GENERAL VIEW OF NAVE TO ORGAN SCREEN.

REREDOS, HOME OF THE GOOD SHEPHERD, UXBRIDGE ROAD,

THE smaller reredos was designed for a window recess which formed the east end or bay of the little chapel attached to the Home of the Good Shepherd, Uxbridge Road, W., then in the care of, and under the superintendence of, the Dowager Lady WILSON. Though the room was only about 24 feet by 18 feet, with a bay window at the east end it was fitted up very completely, having an oak altar and reredos, credence and alabaster piscina, teak prayer desk and panelling round the tiny sanctuary. The lower part of the walls of the chapel were lined with pine panelling stained green. A passage way across the west end formed by a panelled traceried and glazed screen in pine (painted white) was the communication from the home to the infirmary, and was so arranged that the sick in the infirmary could hear the daily offices when the doors were thrown open. The roof timbers were shown and stained a warm brown, as were also the chairs. The decorative scheme of colour was never fully carried out, owing to Lady WILSON's health compelling her to give up the good work. The reredos was executed in oak from designs by Mr. THOMAS GARRATT, architect. The figures of Our LORD on the Cross, with St. MARY and St. JOHN and the four evangelistic emblems in the cornice are carefully and beautifully executed, as is the foliage and tracery throughout.

REREDOS, ST. PETER'S CHURCH, BEXHILL.

THE larger reredos is in the old parish church of St. Peter's, Bexhill, and is the central feature of a very complete carved and decorative treatment of the chancel. The altar front, shown open in the illustration, is filled with a fine painting by Mr. W. G. RICH, illustrating the Women at the Sepulchre finding the stone rolled away and the angel guarding it. The reredos stands on a carved and traceried base, and immediately above it under a rich canopy supported by two shafts is a fine carving of the Lord's Supper in deep relief; on either side under arches are figures of the Patron Saint (his denial and repentance) above these two open-work traceried turrets are carried up. The central feature is Our LORD ascended in the act of blessing, contained within a vesica of conventional cloud and rays, the four spandrels bearing the emblems of the four Evangelists. On either side are figures of angels adoring under traceried arches, and between them and the central figure rising up from the shafts is a rich band of carving carried right round the framing. The dove, typical of the Holy Spirit, is at the apex, the space between the turrets and framing being filled with open-work tracery. On either side the reredos oak panelling, finished with rich crested, covers the walls. Mr. THOMAS GARRATT is the architect.

The decorative and colour scheme of the chancel is too elaborate to describe without illustrations, but will be found of interest by any who visit the church.



# THE ARCHITECTURAL ASSOCIATION.

The concluding meeting for the present session of the Association was held on Friday evening last, Mr. W. H. Smith, president, in the chair. Messrs. H. H. Fraser, W. Guthrie, G. T. Mileham and E. Mundell were elected members.

The following donations to the new premises fund were received:—Mr. G. T. Hine, 50/-; Mr. Max Clarke, 15/- 15s.; Gilbertson, 5/- 5s.; Mr. Alexander Wood, 5/- 5s.; Mr. Hunt, 3/- 3s.; Mr. A. W. Turnbull, 2/- 2s.; Mr. Horace 2/- 2s.; Mr. T. Bee, 1/- 1s.; Mr. E. Carless, 1/- 1s.; Mr. Hearn, 1/- 1s.; Mr. E. Hemingway, 1/- 1s.; Mr. G. W. 1/- 1s.; Mr. W. M. How, 1/-.

Total subscriptions to date, 4,206/- 11s. 6d.

Mr. OWEN FLEMING read the following paper [on

## Municipal Housing: Its Economic Basis.

It would perhaps be an exaggeration to say that housing is the problem of the day, and that finance is housing. But the connection between the two is so intimate and so far-reaching that unless the principles of finance are mastered, talk on housing, especially municipal housing, is almost futile. An excellent illustration of the prevalent confusion of thought occurred at the Paris Exhibition of 1900. At the Vincennes annexe were erected several examples of working-class dwellings, ostensibly representing the tangible outcome of the most recent housing in the different countries. Investigation, however, disclosed the fact that these specimen cottages were not designed on any common financial basis, but were either the arbitrary product of the constructor or the outcome of local and special considerations. Great Britain, for example, was represented by a group of the cottages erected at Port Sunlight by Messrs. W. Brothers. This cottage, however, was not the result of special financial conditions, but really represented the generosity of a distinguished firm of British manufacturers. On March 12, 1902, Mr. W. H. Lever informed this Association of the financial basis upon which Port Sunlight has been conducted. "The financial aspect of the village of Port Sunlight," he told, "said Mr. Lever. 'The capital it has taken to acquire 140 acres of land, build the cottages, schools, shops, recreation grounds, clubs, &c., and including making the roads, laying out the parks, &c., has been over 350,000/.' Upon this, Mr. Lever Bros., Ltd., receive no interest or return whatever, the rents being fixed at such an amount as only to pay for taxes, repairs and maintenance.'" However highly we may be disposed to value the work that Messrs. Lever Bros. have done, it is clear that municipal action cannot proceed on similar lines. A municipality has to account for its action to its constituents. There is no banking account upon which advances can be drawn at will. Every pound spent by a municipality on housing has to come from somewhere. The work of a municipality, in fact, to be administered on strictly commercial principles, capital has to be borrowed and redeemed; and unless due provision is made for the consequent interest and sinking fund provisions of the results achieved are of very little value. It is clear, therefore, that in considering any housing scheme the first point to be examined is the soundness of the financial basis, and in this investigation it is necessary to be somewhat exacting. Many apparently promising building schemes break down when submitted to this financial examination, and it has therefore seemed better to utilise the present opportunity for a description of the actual financial circumstances under which municipal housing work has to be carried out, rather than for a comparative analysis of the resulting architectural achievements. After the economic basis has been grasped, the architectural questions remaining will be not so insuperable a difficulty to experienced architects. The plan and general structure of housing buildings are the tangible and visible outcome of the intangible but determining circumstances.

The nature of the powers conferred on British municipalities by the Housing Act of 1890 is very extensive. Under this Act a municipality is empowered to acquire and demolish whole districts of any property, and to sell or otherwise utilise at their discretion the value the sites thus cleared for the erection of new dwellings. They may also go into the open market, and purchase vacant land for the construction of new dwellings.

In this work, it will be seen, is of a destructive as well as of a constructive character, and in considering the question of municipal housing, it is necessary to draw a very clear line between these two classes of work, which are totally distinct from one another. The destructive work is a compulsory duty laid out by the municipality for the benefit of the whole community and at the sole cost of the whole community. The Local Government Board has enacted that the compensation to the owner of the insanitary property purchased for demolition is to be assessed on the most severe terms, yet the difference between the purchase money of the old property and the value of the sites cleared by its demolition is always

considerable, and this difference is increased by the fact that the cleared land is earmarked for, and can only be sold at its market value for working-class dwellings.

It is not proposed in this paper to deal with many economic problems involved in the destructive side of the question. The following remarks apply solely to the constructive housing work which begins with the purchase of the cleared or vacant sites for dwellings.

The constructive work is a voluntary undertaking carried out on borrowed capital, and in respect of which the whole community reaps no immediate financial benefit, although the ultimate financial benefit is considerable. The destructive work during the period of redemption is exceedingly costly to the ratepayers. The constructive work during the same period should not cost the ratepayers anything. The destructive work finally vanishes from sight after the loan has been repaid. The constructive work leaves behind it property of great value.

The difficulties of constructive housing are due chiefly to an inadequate recognition of the financial conditions under which it has to be carried on. Municipalities are in this respect subject to the same laws as individuals. Their action is, and must be, largely influenced by financial considerations, and even a temporary disregard for these considerations inevitably sets up reaction, and in the long run impedes progress.

The first point to remember when studying housing finance is that it is an organic structure, and, like other organic structures, is subject to the laws of growth. Given this fundamental fact, the line of action almost becomes self-evident. It consists in the simple duty of guarding the growing structure from influences likely to check or impede its full development. These checking influences may arise from either of the three classes of persons which co-operate in the work of municipal housing, viz. (a) the stockholders; (b) the ratepayers, represented by the municipalities; (c) the rent-payers. Progress can only be made if each of these three classes is satisfied that its interests are being adequately watched. If doubt arises, the class concerned will either ask a higher price for its co-operation, or it will cease to co-operate. It is necessary, therefore, to consider in detail the functions performed by each of these three classes of persons. In a general way, it may be said that the willing co-operation of any one of these three groups can be secured by guaranteeing to it the market value of the services rendered by it. The stockholder, for example, cannot very well grumble if he receives the market rate of interest for the capital advanced by him. The ratepayer will be willing enough to perform his share of the work if he can assure himself that, at no immediate loss to himself, he is building up a property that is visibly increasing in annual value, and even a rentpayer's prolific power of complaint is lessened by the knowledge that there are numerous applicants waiting to take his place.

### (a) The Stockholders.

The functions of the stockholders are briefly to provide the sinews of war. The method of raising money, however, varies in different cities. London adopts the simplest and perhaps the most secure method by advertising its loan issues in the open market at a fixed price, and allotting the amount of the loan proportionately among the applicants. The rate of interest payable on the loans varies from time to time, according to the condition of the money market, but to avoid the disturbance caused by these periodic fluctuations, the rate of interest paid for the housing work of the London County Council has been fixed at 3 per cent.—a figure perhaps fractionally in advance of the mean rate of interest averaged over a period of years.

These loans are raised for definite periods, varying from thirty years in the provinces to sixty years in London and Glasgow, this latter term being the limit allowed by Parliament for housing loans. Some years ago the loan period diminished during the intervals between the periods of issue; but this inconvenience has now been removed, and as far as London is concerned, money can be taken up at any time for the full term of sixty years.

In Glasgow the Corporation maintains what is known as a "Floating Loans Fund." Shipowners and merchants deposit in the fund capital that is temporarily not needed. It is on call at a month, and the interest is fixed each year in May and November, at rates slightly above the current bank discount rate. The following table gives the rates of interest paid by the Glasgow Corporation during recent years:—

Year.	Amount of Loan.	Rate of Interest. Per cent.
1898-99 . . . . .	£1,273,357	£2 13 2
1899-00 . . . . .	1,276,785	2 18 6½
1900-01 . . . . .	1,287,025	2 19 10½

The smaller cities apply to the Local Government Board for a separate loan for each housing undertaking, the Local Government Board being the Government Department that is



entrusted with the administration of the Local Loans Fund. This is a Three per Cent. stock guaranteed by the Imperial Government.

It will be seen by this comparison that Glasgow raises its money at the cheapest rates, but the system of floating loans which enables this cheap money to be obtained is hardly capable of indefinite extension, and as the rate of interest fluctuates from year to year any period of financial stress affects prejudicially the whole housing work in a way that is rather disturbing. This element of luck is not possible with a financial system based upon an equal annual payment for interest fixed to run at this same rate during the continuance of the loan.

One of the most interesting aspects of housing finance is the question of the sinking fund for the compulsory repayment of loans. This is a question that is watched with some jealousy by the British Treasury. Acting under its advice, Parliament has formulated certain Standing Orders which require that all money advanced to local authorities in Great Britain shall be repaid within certain fixed periods. I use the term "Great Britain" advisedly, because the policy of loan repayment does not seem to commend itself to the Colonial mind; and I believe I am correct in stating that the whole of the great public works of Australia have been carried out on the principle of permanent loans without provision for repayment. The argument advanced is that the primary consideration is the development of the country, and the security against depreciation is to be found in the improved value that the Colony as a whole secures by the free use of the capital. The policy of the Australian Government in this question may not be financially sound. The periodic financial crises that occur in Australia lend weight to the view that it is not financially sound, but the position of the British Government seems to err in the other direction, with the result that enterprise is seriously and perhaps needlessly checked. The British error lies in the fallacy that the security will have entirely lost its value at the expiration of the sinking fund period. In other words, that the substantial housing estates of the great British corporations will resemble the baseless fabric of a vision, and that at the end of the sinking fund term they will have faded, leaving not a wrack behind. This position is so obviously untenable that the attention of statesmen is gradually focussing upon it as one of the first questions to be tested by the light of scientific inquiry. There is no desire as far as I am aware to imitate the boldness of the Australians and to dispense with the sinking fund altogether, but there is a strong and growing view that the terms of repayment should be made more elastic. At present, as has been stated, the sinking fund term varies from thirty to forty years in the provinces to sixty years in the Metropolis. There seems to be no reason why the provinces should not be brought up to the same scale as London. There the indestructible land is treated in the same way as the destructible buildings erected upon the land. The reason is not clear why it should be necessary to redeem the cost of the land. It will not deteriorate as time goes on. In all human probability it will increase in value, and the gradual redemption of the buildings upon it will annually increase the value of the whole security. It has also been urged that the maximum term for loans (including the land and buildings) should be extended from sixty years to 100 years. The importance of this extension to us as architects may be gauged from the fact that it would automatically transform each 100*l.* of capital available for constructive purposes into 116*l.* Oddly enough, the greatest housing loan of the nineteenth century, *i.e.* the Glasgow Improvement Trust Scheme of 1866, was granted by Parliament without any specific provision for repayment, and on May 31, 1901, Glasgow had only accumulated 10,257*l.* as a purely voluntary sinking and reserve fund in respect of an outstanding capital debt of 1,287,025*l.* This striking parliamentary lapse was corrected in the 1897 scheme, which was approved subject to a sixty years' sinking fund.

The method of sinking fund repayment differs in different cities. In London the system adopted is what is known as the cumulative annuity system. In addition to the ordinary simple interest a sum of money is deducted each year from the gross revenue received and invested at compound interest. These annual equal instalments, plus the compound interest on each of them, produce at the end of the sinking fund period a sum equal in value to the amount of the original loan, which is then repaid. This system is in itself economical, and has the added advantage that the sum to be deducted each year from the revenue does not vary from year to year. Financial experts will, I am sure, pardon the introduction of a somewhat homely illustration of the working of this principle. It is as if a snowball were formed out of the receipts and set a-rolling at the end of the first year after the buildings were opened. This snowball would continue rolling during fifty-nine years. At the end of the second year a second snowball of the same size as the first would be formed and set off on a similar journey. And the completion of the third year would witness the formation and departure of a third ball. And so on each year during the

whole fifty-nine years. When the sixty years were ended fifty-nine snowballs, which by that time would have assumed fifty-nine different sizes, would be rolled into one ball, and great ball would represent the total amount of the loan. Some other cities repayment is secured by the provision of annual instalments of principal, with the result that the cost for interest and sinking fund is greater during the earlier of a loan than at the later period. The disadvantage of the latter system, known as the instalment system, is that it is difficult to arrive at an annual estimate of receipts and goings, and the difficulties of producing a proper balance-sheet needlessly enhanced.

#### (b) *The Ratepayers.*

The functions of the second class of persons concerned, *viz.* the ratepayers, are somewhat analogous to those exercised in ordinary business by executors and guarantors: as executors they have to manage the estates as a trust and not for personal profit; as guarantors they have to make good the deficit of any. Skilfully managed on ordinary business principles a housing estate should pay its way, but if any deficit appears it has to be made good out of the current rate. It is therefore highly important in the interests of the ratepayers that housing accounts of a municipal corporation should be entirely distinct and published separately from the general accounts. This separate housing balance sheet should show every item of expenditure that is directly due to the housing work. If this separate balance-sheet is not published the ratepayers cannot see the financial effect of their operations. Liabilities may be incurred that otherwise would be avoided. Quite recently one of the most important municipalities in Great Britain determined to disentangle the housing account from the general accounts, with the result that the housing work was found to be drawing a subsidy from the rates to the extent of nearly 5,000*l.* a year on a capital outlay of 189,000*l.* Another municipality of equal standing happens to be so profoundly concerned by the presence within the city of a number of back-to-back houses inhabited by persons of a low earning power. The municipality is building new dwellings for this very helpless class, and is restricting the occupation of the new dwellings to them, and to them only. How valuable, and perhaps in the present case, however necessary, may be to restrict occupation to a particular class of persons it is clear that the standard of rent is thus artificially lowered below the ordinary market standard. There is, of course, an administrative reason why a city, if it be so minded, should underlet its tenements. It is purely a question of local policy. But the ratepayer may fairly require that the amount of the subsidy should be clearly set forth in the housing balance sheet. Again, arguments have been advanced advocating that the sinking-fund charges should be debited to the ratepayer rather than to the rentpayer. This is again a question of policy, but if such a policy were adopted the amount of the sinking-fund charges should be calculated and carried to their proper place in the housing accounts, so that the ratepayer should be able to tell at a glance what the municipal housing work was costing him. There is, of course, no need for it to cost him anything.

The policy of London is based upon the principle that it should not cost him anything. It is true that in London the ratepayers have advanced to the housing account a sum of 6,943*l.* 17*s.* 1*d.*, but this was a temporary advance, and the housing account is now almost in a position to repay the loan. There was a cash balance in hand on March 31, 1901, of 4,033*l.* 4*s.* 7*d.*, so that the real amount of the outstanding overdraft at this date was 2,910*l.* 12*s.* 10*d.* With this exception, which will probably disappear this year, the constructive housing work of London has not cost the London ratepayer anything from first to last. Moreover, the reserve fund for repairs and renewals has now grown to 8,934*l.* 18*s.* 2*d.*, and the sinking fund accumulations to 19,811*l.* 12*s.* 2*d.* Summarised, the financial change in London housing accounts from the date of their inception on March 31, 1901, is as follows:—

#### *Housing Account L.C.C.*

##### DECREASE IN VALUE.

Rate subsidy . . . . . £6,943 17 1  
And, of course, any depreciation in value of estates.

##### INCREASE IN VALUE.

Sinking fund account . . . . . £19,811 12 2  
Reserve fund for repairs . . . . . 8,934 18 2  
Cash in hand . . . . . 4,033 4 7

And any appreciation in value of estates.  
(Capital expenditure to March 31, 1901 = 772,125*l.* 3*s.* 5*d.*)

The Glasgow property is of somewhat exceptional character. It formed part of a great improvement scheme carried out at the cost of the ratepayers, and the constructive housing work as it were, gradually emerged from the unremunerative improvement scheme. In other words, the rate contribution to the improvement diminished as the housing work grew stronger. The rate stood at 6*d.* in the 1*l.* in 1866, and



ally, until in 1895 it was  $\frac{1}{2}$ d. in the  $\text{£}1$ ., and in 1896 ceased ther. Thenceforward the estate has been self-supporting. Only weakness of the Glasgow position has been the absence of a properly constituted sinking fund, and if this were based on a sixty years' basis, it is to be feared that the Glasgow estates might not pay their way. Other cities carry on their constructive housing work at a heavy annual cost to ratepayers, having regard to the restricted character of the tenements. It is fair to say, however, that this is chiefly due to exceedingly short loan terms under which most of their work had been carried out. If these cities could consolidate their housing loans into one stock, redeemable at the metropolitan term of sixty years for all purposes, the rate subsidy would be greatly reduced.

### (c) The Ratepayers.

This class of persons occupies a position contrary to that of stockholders. It has no permanent interest in the estates, but simply occupies the tenements as it would occupy any other premises, paying the market value of the accommodation afforded. It is true that in very exceptional circumstances a municipality—i.e. the ratepayers as a whole—may think fit to grant some tenements at less than their market value, but it is clear that such an artificial arrangement has no permanent basis. The school of thought, for example, that argues in favour of cases of compulsory expropriation of the tenant should pay the market value of the tenement from which he has been dispossessed, irrespective of the market value of the new tenement, does not contemplate, so far as I am aware, that such an arrangement should remain in perpetuity, and, speaking generally, I think it may fairly be assumed that rent, like all other things, will in time find its own level.

In this brief summary of the respective functions of these various classes of persons will enable the general economic position to be grasped. Market rates of interest, on the one hand, and market rents on the other, and a sufficient working balance between the two to enable temporary fluctuations to be met. This may seem a simple statement of the complex and complicated housing question, but most complex questions are reduced to simplicity by the elimination of the non-essential. It may, however, be urged that I have described a condition of stability and not one of growth. This is not, however, the case. The stability that I have described is a necessary precedent to growth. But the growth is very real. As has been stated, the sinking fund is framed on the assumption that the land and buildings will have become valueless at the expiration of the sinking fund period. This assumption is clearly inaccurate, as the land and buildings will retain a very considerable value at that date. But the sinking fund is accumulating more rapidly than the actual value of the property is diminishing. Therefore at any given time the sum of the sinking fund accumulations, plus the then value of the property, is mathematically bound to exceed the total of all sums taken at any previous period.

To illustrate the growth from actual figures a table is given showing the annual amounts of the sinking fund accumulations in the London estates. The totals given against each date represent the sum of—

Total of previous years' accumulations;  
Interest upon total of previous years' accumulations;  
Normal annual instalments from buildings already in

First annual instalments from new buildings completed in previous years.

#### Growth of L.C.C. Sinking Fund on Housing Estates.

Year.	Sinking Fund.
1895-96 . . . . .	£1,103 11 5
1896-97 . . . . .	3,228 13 9
1897-98 . . . . .	6,757 8 0
1898-99 . . . . .	10,582 3 8
1899-1900 . . . . .	14,536 10 5
1900-01 . . . . .	19,811 12 2

It should be a pleasing thought to London ratepayers that not only is this fund mathematically certain to increase each year, but the difference between each year and the preceding year is mathematically certain to be greater than the difference between any previous two years. This process will continue until the loan has been paid off, when the consequent set-back in figures will be compensated for by a quickened rate of increase, as the annual contribution will then be the whole of the net revenue from the property. When at last this is accomplished and the buildings become worn out and incapable of further production, all that will be necessary will be an advance in the sinking fund for rebuilding the buildings which, when completed, will contribute the whole of their net revenue as heretofore. The land of course, having once been freed, remains valueless for ever. The method of automatic growth is indeed so simple and so effective as to stimulate a mild feeling of regret that the constructive work of municipalities was not begun in the days of the Victorians rather than in those of Victoria.

Such are the financial conditions which govern the housing

work of British municipalities, and it is now proposed briefly to indicate the process by which the actual work of housing is carried on under these financial conditions.

The chief administrative difficulties of housing are to be found in the conditions of instability that have to be watched and accommodated as far as possible. There is the labour market, with its demands constantly increasing as the standard of life advances; the "material" market, sometimes violently oscillating from natural and artificial causes; the land market, troubled with the subtle advance of industrialism; and the sensitive rent market. And behind all these varying elements lies the constant pressure of the vast numbers of the overcrowded town populations, who are beginning to realise what they are losing by living under conditions stifling alike to their development in mind and body.

When a housing scheme has to be prepared the simplest method of procedure is for the architect to prepare a preliminary plan showing approximately the character of the buildings that could be placed upon the site. An estimate should then be prepared of the cost of erecting the building shown on the plan. This should include all the probable capital expenditure, i.e. cost of land, building, architects' fees, quantities, wages of clerk of works, lithography and all items properly chargeable against capital. It is generally wise to make a preliminary estimate on a cube basis founded on previous experience. If the financial margin is then felt to be too narrow rough quantities form a useful check. The sketch plans are then forwarded to the housing manager for the probable rents and annual outgoings to be estimated by him. These estimated figures should not be the rents and outgoings in force at the time of the estimate, but a forecast of those that will probably be in force midway through the sinking fund term. The figures are of great importance to the architect, and should if practicable be studied in detail; for it should be constantly borne in mind that the success or failure of any given building scheme lies not as in any ordinary architectural work in the absolute estimate, but in the relation that the estimate bears to the estimated production of the scheme. In order to facilitate comparison with the estimate of cost, the net annual income reported by the housing manager is converted by him into capital form, and this figure is technically known as the amount available.

The next step is for the preliminary estimate of cost to be compared with the preliminary amount available. If the amount available exceeds the estimate of cost the scheme possesses the elements of success. In any case, it is desirable for the respective estimating officers to confer as to the result disclosed by the comparison. It may be found, for example, that a deficit could be converted into a surplus or a surplus enlarged by some minor modification of the scheme. When both officers concur that the scheme is the best that can be devised, it is presented while in its preliminary form to the housing committee, and if then it is fortunate enough to meet with approval it is finally presented to the municipality in the form of a typical year's balance-sheet, which, if approved, forms the standard with which all subsequent balance-sheets are compared.

#### Example of a Housing Balance-sheet.

Accounts prepared to show the estimated effect on the rate of certain working-class dwellings:—

##### (a) MAINTENANCE ACCOUNT.

Receipts.	
To gross rental . . . . .	£468 0 0
„ Less—Empties . . . . .	14 0 9
	£453 19 3
Expenditure.	
By Rates and taxes . . . . .	84 19 6
„ Water rate and insurance . . . . .	18 6 0
„ Repairs . . . . .	51 9 7
„ Supervision and collection of rents, &c. . . . .	31 4 4
„ Contingencies . . . . .	11 14 0
	197 13 5
„ Balance available for payment of interest and sinking fund . . . . .	256 5 10
	£453 19 3

##### (b) INTEREST AND SINKING FUND ACCOUNT.

Receipts.	
To balance brought down from maintenance account . . . . .	£256 5 10
Expenditure.	
By interest on cost, viz.:—	
„ Land (value for housing purposes) . . . . .	£1,000
„ Buildings (including all incidentals) . . . . .	5,261
	£6,261
Interest at 3 per cent. on £6,261 . . . . .	187 16 7
„ Sinking fund to replace capital raised, £6,261, in fifty-nine years by cumulative annuity at $2\frac{1}{2}$ per cent. . . . .	47 10 10
„ Estimated annual surplus . . . . .	20 18 5
	£256 5 10



If the procedure here outlined is carried out with care and judgment, there is no reason why the housing work of a municipality should not proceed smoothly and without giving ground for reasonable public criticism. Progress will become more rapid as the work becomes more familiar to those concerned, and to this end intercommunication between the various municipalities engaged in the common work will probably be of great service. Movement, however, can only take place along the path marked out by the limiting boundaries of "Amount Available" and "Estimate of Cost." If these limits are overstepped the economic laws violated will seek to reassert themselves. Schemes have been advanced, for example, for the Imperial Government to make advances of capital at less than its current market value, but this is only a form of subsidy on the part of the general taxpayer to help meet the rent of certain individual members of the community. The idea of letting tenements at less than their market value is open to the same objection, as is a somewhat similar proposal to debit the sinking fund charges against the ratepayer instead of the tenants. If progress is to be quickened it should be accomplished by endeavouring to widen the space between the boundary limits rather than by overstepping them. This can be done either by—

(a) Reducing the cost of production by improved organisation, taking full advantage of modern machine production;

(b) Increasing the amount available by perfecting the system of management;

(c) Extending the sinking fund term.

Bearing these three points in mind, there seems to be little doubt that patient continuance in the present work will do much towards the solution of a question that is, in the opinion of those competent to form a judgment, at the root of most of our social anxieties.

## STREET ARCHITECTURE.\*

(Concluded from last week.)

### The Mezzanine.

WE have referred to the usual treatment of the shop or ground-floor storey by supporting pilasters and a carrying cornice with a reversion to ordinary proportions in the upper part, but the treatment of the storey over the shop front as a mezzanine or *entresol*, and as part of the shop front, must be dealt with. A few years ago it was more commonly used as an architectural device for getting over the difficulty of affording apparent support to the upper part than it has been of late years; the later developments of shop design have a tendency to make two storeys of shop fronts extend over an area of about half the elevation of the building. The mezzanine proper was enclosed by an arch springing from the side pilasters at the level of the head of the shop front spanning the whole frontage; if of ordinary narrowness, it would rise to the underside of the floor over the mezzanine; thus an arch was gained of considerable size, and at first sight of some capacity, not only for carrying the upper storeys, but of blending the smaller scale of the upper part gradually and harmoniously with the ground floor.

For single houses and shop-fronts this method has not proved very successful. It can be easily imagined, and indeed seen in many examples readily called to mind, that a large arch springing from narrow pilasters on the extreme limits of a frontage gives the impression that its thrust must be acting upon the neighbouring buildings—in the most likely cases also shops—and crushing them. The initiated would, of course, understand that this does not actually happen, as the arch is more apparent than real, the weight of the upper building upon it being probably carried on a concealed horizontal girder behind the crown of the arch. The success of the arched mezzanine treatment, therefore, depends largely upon the neighbouring abutments, and unless these are controlled by the same designer or pre-exist in a satisfactory way the experiment is very risky. Instances can be cited in very modern London of lofty and powerfully-drawn arches of brick and stonework carrying with apparently scientific and architectural balance a series of upper storeys by conveying their weight with every optical demonstration of mechanical law against the plate-glass expanse of a neighbouring elevation of the picture-frame order.

The *entresol* arch is also dependent for complete effect upon a sufficient reveal or exposed thickness on its under sides to convey an impression of the substance requisite to arch construction of ordinary walling materials. This is difficult where the shop front is continued upwards into the mezzanine, but can be obtained by recessing the window of the mezzanine upon the shop fascia.

The arched mezzanine treatment is most satisfactory if several fronts can be treated and a continuous effect, as an arcade, obtained, the arches over each shop corresponding providing the effect of mutual resistance to thrust which is required. In such cases there is no reason why the arch construction should not suffice for carrying the wall above provided that the easement of support required from the neighbouring houses is secured by the mutual covenants which originate in a joint ownership of such rights. The north of New Oxford Street, towards its western end, affords a successful and satisfactory example of this treatment, the proportions of the whole block and the reduced requirements of the upper storeys being harmonised with large openings of the ground and mezzanine storeys by architectural treatment of the arcade. Though this example may be open to other criticisms as to internal arrangements presents a standard to which unfortunately there has been no approach in any more recent example of an extended facade of shop fronts. The architect should be urged to continue to study the use of the storey over the ground floor as a mezzanine on account of its value in extending the carrying proportion of the shop front, and of combining them with the complementary storeys of the building into a homogeneous expressive design.

In general, architectural proportion is so much a matter of the relation of the solids to voids, that the designer of a shop-fronted house, limited as he is by earlier considerations, has very few principles left to guide him. The relationship of voids to solids cannot apply to this class of design, because solids have to be eliminated as a condition precedent to suitability for shop display. The architecture becomes a collection of window frames, and the solids of which these frames are apparently constructed are unreal concessions to architectural fancy, as in most cases the stone piers and window heads but casings to metal girders and stanchions, large and small alike. Deprived of grouping, confined in perspective, tied to topsy-turvydom of design, the architect of a shop front has difficulties to contend with which one devoutly hopes that he will never be alive to. But it is to be feared that, by the instructions of a commercial employer, his new front must be exactly like his superior rival's, or like the Louvre in Paris, or a Scotch castle, and he has steeled his artistic soul, reflecting that it is hopeless and profitless to struggle with a client who has no taste, that after all he is not paid by him for any other purpose than to provide him with just what he knows he wants.

### Names and Signs.

I have not mentioned other artistic terrors, as figure name tablets, signs and electric startlers, in many cases necessary to commercial existence, though rendered so only by the force of a bad habit, which could be readily and painlessly cured by statutory enactment. It may be suggested to the commercial world that the streets of shops in London are too where this obnoxious habit of self-assertive emptiness is more apparent than elsewhere, reputation and success being assumed by the public to belong to that house of business that dispenses with—to put it mildly—inartistic advertisement. However, part of that frank modernism which we have predicated for the commercial architect, the provision of significant spaces for inscriptions, and of such signs as architecture can by deliberate forethought prearrange and make properly conspicuous, artistic at once, is a certain part of the problem, and a bad means unpleasant one. Inscriptions and signs add a little value to buildings which grows in value with every year of history, and we could foresee a pleasant development of particular symbols and types in commercial architecture expressive of purpose in the building, of use alike to the tradesman and of interest to the public and artist.

### Horizontal and Vertical Principles of Design.

The architectural qualities which can be exhibited in street architecture are thus comparatively limited. In the great number of cases the front or façade only can be seen and is capable of considered design, though in corner buildings there is a return frontage available which admits of some grouping. The fronts of the many buildings forming a street are comparatively narrow and lofty, and, unless the street is a wide one, the general effect of the design can only be appreciated from the limited standpoint of the pavement, either in sketching approaching perspective or in a directly opposite view from a point near to and under the building. These limitations seriously affect the possibilities of successful results, it being borne in mind that the success of the architecture is that of executed building *in situ*, and not of the harmony of proportions in true elevation or upon its picturesqueness in ideal perspective view. The test of satisfactory result rather than of pleasing elevation must be applied rigorously to the work by the architect. This is not an easy thing to do, as elevation and horizontal effect is accentuated, while vertical lines and proportions are all foreshortened from either of the possible perspectives of an ordinary street. London and

\* A paper by Prof. Beresford Pite, F.R.I.B.A., read at the meeting of the Applied Art Section of the Society of Arts on April 8.



ure has but few examples of suitable methods of dealing with this difficulty. The horizontal cornice upon the skyline of similar lines subdividing the front above and below each story of windows are the more usual methods. These have come simple to the designer solely from custom and from the facility with which they are drawn with a T-square, but a free consideration of the problem of designing narrow frontages to buildings in a narrow street would certainly suggest that horizontal lines, with no continuity beyond the limits of a small area, are not the only means with which to attempt suitable design. The varying contours of streets, sometimes broken, crooked and crooked, sometimes in long straight lines, would suggest some treatment which would not necessarily—as conspicuous horizontal lines must—throw each separate frontage into violent contact with the proportions of its neighbour.

There grew up in Gothic times, in the narrow, devious lanes of Mediaeval towns, a method quite as universal as the use of horizontal cornices and lines, in the use of vertical ones, in which the grouping and arrangement is upwards. Each window in a storey was grouped over the one below it, the origin lines being made continuous, and often carried up into the gable in which the centre one reached to the top, creating a unity in the roof as it went up. This principle seems more natural and proper, and one can easily imagine its growth among the craftsmen as a necessary tradition of street building, vindicating itself by its suitability and truth of expression to their artistic instinct. It may be remarked that, in other instances of building, all of the same period, such as in the external design of churches, detached houses and castles, there is no such universal tendency of vertical expression, the use of ornamental and corbelled parapets tending to complete the horizontal aspects of these buildings horizontally. But in street architecture the vertical grouping is very general, and instances of any other principle would be difficult to find and group, at the dawn of the Renaissance, which brought with it the use of the enormous horizontal crown or cornice.

Many examples remain in the Low Countries and in North Western Germany, as at Lübeck, Münster, in Westphalia, at Nuremberg, of the assiduous application of the vertical principle to narrow street fronts, executed in brick and stone, and collectively a more instructive exhibition of the innumerable possible combinations of simple forms upon one method of treatment. Of similar wooden architecture, where the horizontal principle of beam or lintel construction necessarily enters into construction and design, England furnishes examples in such as Chester, Shrewsbury and Tewkesbury, while in many there are many refined examples of beautiful half-timbered fronts. The application of a delicate artistic originality in emphasising and giving value to vertical expression can be observed in Mediaeval examples, and the employment of horizontal steps in the brickwork gables, so characteristic to us of the fifteenth century, is echoed in stonework examples in Westphalia; the Scotch corbie-stanes or crow's feet all subserve the same principle of design.

The advent of the Renaissance into Northern Europe did not, as in the South, bring the pedantic use of overhanging half-cornices into its less sunny clime; that was reserved for the pseudo Italian palaces which made the modern London of fifty years ago so gloomy, but allowed a great freedom of treatment in line and ornament, gradually casting aside from the craftsmen's methods of development from pure necessity by fitting and subduing all to preconceived notions of architectural effect. Swirling curves and disjointed architectural fixtures soon began to exercise themselves upon the surface of wall surface provided by the front with its gable, and it was not until the need of a new restraint began to make itself felt that the freedom of rococo treatment was reduced by the ready application of horizontal cornice lines over and under the storey of the façade.

#### *Picturesque Streets.*

The happy independence which was obtained by each front, by the vertical method of design was practically universal, and in the aggregate of a street view a charming grouping and freedom which has a fascinating effect, and always proves attractive to the artist follower of Prout and Roberts on his sketching tours. The more or less flexible curve of the lines of the eaves and gutters in a winding narrow street combine and contrast with the closely grouped vertical subdivisions of the house fronts, broken by the occasional projection of oriels or corbelled turrets, or in half-timber work by joist ends and brackets. The gable peaks in varying proportions, heights and positions, naturally form themselves into pictures without the aid of fancy or composition. The charm of a Mediaeval street has certainly within it a basis of reasonable beauty, and is attractive to us as modern street builders, which will bear the test of its antiquity and associations. These are of the qualities with which we cannot endue our designs, and without which we should compare the artistic effect of more modern streets, whether purposely architectural—as in the case of the sobriety of Moorgate or King William Streets—or

accidentally arranged on modern lines, as in Queen Victoria Street or Shaftesbury Avenue, with the earlier examples.

We do not wish to assume a universal artistic principle of street building design, for to do so would be to limit the illimitable possibilities of artistic combination and effect, but from impressions of result we may derive safely enough the conclusion that in narrow frontages a design should be self-contained, its lines terminating satisfactorily within their own field, and the direction which is to the eye unbounded, namely, the vertical one, is that in which the artistic sense of appropriateness can be best brought to play, while totally, the effect of a street or city built of independent but self-contained designs is pleasing, the separate fronts adding together picturesquely in the necessarily horizontal sum of street perspective.

#### *Uniformity and Symmetry, Regent Street.*

There are, however, many principles of design and ideas of symmetrical or picturesque arrangement beside those into the discussion of which we have gone at some length.

The principal consideration, in contrast to what we will call the Mediaeval independence of each frontage, is that of a uniformity compulsorily applied, either by that relic of Mediaevalism, most necessary and useful to architectural effect, the lord of the manor, or by special legislation. The underlying idea in such cases is the almost unproved assumption that uniformity of effect in street architecture is necessary in the interests of dignity and art. This whole doctrine of architectural symmetry has been courageously assailed by Gothic revival enthusiasts, its value denied, and its effects of repetition and gradation scouted as formal weaknesses alien to the picturesque and truly artistic. The present generation stands in many respects at the parting of the ways. The heat of Gothic vigour has evaporated, and we are prepared to consider its artistic assertions at least as coolly as we have regarded the orders and proprieties of the preceding school which produced Regent Street and the park.

Within the last half-century public taste, national genius, or what you will to call that will of the wisp, has romanticised into Mediaevalism with its guilds and crafts ideally uniting work with art in life, and not in vain; and also not in vain has it discovered the charms of the Bloomsbury and Soho view of art life, with its sober respectability of external appearance and delicious completeness within, reticent to plainness about the house and home, and serenely Athenian in monumental churches and porticoed institutions. While this sprite of fashion is at present dissipating her enthusiasms in a somewhat libertine interlude, we can do no harm by putting in a plea for the organised hypocrisy of Regent Street, with its many and various dispositions and subdivisions successfully masked in stately groups and blocks culminating in the magnificent Quadrant, new made annually with fresh paint in every architectural feature with whiteness of surface—and is not architecture mainly surface matter after all? The sense of scale, of grouping, of harmony and of successful regulation still survive in Regent Street, though well nigh three-quarters of a century have elapsed since it was designed, and of all London streets it is yet the only one of which, as street architecture in total, we can in any way be proud. We must not fail, though, to qualify our self-congratulation by the objections which lie below the surface, for they will practically prevent an entire repetition of the experiment. The stately grouping of varying blocks has been achieved mainly by the sacrifice of what to-day would be altogether too valuable, comfort in arrangement, and of market rental value in the "upper parts." There is a manifest wrestling between internal facts and external appearances, which struggles with windows, parapets and roof lines. The pleasant proportion of width of street to height of building will be rarely attained now in any great city, and the charm of curved line on which the whole street scheme is planned from St. James's Park to Langham Place is uniquely happy in its architectural effect. The effort was a great one, and the genius of Nash one for the occasion; the result is characteristic of the age that produced it, and serviceable and delightful to that which has followed. London would frankly approve of a repetition of the occasion, effort and genius, and of a result as expressive of our generation as that is of the "First Gentleman" of Europe.

#### *Speculative Building in Important Streets.*

A practical aspect of our subject sorely presses us to-day in London, and to some extent in all our larger cities. We have been considering the improvement of our street architecture upon definitions of the requirements of commercial buildings, and the way in which the architect seriously devoted to the advancement of his art can meet and give them artistic expression. These requirements postulate as a requirer, an intelligent progressive man of business, also a sympathetic and trained architectural mind to consider them. But practically neither the business man nor the architect have much to say upon the matter in a way which can affect street architecture,



for buildings are now ready made for them. These are the production—and as such also express the characteristics and ideals of their producers—of building investors who buy or secure the most prominent and serviceable sites and erect speculative shops and warehouses upon them as ready for occupation by the purchaser. I do not propose to take any exception here to the speculative purchase of land likely to become valuable, or to its being offered at the highest obtainable figure, and though it is gravely open to doubt whether the policy of providing ready-made buildings is the best and most profitable either for the promoter or purchaser, or for both. But I conceive it well to be within the proper limits of our subject to-night to protest in the name of our commercial men, in the name of architects, and of all passers-by who have regard for the pleasant, decent and beautiful character of the cities of our land, against the great speculative building blocks recently erected, and now being carried out, upon many of the most important sites in the Metropolis. The outrageous vulgarity of design, ignorance or defiance of elementary considerations of appropriateness of proportion, and of architectural suitability in expression, and the abominably bad ornamentation, are surely an artistic scandal of a serious kind. There seems to be no protection for the public, refined or unrefined, against the insults to taste and national self-respect which deface our finest and most important thoroughfares, through the sordid incapacity of grossly ignorant men. The architecture of the whole class of speculative building is normally of a low class, but since this element has invaded the more expensive sites and proceeded to erect buildings demanding the highest rents, the depths of the degradation of speculative building art have received a new exploration and exposure that is appalling. Kind nature makes us slowly oblivious to constant or recurrent physical pain; but, speaking from painful experience, I cannot discover any such alleviation in the doom of having to come into daily contact with buildings in high places exhibiting the worst effects of architectural degradation. Indeed, a settled despair of London, in spite of much in many directions to give bright hopes of oases of cheer in the desert, drops with chilling and deadly effect upon that zeal without which an architect is fairly useless to his fellows and his art. A really bad building is a upas tree, to be destroyed as rapidly as possible, and of the real badness of this branch of modern street architecture no one has any doubt. It is not even to be expected that the promoter, or even architect of such buildings possibly know or care that they are bad or good; their interests are otherwise entirely wrapt up in present profits; these are compelled. The buildings occupy certain positions and insure rents at no more or less, whether the architecture is a source of pleasure or pain to the citizens upon whom it is forced. We protest; if we can do nothing else we will make this beginning by crying revolt against a shamelessly bad architecture, a continued disgrace to our building art, commercial intelligence, national self-respect and civilisation. There are no good points, not even of arrangement and suitability or of improvement, in the design of these blocks, while their construction sails as near disastrous inefficiency as the administration of a difficult statute by hardworked and heavily handicapped district surveyors can allow.

#### *Regulation of Designs.*

In conclusion, it is not perhaps much good railing at a blot, however disfiguring upon the surface of a city, but as the mischief is spreading rapidly, we would point out again that while not limiting free trade if you will, in land of public or private importance, there is a definite call for such a censorship as liberal as you like, but cultured and wide, that will prevent the intrusion of ready-made or purposeless buildings of hideous and incompetent architecture as speculation upon our public streets. With goodwill some reference to authority of designs in important streets of distinctive character should be readily obtained. This at present exists by statute upon construction, height, purpose and accommodation, but not upon the more widely-dispersed, though less realised evil of bad design. There is as yet no sufficient standard of public taste to enable us to trust such censorship without fear of controversy in the hands of any mere officials, but having organised societies for the promotion of the fine arts and architecture and for the improvement of our cities, there should be no difficulty in obtaining sufficiently large committees of taste willing to proffer advice, criticism, and to exercise veto without illiberality or narrowness. There may be danger in this suggestion, the censorship may prove either a stork or a log to the frogs, but there are greater dangers in the continuance of the existing state of things, for some of the best streets of London are already marred and appear to exhibit a gross decadence of public taste, which is really as untrue as any other artistic characteristic of such buildings.

The London County Council happily, to some extent, seems alive to this danger in regard to the great thoroughfare which they have now in hand. It has proposed regulations for

buildings upon the new crescent towards the Strand, and held a tentative competition for uniform designs, that certainly marks a progression of ideas in the direction of proper control. But the subject is one of great difficulty and complexity; unless the control is in the first place wisely directed, in the true interests of successful architecture, by highly competent hands, and in the second is so entirely firm by enactment a covenant that it cannot be broken away from, the experiment will not be successful. These two conditions are not unattainable, and Londoners hope for much, as they always do in spite of much disappointment. Into the discussion of the great street from Holborn to the Strand, so full of detail and interest, we cannot now enter if we would. The preliminary work is far advanced for suggestions to be of much value to the authorities, but we can and do appeal to all who build in the streets, whether promoters, owners, men of commerce, speculation, or of public purpose, to employers, builders and architects alike, to consider how deeply important is the right use of every opportunity of permanent building to the whole city, and if character is written in stone, wood and iron, that character should reveal devotion to the highest ideals.

#### PREHISTORIC BRIGHTON.

AT the last meeting of the Brighton and Hove Natural History and Philosophical Society, held at the Royal Pavilion, Brighton, an interesting paper was read by Mr. S. Toms on "Some Prehistoric Camping Grounds near Brighton." Mr. Toms began by explaining, says the *Sussex Daily News*, that for some years past his favourite recreation had been to scour the county of Sussex in search of flint implements and such other material as enables the archaeologist to construct, by synthetic and comparative methods, a fairly accurate account of what were the crafts, arts, and customs of the prehistoric inhabitants. His object now was to give, in the nature of a preliminary report, one result of his local "flint hunting" expeditions during the past twelve months. He found that the best hunting grounds were the cultivated patches of downland in the vicinity of Cissbury. On his first visit he turned up no fewer than a dozen flint axes, three of which were perfect specimens. During another visit he was rewarded with an axe, a gouge, a dagger, and a large boring instrument, the three latter being rare types, hitherto unrepresented in the local collection of flint implements. An extended search in this district led to the observation that the axes do not seem to be scattered broadcast over the hills, but that they are confined to certain spots, and that where one finds a single specimen several others may generally be revealed by a diligent search, and was attended with the discovery that other prehistoric remains invariably and abundantly occur on these spots in close association with the flint axes, namely, flint flakes, cores, hammerstones, scrapers, needlemakers, arrow-shafts, &c., and also the calcined flints with which prehistoric man boiled water and cooked his food. The thousands of flakes were either chips struck from a flint to serve for scraping and cutting purposes, or produced during the fabrication of some flint tool. Not being able to make pottery, primitive man dug a hole, lined it with skin, put in water, heated stones in a fire, and threw the stones into the water to make it boil; hence stones called "pot-boilers."

Having described the differences between artificial chert of flint and natural splinters, and quoted Lord Avebury as saying that "a flint flake is to the antiquary as sure a trace of man as the footprint in the sand was to Robinson Crusoe," Mr. Toms said his own observations led him to the conclusion that this statement required some modification. A little practice, however, enabled one to distinguish between natural flaking, by the action of the sea, and the comparatively beautiful and thoughtful workmanship of the hand of man. Whenever they came across a symmetrical or well-formed flake which exhibited the portions of at least two facets on its outer face, then and then only, he thought, could they regard it as a sure trace of man. In the neighbourhood of Cissbury he had discovered three typical prehistoric sites—one on the crest of Lychpole Hill, about half a mile south-east of the entrenchment; another about 400 yards to the east; and another on the spur of the Downs known as Mount Carvey, which slopes from Cissbury towards Broadwater. Flakes, cores, scrapers, cooking stones, refuse axes, &c., were to be found in spots throughout the length and breadth of the last-named spur. He had also worked the Beachy Head district, and last year he came across a dozen men, women, and boys who were engaged in picking flints for road material from the cultivated land, and he found that, owing to their frequent conversation with collectors, they had all become possessed of sufficient knowledge to recognise a "war-stone" (a flint axe) whose value might represent anything from sixpence to as many shillings according to the excellence of the specimen and the length of the collector's purse. Last year he discovered that cooking



flakes, scrapers, &c., occur more or less in groups over the whole surface of the field opposite the Bird Museum on the Dyke Road, Brighton, to walk over which permission had been given him by Mr. J. J. Clarke. The other spot he had to mention was even more typical. It was situated in the open fields on each side of the Dyke Road just beyond the last reservoir (near the Three-cornered Copse); here he discovered several flint axes and perfect axes, and some of the most beautiful scrapers he had ever seen. The finest axe he had ever found he accidentally turned up about two years ago near the south-western summit of Newmarket Hill, known locally as Norton Top.

Mr. Toms thought that from the array of evidence they might deduce the obvious conclusion that these productive sites were frequented by the members of some primitive tribe, not only for the purpose of boiling water or cooking food, but for making their flint tools and preparing animal hides as well as for things, tent coverings, &c. Lacking a better term, he had, therefore, given these sites the name of "camping grounds." The problem now inviting solution was as to what period these camping grounds might be assigned. Judging by the nature of the "finds," many of them might have no hesitation in saying they might at once be relegated to a position in the Neolithic phase of the Stone Age. But they found there were authentic records of the abundant occurrence of burnt flint, or flint-boilers, in association with the remains of the Neolithic, Bronze, Early Iron, and Roman periods, thus showing that the practice of stone-boiling and flint-chipping survived together in the Neolithic period down to early historic times. A pottery sherd, flint-flake, scraper, &c., found on the surface of the Iwms might consequently belong to any of the above ages, and the difficulty of assigning even an approximate period to such surface finds would be apparent. He feared that the question of the probable age of the camping grounds bristled with difficulties. They had seen that it was not an infrequent occurrence to find hand-made pottery, cooking-stones, and the smaller flint implements with Roman and the so-called late Neolithic remains, and that where they are thus discovered they are invariably accompanied by numerous fragments of the pottery of the periods in question. The latter remark equally applied to the Bronze age, for, wherever the bronze-using Briton went, he seems to have taken his pots and pans with him, and if they might judge by the multitude of shards occurring with the remains, the ceremony of "washing up" in those days must have been often associated with drastic results. He associated flint-flakes, also, with the comparatively modern period when they were made for gun-flints.

In the hope that it might afford some clue as to the period to which the camping grounds belonged, he had been constantly on the look-out for the occurrence of pottery in any size or condition, but with one solitary exception he had utterly failed in this respect. The exception was the discovery of a small fragment of Romano-British pottery on the camping ground near the Dyke Road reservoir, but the utter invalidity of such a piece of surface evidence was singularly demonstrated by the immediate discovery on the same spot of another fragment of pottery which bore the magic inscription that a certain brewery was located in such-and-such a place. This combined discovery gave rise to the remarkable query as to whether the camping ground in question belonged to the period of the Roman occupation or to the flourishing period of Tamplin's ales. After such a preamble of conflicting theories he would in conclusion venture his opinion as to the age of the camping grounds. The fact that the flint axes found on these sites were purely Neolithic in character, and that they occurred there so abundantly as in association with the smaller implements and cooking-stones, coupled with the strong negative evidence which exists in the marked absence of pottery of any type or kind, seemed to him to point only to the conclusion that these camping grounds were distinctly those of the Neolithic tribes.

## ARCHITECTURAL COMPETITION IN AMERICA.

COMPETITION—"the life of trade"—has come to have a peculiar and impressive meaning for American architects. Most men who follow trades in New York, or do business for themselves, or who are building up a professional practice of one kind or another, says the *New York Times*, can tell you a thing or two about competition. In no other city is there so fierce and incessant, they will say, as in New York—the best city in the world for the skilled worker, and one of the best in the world for the man who has not trained his mind or his hands.

But to the architect competition has come to mean something more than the strenuous rivalry in which men of other trades and professions are engaged. He not only competes in the ordinary sense for the privilege of making a living. The bulk of the work he does nowadays is laid out for him on the basis of competition alone, so that the task set him and fifty others is one for which he receives a full reward or nothing.

"It's a curious state of things," said a New Yorker, who was graduated from the Beaux-Arts a good many years ago, and who has since been following his profession with considerable success in Manhattan. "I don't know of any other calling in which like conditions obtain. Hardly any building costing 50,000 dollars and upwards is erected nowadays excepting on plans submitted in competition. You will observe that I am so busy that I cannot stop work to talk to you, but keep on drawing while I speak. It would be just the same no matter when you called. I'm always this busy. I have to be, because so little of my work counts for anything. For example, my partner and I are at present engaged on plans for a public building in an Eastern city. For six weeks I have given two-thirds of my time to this work alone. Then there is the office rent, of course, and the salary of our draughtsman, whose weekly salary sometimes amounts to more than we are able to make ourselves. If one of our plans is accepted, we will make a good bit of money, and it will help our reputation. The architect receives 5 per cent. on the cost of the building he designs, and when all expenses are paid this yields him 3 per cent. net profit. The building we are making plans for now is to cost 1,000,000 dollars. So, if we are successful, we will ultimately divide 30,000 dollars between us. But you see there are from forty to seventy-five other architects after the same thing; and, as only one plan can be accepted, from thirty-nine to seventy-four members of the profession will have their work for their pains. But of course if one stopped to think about that it would paralyse his energy."

"And can a rejected plan be put to no other use?" he was asked.

"None whatever. It represents so much waste material. You will notice that drawing of a State house there against the wall. Isn't half bad, eh? Yes, the circling eagle was thrown in. Well, that cost me a full month's time and a considerable cash outlay in the bargain; and if you have some taste for art you can take it away with you for 25 cents."

"But is this not an exception?"

"I should say it was rather the rule. One year with another, I put in two-thirds of my time at just this sort of thing. Other architects do the same. Occasionally in these competitions a very few of the competitors whose plans were almost as acceptable as the winning one will be paid something to cover expenses. But it is only occasionally. Then it happens sometimes that a competition for which plans are making falls through because the would-be builders find themselves short of funds."

"Have these conditions always obtained?" asked the visitor.

"Not to the extent that prevails to-day, though competition in public buildings is as old as the country. Away back in 1792 a prize of 500 dollars or a gold medal of that value was offered to the man who should produce the most approved plan for the President's house at Washington. A like sum, or a city lot, was the award announced for the prize designer of a capitol, and even a second prize of 250 dollars was offered for the encouragement of architecture. Compared with those times we are doing pretty well, only of course there are more architects now."

"There are several faults to be found with the competitive system of to-day. In the first place, it is practised to excess. As I have intimated, architects can be gotten to submit plans for 50,000 dollar buildings. In such cases the system is worse than the method of public competition, because there are no judges, and, consequently, the conditions are not so fair. In only a few instances of this sort are all the conditions favourable, including an expert arbiter. And there we strike at the root of the evil, whether the structure is to cost 50,000 dollars or 1,000,000 dollars. No valid objection could be made against the competitive system were there always architects, instead of laymen, on the committee of award. As it is, the system is a bad thing for the profession, as it encourages too many incompetents to enter it. You see, to construct a good building is a test of ability, but to make a good drawing is comparatively a simple matter and easily accomplished by the tyro. So the committees of laymen are too often taken in, and, naturally enough, by mere sham—which is bad both for architecture and for the real architects."

"Is there sometimes a 'pull' as another element to contend with?"

"That almost goes without saying when public buildings are in question. And it reminds me of a sad case in point. A few years ago the American friends of a gifted young Parisian architect, whom they had studied with at the Beaux-Arts, persuaded him to send in a plan for a public building in a big Western city. His design was pronounced the best by the expert whom the committee had consulted, and he recommended that it be adopted. On the strength of that the Americans who lived in the Western city and who were themselves competitors sent for the Parisian to join them. But after his arrival the committee of award decided to ignore the expert's recommendations, and the design of another man, with



a political 'pull,' was adopted. I saw the young Frenchman some months later. His money was gone, he had no friends excepting the few of his own calling, and he was desperately trying to make a living as best he could. Probably he would have starved to death had not friends helped him to get to New York, where there was a better market for his work. And, after all, a part of his plan for the public building was used without credit or compensation."

"And the architects themselves, do they all live up to the ethics of their calling?"

The Beaux-Arts graduate smiled. "There are some queer things in all professions," he said. "Not long ago I called to see a lawyer for whom I was designing a dwelling-house. We had no formal contract, but he was satisfied with my plans and all was going well. In his ante-room I found an architect of my acquaintance, and on questioning him I discovered that he had come to submit plans himself, voluntarily. I explained the situation to him. However, he remained, offered his plans, and was then told what I had already told him. Afterwards, not to be balked, he forwarded the plans by mail. So competition, you see, is active with us in more ways than one."

"Competition in several senses is in fact so keen that a certain architect who had made headway enough in his profession to design one of the handsomest large buildings in a prosperous suburb of New York, some time ago announced his intention of giving up a profession in which he could not make a living and returning to his father's farm."

"Another, and a prosperous architect of Manhattan, who has finally found a secure footing, says that 80 per cent. of the architectural work in this big town is done by ten firms. For the architects who do the remaining 20 per cent. you may consult the directory. The list is not brief."

## Correspondence

*The Editor does not hold himself responsible for opinions expressed by the writers.*

### The Piers of Truro Cathedral.

SIR,—The interesting report of Sir Thos. Drew in your issue of April 25 relating to the fractures in the nave piers of Truro Cathedral bears upon questions which have claimed attention here in New York. Study of the great stresses engendered in modern high buildings shows that there is one factor in the problem which may, I think, be added with advantage to those so well stated in the report. It is the elasticity and compressibility (under stress) of materials usually treated as rigid. The effect of a great load is that the materials are compressed where it is applied, and there only. Parts not loaded are not compressed; and if a mass is thus unequally strained it will measurably change its form. To make a pier capable of working to its maximum strength it, and its adjoining members, must be stripped of superfluous substance, which, if not under strain, will distort the mass by their excessive resistance. Refer to the diagram on your page 273. There is a rubble pier over 4 feet wide supporting a freestone base about 2½ feet wide (except at a shaft). The load upon the rubble at the plane of contact seems to be more severe than upon the freestone. I will assume that it is not excessive, but it is ill-applied, and the consequent distortion of the rubble has caused the failure of the freestone and not any defect of the freestone itself. This is proven by the fact that it is the base which cracks. If the column failed of its own weakness the crack would appear in the smallest part of the column instead of in the base, which is considerably larger. There is no load upon the edges of the rubble pier, therefore these parts stand higher than the loaded middle, and the elasticity of the mass causes it to assume a curved or dished form. The base stone being less elastic receives an added stress upon its outer parts and (the load being sufficient) cracks because of the development of transverse strain, and assumes a new condition of stress which may be more safe than the former one. But the task is now transferred to the next stone above, and the continuation upward of the crack will depend more upon the elasticity of the stone (and its bed joints) than upon its strength under compression.

The remedy for the original failure would be the cutting away of the superfluous rubble at the upper surface, giving the pier such an inclined face (or stepped face) as would preserve to all parts a due share of the load. A projection of one-quarter the height is probably all that can be allotted to stone-work of this class, when it is expected to distribute as well as transmit an extreme load to the course below, and this ratio will vary with the tensile strength of the material. If so gradual a reduction is improper because of the weakness of the rubble, then a stronger material must intervene. The concrete

cap, about 6 inches thick, cannot do the work required. It (and is intended to be) simply a cushion. What is needed is the elimination of the idle rubble which distorts the top surface of the pier.

Let me ask that this be taken as in no sense a criticism. Experiences very similar to that under consideration have led me to believe that the theory here advanced is valuable enough to be taken into account, and I hope it will make its own apology.—Yours, &c.,

ROBERT W. GIBSON.

New York: May 5, 1902.

## GENERAL.

**The King** has placed a stained-glass window in the private chapel at Windsor Castle as a memorial of Her late Majesty Queen Victoria. The window consists of ten lights in two tiers above the altar.

**Mr. Frank Verity** was presented to the King on Monday at St. James's Palace, on appointment as architect to the Lord Chamberlain's Department.

**Lord Iveagh** has invited designs from architects practising in Ireland for the erection of a market for the sale of old clothes at Dublin.

**Mrs. A. Lea Merritt** was elected a member of the Royal Society of British Artists at the last general meeting.

**Mr. Lacy W. Ridge** has prepared a report as to alterations and additions to St. John's Church, Lewes. The scheme, which includes improvements to the ceiling, windows, porch, &c., is roughly estimated to cost 900*l*.

**The Warden and Fellows** of Merton College, Oxford, have ordered the alabaster effigy of Walter de Merton, Bishop of Rochester, and founder of the college, to be replaced upon his tomb in St. William's Chapel, Rochester Cathedral. The figure was removed when the tomb was renovated by the wardens in 1849, and has since lain in an adjoining recess.

**A Committee of Old Etonians** unanimously decided last week "that a memorial to those who have fought and have fallen in the South African war should take the form of a building worthy of the school, together with a memorial recording the names in the Eton College Chapel."

**Mr. Walter W. Thomas**, deputy chairman of the Liverpool Corporation baths committee, is to read a paper on Thursday next, entitled "People's Baths," before the Society of Architects.

**The Glasgow Exhibition Buildings** were estimated to cost 163,000*l*. This estimate, however, has been considerably exceeded. At a meeting of the buildings committee a report was submitted showing that after final measurements the cost of buildings is 184,642*l*, in addition to which there is the cost of erecting the water chute and re-erecting a restaurant.

**A Memorial** of the late King Humbert has been erected on the Superga Hill, in the environs of Turin, beside the basilica containing the tombs of the kings of Piedmont. It consists of a conical column surmounted by a wounded eagle representing the House of Savoy. At the foot of the monument a figure representing an Allobrogian, wounded in the hand, stands with angry brow, menacing vengeance. The pedestal bears the date 1900, and beneath it King Humbert's name, surrounded by the aureole of martyrdom and an inscription.

**The Statue** to be erected by the Gladstone Memorial Committee is to occupy a site in the centre of the open space in the Strand between St. Clement Danes Church and the eastern horn of the proposed crescent block.

**The French Government** have at length decided in favour of accepting the collection of paintings and studies by the late Gustave Moreau, for the upholding of which a sufficient sum has been given by his executor, M. Henri Rupp. The building will be in the Rue de la Rochefoucauld, and will be officially known as the Musée Gustave-Moreau.

**The Foundation-stone** of the tower of the church of the Society of St. John the Evangelist at Oxford was laid last Monday. The designs of Messrs. Bodley & Garner provided for a building to cost about 12,000*l*. It is six years since the church was dedicated, but the erection of the tower was left to a future date, as the expenditure would be 3,000*l*.

**An Exhibition of Furniture** is to be held in the Grand Palais of the Champs-Élysées from July to November next. Other industries will also be allowed the use of the building at a subsequent time.

**M. Paul Renouard** has been sent by the French Government to make a series of drawings of the fêtes in honour of Rochambeau, which are to be held at Washington on the occasion of the inauguration of a memorial of the French general.

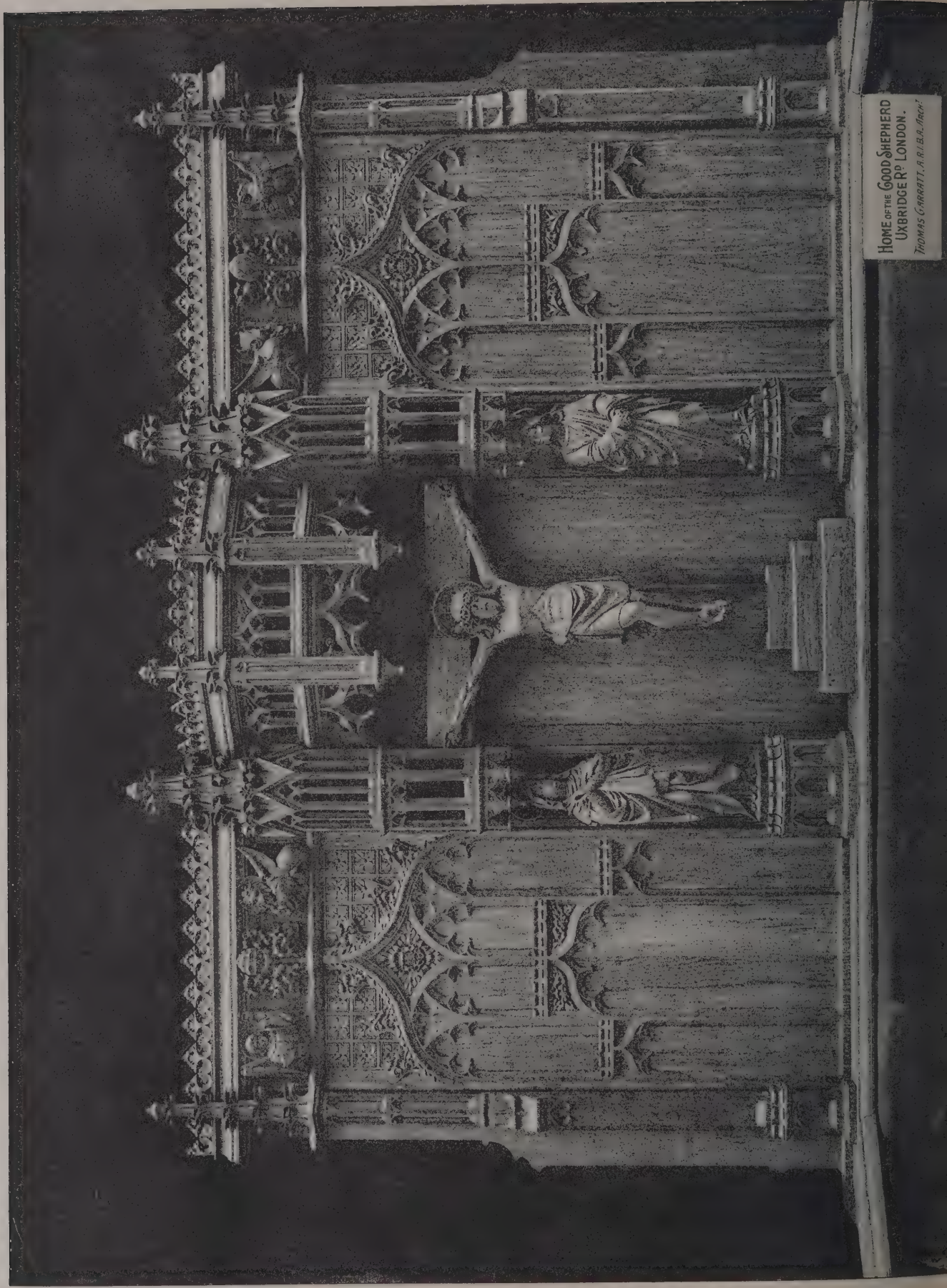
**Mr. Gordon P. Hills** has prepared plans for the enlargement of the chapel of Otter College, Chichester. The work is to be completed in twenty weeks.



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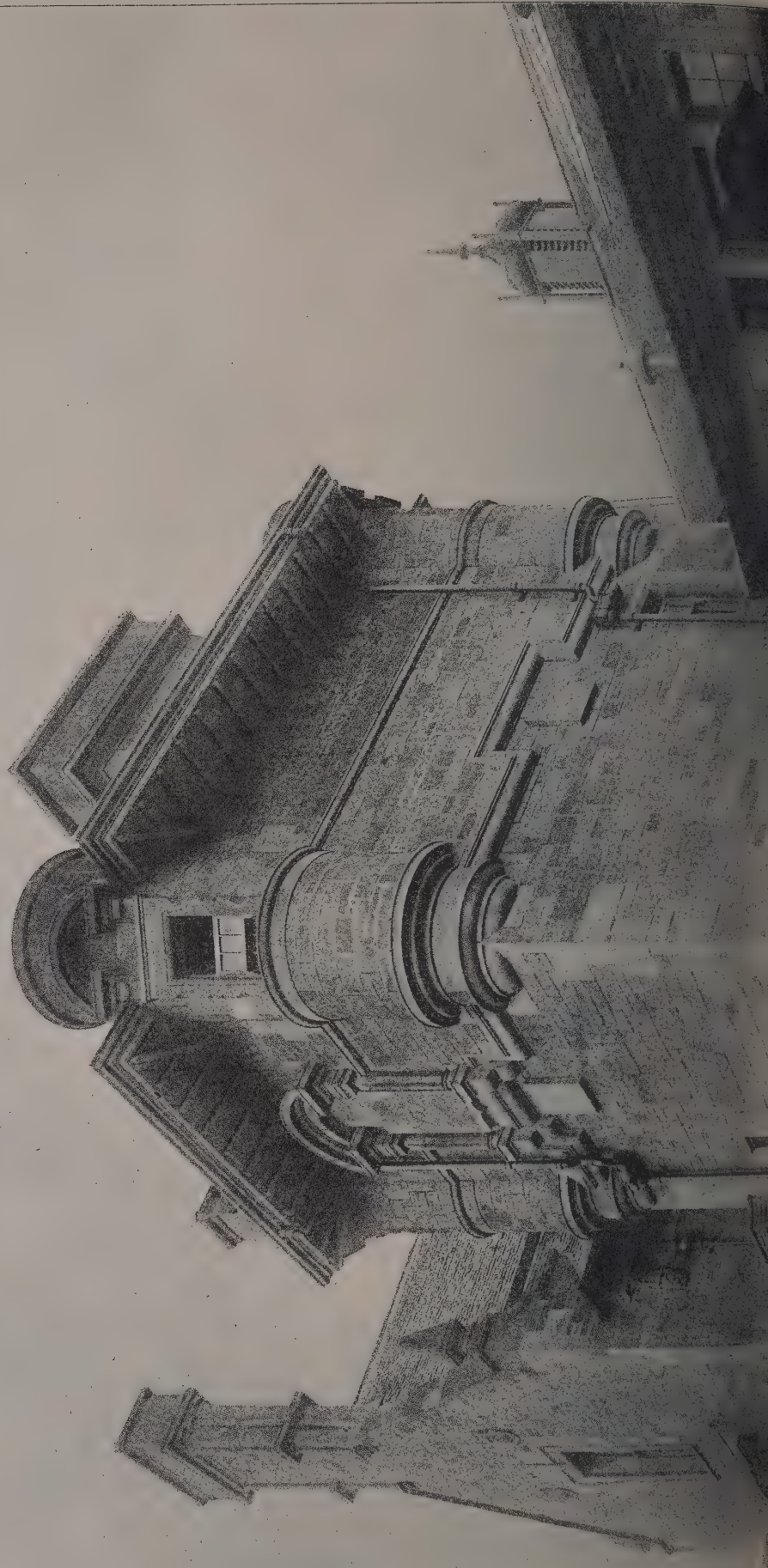




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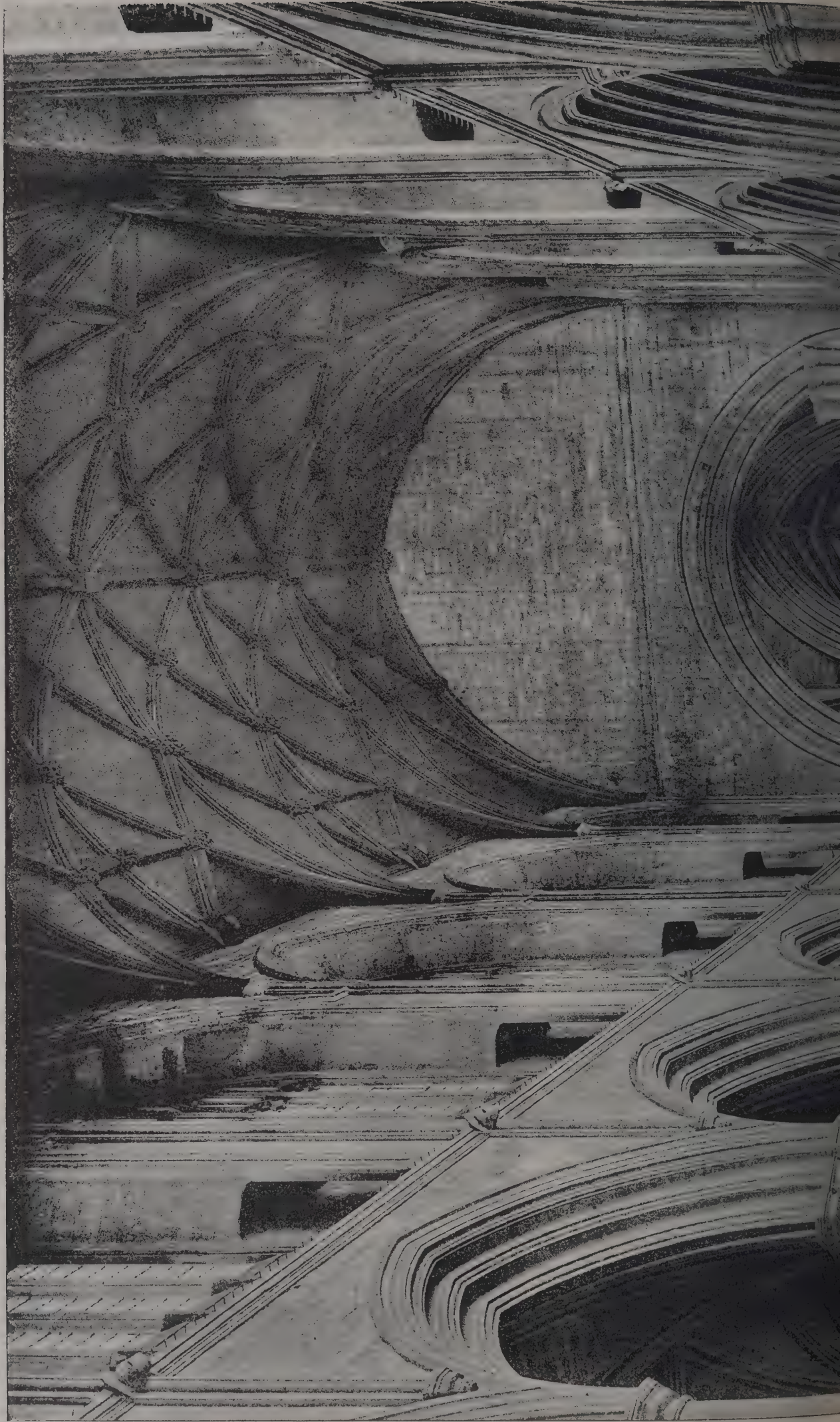




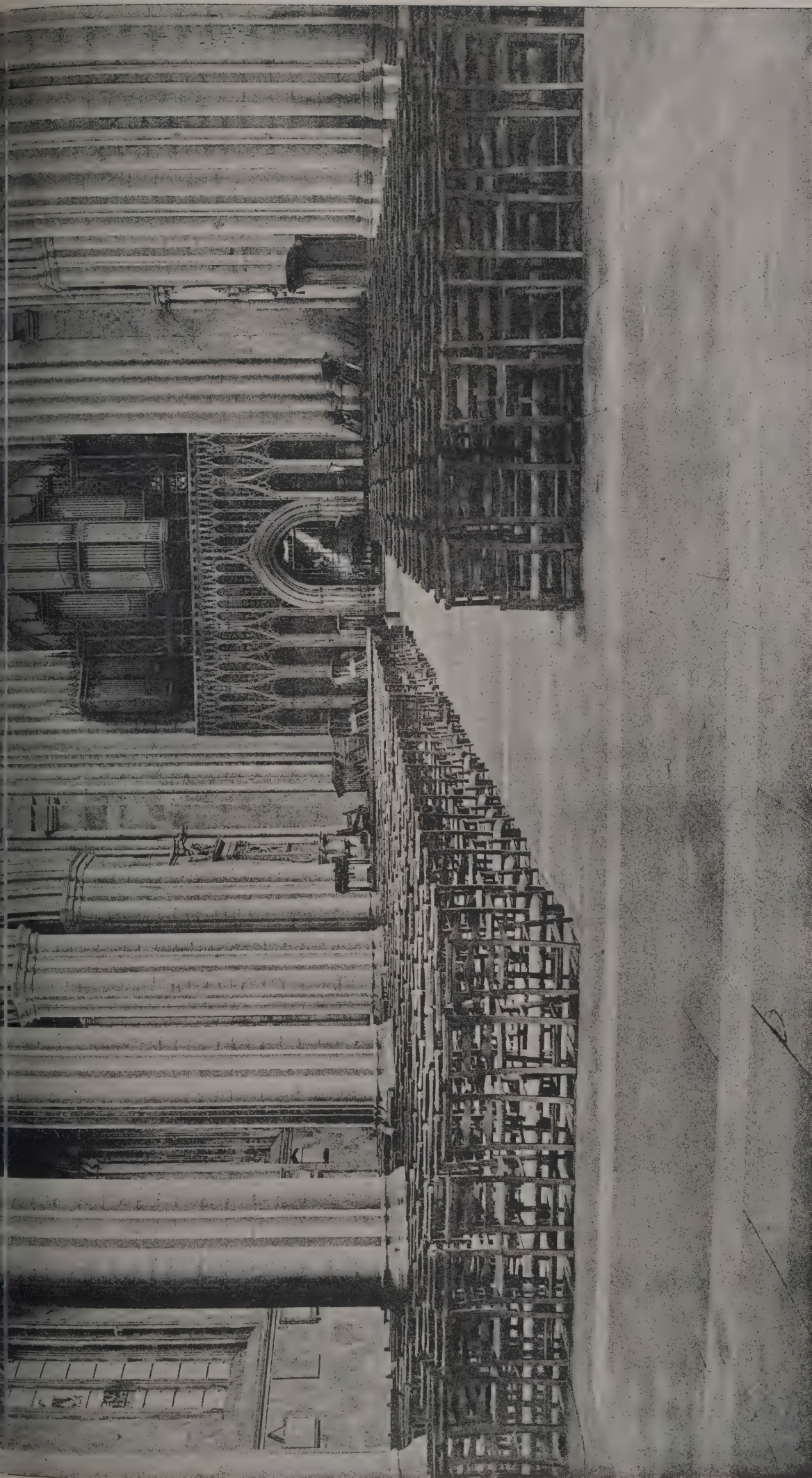
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CATHEDRAL SERIES, No. 387.—RIPON: GENERAL VIEW OF NAVE TO ORGAN SCREEN.







THE  
Architect and Contract Reporter.

EDITORIAL NOTICES.

view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.

Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.

Authors of signed articles and papers read in public must necessarily be held responsible for their contents.

Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.

Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.

TENDERS, ETC.

As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

COMPETITIONS OPEN.

REWE.—June 12.—Designs are invited for new municipal offices and council chamber. The author of the design which is judged best will receive a premium of 50*l.*, and he will be appointed to carry out the design; second premium, 25*l.* Particulars will be supplied by the Borough Surveyor, Municipal Offices, Crewe.

LEPTFORD.—Aug. 30.—Competitive designs are invited for town hall and municipal offices. Premiums of 100*l.*, 75*l.*, and 50*l.* are offered for the three selected designs. Mr. Vivian Ward, town clerk, Municipal Offices, 20 Tanner's Hill, Leptford, S.E.

HARTSHILL.—June 16.—The committee of the North Warwickshire infirmary and eye hospital, Hartshill, Stoke-upon-Avon, invite designs for a home for nurses at Hartshill, Stoke-upon-Avon. Particulars may be obtained on application to Mr. E. Boyce, secretary and house governor.

KNARESBOROUGH.—June 1.—The Harrogate and Knareborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital at Thistle Hill, Knareborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

SUNDERLAND.—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.*, and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

TOTTENHAM.—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

WEST HARTLEPOOL.—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

CONTRACTS OPEN.

AXBRIDGE.—May 26.—For erection of a new infirmary (about sixty beds) on a site adjoining the existing workhouse, Axbridge, Somerset. Mr. A. Powell, engineer, 3 Unity Street, College Green, Bristol.

BELPER.—May 29.—For reconstruction of 241 feet lineal of surface-water brick culvert 2 feet 6 inch diameter at Kirk Langley. Mr. Robt. C. Cordon, surveyor, Hazelwood, Derby.

BEVERLEY.—May 21.—For erection of a pavilion for 120 patients and for alterations and additions to the administrative department of the East Riding lunatic asylum. Mr. C. H. Hebblethwaite, architect, 10 Waterhouse Street, Halifax.

BIRKENHEAD.—June 10.—For erection of a warehouse at Morpeth Dock, Birkenhead, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, W.

BIRMINGHAM.—June 2.—For putting-in the foundations and lower storey of the buildings and the installation of a power station at the Birmingham University. Messrs Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, S.W.

BIRSTALL.—May 22.—For erection of an infectious diseases hospital at Foxhall, Birstall, Yorks. Mr. J. W. Burrows, architect, Birstall.

BOCONNOC.—May 20.—For additions at the school, Boconnoc, Cornwall. Mr. W. Pease, solicitor, Lostwithiel.

BOOTLE.—May 21.—For alterations and additions to the 4th V.B.K.L.R. drill-shed and armoury, Park Street, Bootle, Lancs. Mr. J. Henry Farmer, town clerk, Bootle.

BOSTON.—June 2.—For additions and alterations to the isolated ward at the fever hospital in Skirbeck, Boston, Lincs. Mr. Jas. Rowell, architect, Borough Offices, Boston.

BRENTWOOD.—May 23.—For erection of a retort-house (75 feet by 40 feet), coal store (75 feet by 25 feet), boiler-house, engine-room, &c. Mr. C. A. Fielder, secretary, Gas Offices, Brentwood, Essex.

BRENTWOOD.—May 31.—For underpinning a portion of the chapel at the Essex County lunatic asylum. Mr. Frank Whitmore, architect, 17 Duke Street, Chelmsford.



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BRIDLINGTON.—May 23.—For alterations at the work-house. Mr. Samuel Dyer, architect, Bridlington.

BRISTOL.—May 23.—For erection of additional storerooms at Stapleton workhouse. Mr. J. J. Simpson, clerk, St. Peter's Hospital, Bristol.

BURSTWICK.—For erection of a new vicarage house at Burstwick, East Yorkshire. Messrs. Brodrick, Lowther & Walker, architects, Hull.

CANNOCK.—May 26.—For alterations and enlargement to Rawnsley schools, Cannock, Staffs. Messrs. Bailey & McConnal, architects, Bridge Street, Walsall.

CANNOCK.—May 28.—For reconstruction of the bridge over Mitton Brook, on the Penkridge Road, Cannock, Staffs. Mr. Herbert M. Whitehead, surveyor, Penkridge, Staffs.

CARNFORTH.—May 22.—For erection of a dwelling-house at Carnforth. Mr. Joseph Pattinson, architect, Windermere.

CHARMINSTER.—May 22.—For erection of a house for private patients on land adjoining the county asylum, near Charminster, Dorset. Mr. George T. Hine, architect, 35 Parliament Street, S.W.

CHELTENHAM.—May 20.—For erection of a chalet at the Essex Lodge entrance to Pittville Park. Mr. E. T. Brydges, town clerk, Municipal Offices, Cheltenham.

CHOPWELL.—May 21.—For erection of cottage residence in Pear Tree Road, Chopwell, Durham. Mr. David M. Spence, architect, Ashmount, Shotley Bridge.

CHOPWELL.—May 21.—For erection of business premises and house, Beaconsfield Terrace, Chopwell, Durham. Mr. David M. Spence, architect, Ashmount, Shotley Bridge.

COPPULL.—May 21.—For erection of a Wesleyan chapel, &c., at Coppull, Lancs. Mr. W. H. Dinsley, architect, 12 Cleveland Street, Chorley.

CORNWALL.—May 23.—For erection of a Wesleyan Sunday school at Lanner, near Redruth. Mr. H. W. Collins, architect, Walreaddon, Redruth.

COVENTRY.—May 28.—For erection of branch police station, free library and fire station, at Holmsdale Road, Foleshill. Mr. J. E. Swindlehurst, city surveyor, St. Mary's Hall, Coventry.

CRICKLADE.—May 20.—For erection of a police residence at Cricklade, Wilts. Mr. Charles S. Adye, County Offices, Trowbridge.

CROOK.—May 22.—For erection of Church institute and Sunday school at Crook, Durham. Messrs. Oliver, Leeson Wood, architects, Mosley Street, Newcastle-on-Tyne.

DARLINGTON.—May 21.—For construction of a three-gasholder, 140 feet diameter, in the vicinity of the gasworks. Mr. Hy. G. Steavenson, town clerk, Houndgate, Darlington.

DERBY.—May 22.—For erection of a lodge at the Little Chester recreation ground. Mr. John Ward, borough surveyor, Babington Lane, Derby.

DEWSBURY.—May 21.—For erection of boundary wall, kerbing, flagging, channelling, &c., in Headfield Road, Savoy Town, Thornhill. Mr. S. W. Parker, surveyor, Council Office, Thornhill.

DUKINFIELD.—May 27.—For erection of a police station and court-house. Mr. H. Beswick, county architect, Newgate Street, Chester.

EDMONTON.—June 17.—For erection of schools in Montague Road and Houndsfield Road. Each school has four departments, and will accommodate 1,360 children. Mr. H. W. Dobb, architect, 99 Church Street, Lower Edmonton.

EGREMONT.—For rebuilding of a house and premises in Smithfield, Egremont, Cumberland, and for slating and plastering. Specification and plan can be seen at the Wyndham Mining Company's Office, Egremont.

EPHING.—June 4.—For erection of an infants' school to accommodate 250 children at St. John's Road, Epping, Essex. Messrs. Harrington & Ley, architects, 65 Bishopsgate Street Without, E.C.

GLOUCESTER.—May 22.—For reconstruction of the roof of the Eastgate market. Mr. R. Read, city surveyor, Guildhall, Gloucester.

GRANGE-OVER-SANDS.—May 23.—For erection of Sunday schools, lecture hall, out-offices, &c., adjoining the Wesleyan church, Grange-over-Sands. Mr. Stephen Shaw, architect, Kendal.

HALIFAX.—May 19.—For alterations and additions to dining-rooms adjoining the borough slaughter-house, Market Street, Halifax. Mr. James Lord, borough engineer, Town Hall, Halifax.

HALIFAX.—May 24.—For taking-down and rebuilding the improvement line Mr. Joseph Whitaker's lodge entrance gates, &c. Mr. James Lord, borough engineer, Town Hall, Halifax.

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**HALIFAX**—May 28.—For erection of three houses at Rushton Hall, Pellon, Halifax. Mr. Arthur George Dalzell, architect, 15 Commercial Street, Halifax.

**HALIFAX**—May 29.—For erection of new implement works at Ruston Hill, Highroad Well, Halifax. Mr. Lister Coates, architect, Yorkshire Bank Chambers, Waterhouse Street, Halifax.

**HARTSHILL**—May 20.—For erection of a manager's cottage at the new sewage-disposal works, Hartshill, Atherstone. Mr. J. S. Pickering, Council Offices, Nuneaton.

**HEANOR**—For erection of factory at Heanor. Mr. Arthur Marshall, King Street, Nottingham.

**HORLEY**—May 17.—For erection of a gatehouse, lodge and four cottages at Farmfield, near Horley, Surrey. Particulars may be obtained at the General Section of the Architect's Department, County Hall, Spring Gardens, S.W.

**HYTHE**—May 31.—For erection of a shelter, bandstand and sanitary conveniences on the Marine Parade, and sanitary conveniences in Red Lion Square. Mr. Arthur S. Butterworth, borough surveyor, Hythe.

**IRELAND**—May 19.—For erection of a villa at Donaghadee. Mr. William J. Fennell, architect, 2 Wellington Place, Belfast.

**IRELAND**—May 19.—For erection of two houses at Ballywilliam, Donaghadee. Mr. William J. Fennell, architect, Wellington Place, Belfast.

**IRELAND**—May 19.—For erection of additional lecture-rooms at the Marlborough Street Training College, Dublin. Mr. J. F. Fuller, architect, 179 Great Brunswick Street, Dublin.

**IRELAND**—May 21.—For remodelling the buildings at each end of the Castleblaney workhouse infirmary and providing wards for the treatment of consumptives. Mr. James Keelaghlan, Ballybay.

**IRELAND**—May 21.—For additions to Masonic hall, Killinchy. Mr. James Robinson, Balloo Mills, Killinchy.

**IRELAND**—May 22.—For erection of a dwelling-house in Bacre Terrace. Mr. John M. Robinson, architect, 7 East Wall, Londonderry.

**IRELAND**—May 23.—For erection of a footbridge about five miles from the town of Tobercurry. The Secretary, County Council Court House, Sligo.

**KEIGHLEY**—May 19.—For erection of a laundry, dwelling-house and stabling at Riddlesden, Keighley. Mr. Henry Smith, architect, Compton Buildings, Keighley.

**KINGSTON-ON-THAMES**—May 20.—For new wood floors and fireplaces and underpinning brick walls to the isolation wards, and erection of a porter's room at the workhouse. Mr. James Edgell, clerk, Coombe Road, Kingston-on-Thames.

**KENDAL**—May 20.—For erection of a strong room. Mr. John Stalker, architect, Kendal.

**KENDAL**—May 23.—For erection of six dwelling-houses and out-offices at Netherfield, Kendal. Mr. Stephen Shaw, architect, Kendal.

**LEEDS**—May 22.—For erection of baths and library fronting to York Road and All Saints Place, for the Corporation. Mr. H. Ascough Chapman, architect, Prudential Buildings, Park Row, Leeds.

**LONDON**—May 22.—For renewing the floor of Brewer ward and offices attached at the South-Western Fever Hospital. Particulars on application to the Metropolitan Asylums Board, Embankment, E.C.

**LOWESTOFT**—May 23.—For erection of boys and girls and infants' schools, Beckham Road, Roman Hill, to accommodate 800 children. Mr. R. Beattie-Nicholson, clerk to School Board, Lowestoft.

**MANCHESTER**—May 27.—For erection of public baths at Old Trafford. Mr. E. Wodehouse, architect, 88 Mosley Street, Manchester.

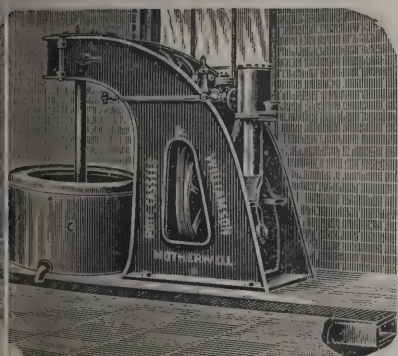
**MANCHESTER**—May 28.—For construction of a brick viaduct from Stuart Street to Bank Street, Bradford. Particulars may be obtained on application at the City Surveyor's Office, Town Hall, Manchester.

**NELSON**—May 21.—For erection of a galvanised iron car-shed. Mr. J. H. Baldwick, town clerk, Town Hall, Nelson, Lancs.

**OAKWORTH**—For erection of a coachhouse, stabling, alteration of farm building and addition to house, Two Laws, Oakworth, Yorks. Messrs. John Judson & Hudson, architects, Oakworth, near Keighley.

**OLD TRAFFORD**—May 27.—For erection of public baths, Stretford, Manchester. Mr. E. Woodhouse, architect, 88 Mosley Street, Manchester.

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**PINNER.**—For erection of two detached houses at Pinner (Royston Park). Messrs. Clarke & Charles, architects, Harrow-on-the-Hill.

**PLYMOUTH.**—May 27.—For erection of school buildings in Hyde Park Road, Plymouth. Mr. H. J. Snell, architect, 11 The Crescent, Plymouth.

**ROCHDALE.**—May 22.—For erection of about 250 lineal yards of boundary and retaining walls in new street between Bury Road and Spotland Bridge. Mr. S. S. Platt, borough surveyor, Town Hall, Rochdale.

**RUDGWICK.**—For additions and alterations to Loxwood House, near Rudgwick. Messrs. Frederick Wheeler & Lodge, architects, Bank Chambers, Horsham.

**SALTAIRE.**—May 22.—For erection of a new workshop and appurtenances in John Street, Saltaire. Mr. Wm. Rhodes Nunns, architect, Market Street, Bingley.

**SCOTLAND.**—For erection of the new municipal buildings, Barrhead. Mr. John Pattison, town clerk, Barrhead.

**SCOTLAND.**—May 19.—For altering a house at Ballieswells. Messrs. Davidson & Garden, advocates, 12 Dee Street, Aberdeen.

**SCOTLAND.**—May 19.—For additions to the mansion-house of Knowsie, Fraserburgh. Mr. William Reid, architect, Saltoun Square, Fraserburgh.

**SCOTLAND.**—May 20.—For erection of dwelling-house and additions and alterations to the farm offices at Bridgefoot, Tillery, near Udney station. Messrs. Wilsone & Duffus, advocates, Aberdeen.

**SCOTLAND.**—May 21.—For erection of a double villa at Auchterderran, Cardenden. Mr. William Williamson, architect, 220 High Street, Kirkcaldy.

**SCOTLAND.**—May 21.—For erection of a set of farm buildings at Carnkie, Illogan. Mr. H. B. Paull, Tehidy House, Camborne.

**TANFIELD.**—May 28.—For re-erection of Houghal Burn Bridge, near Tanfield Lea, Durham. Mr. Robert Heslop, surveyor, Burnopfield.

**TONBRIDGE.**—For erection of a school hall and classrooms at Foss Bank ladies' school, Tonbridge, Kent. Mr. J. W. Little, architect, 149 High Street, Tonbridge.

**THORPE.**—May 28.—For additions to the infectious diseases hospital, Thorpe, co. Durham. Messrs. Farthing Dunn, architects, 21 Pilgrim Street, Newcastle-on-Tyne.

**WALES.**—For altering business premises, for Messrs. Jacobs & Co, Cwmbran, Mon. Plans and specifications to be seen at above address.

**WALES.**—May 19.—For additions to the retort-house the Welshpool gasworks. Mr. Robert Owen, secretary, Welshpool.

**WALES.**—May 20.—For erection of workmen's institute Ynysybwl. Mr. J. Rees, architect, Pentre.

**WALES.**—May 20.—For erection of a Wesleyan chapel Maesteg. Mr. W. Beddoe Rees, architect, 37 St. Mary Street, Cardiff.

**WALES.**—May 21.—For erection of vestry, classroom organ loft and extension to Jerusalem chapel, Resolven. J. Cook Rees, architect, Neath.

**WALES.**—May 24.—For altering and enlarging Junction hotel, Bargoed. Mr. A. O. Evans, architect, Pontypridd.

**WALES.**—May 22.—For alterations and improvements the Portmadoc Market Hall. Mr. Jno. Jones, clerk to Urban District Council, 20 Bank Place, Portmadoc.

**WALES.**—May 22.—For erection of three business premises at Bargoed. Mr. P. Vivian Jones, architect, Hengoed.

**WALES.**—May 22.—For erection of a manager's house the Cwmaman Coal Company, Ltd., Aberdare. Messrs. Llewellyn Smith & Davies, architects, Aberdare.

**WALES.**—May 23.—For erection of a vestry, classroom appurtenances at the Welsh Baptist church, Aber, near Cardiff. Mr. G. A. Lundie, architect, 53 Queen Street, Cardiff.

**WALES.**—May 27.—For erection of Board school building at Cwmystwyth. Mr. J. A. Jones, architect, 7 Queen's Terrace, Aberystwyth.

**WALES.**—May 27.—For erection of bakery at Ton Pen Rhondda Valley. Mr. W. D. Morgan, architect, Victoria Chambers, Pentre, Glam.

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T. Gurney . . . . .	4,977	0 0
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Freeman & Jones . . . . .	4,897	0 0
Bowers & Co. . . . .	4,797	15 0
Colborne . . . . .	4,736	17 0
W. Jones . . . . .	4,710	0 0
Smith & Pitt . . . . .	4,645	0 0
J. T. Williams . . . . .	4,574	0 0
J. GURNEY, Gloucester (accepted) . . . . .	4,297	5 0

Wood-block flooring.—Redwood.

Fincher & Co. . . . .	250	0 0
Ebner & Co. . . . .	207	14 6
W. Jones . . . . .	203	0 0
Smith & Pitt . . . . .	190	0 0
W. Wibby . . . . .	188	11 0
Baylis & Co. . . . .	180	2 3
A. King & Sons . . . . .	170	0 0
W. T. Nicholls . . . . .	169	15 5
W. Duffy . . . . .	164	7 11
Homan & Co. . . . .	157	13 0
Freeman & Jones . . . . .	157	13 0
J. Byard & Son . . . . .	157	0 0
Colborne . . . . .	156	15 0
J. Gurney . . . . .	156	10 0
Geary, Walker & Co. . . . .	156	10 0
R. Lowe . . . . .	156	0 0
T. Williams . . . . .	140	0 0
Ashby & Co. . . . . (per yard)	0	4 3

GLOUCESTER—continued.

Maple.

Geary, Walker & Co. . . . .	£338	15 0
Fincher & Co. . . . .	315	0 0
J. T. Williams . . . . .	296	0 0
Baylis & Co. . . . .	276	19 9
W. Jones . . . . .	265	10 0
A. King & Sons . . . . .	264	0 0
Smith & Pitt . . . . .	252	10 0
Ebner & Co. . . . .	244	13 9
Freeman & Jones . . . . .	242	3 0
W. Wibby . . . . .	228	11 0
W. T. Nicholls . . . . .	220	11 0
J. Gurney . . . . .	219	10 0
Homan & Co. . . . .	204	10 6
R. Lowe . . . . .	203	0 0
W. DUFFY, Victoria Park, London (accepted) . . . . .	195	12 11
Colborne . . . . .	195	10 0

FRINTON-ON-SEA.

For street works in Holland Road, Frinton, Essex.

F. W. Anderson . . . . .	£870	0 0
D. Mackenzie & Sons . . . . .	840	10 0
WILSON, BORDER & CO., Ilford (accepted) . . . . .	730	0 0

HARRINGTON.

For alterations and additions to a dwelling-house at Eller Vale, Harrington, Cumberland. Messrs. W. G. SCOTT & Co., architects, Victoria Buildings, Workington.

Accepted tenders.

B. Hyde, mason and brickwork . . . . .	£214	6 6
H. Graham, joiner . . . . .	104	17 0
J. Lawson, plasterer . . . . .	61	17 1
D. M. Walker, plumber . . . . .	24	10 0
J. Lythgoe & Sons, slater . . . . .	18	5 0
J. Pratt, painter . . . . .	17	17 9

HIGHAM FERRERS.

For erection of two semi-detached houses at Higham Ferrers, Northants. Mr. GEORGE HALL, architect, Higham Ferrers.

T. Wilmott, jun. . . . .	£629	10 0
E. Mitchell . . . . .	625	0 0
T. & C Berrill . . . . .	567	0 0
P. IRESON, High Street, Higham Ferrers (accepted) . . . . .	526	0 0

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## IRELAND.

For alterations and improvements to Dromore West work-house chapel and the supply of furniture.

J. Mullen	£110	0	0
J. BARRETT, Enniscrone ( <i>accepted</i> )	98	19	0
H. Thornton	92	0	0

For alterations and repairs to the county court house, Londonderry. Mr. C. L. BODDIE, A.M.I.C.E., county surveyor.

Smyth Bros.	£4,201	0	0
R. Colhoun	3,950	0	0
J. BALLINTINE, Strand ( <i>accepted</i> )	3,314	0	0

## LAMBETH.

For erection of a disinfecting chamber, stabling, &c, at the Council premises, Wanless Road, Loughborough Junction. Mr. HENRY EDWARDS, borough engineer.

*Disinfecting chamber.*

Foster Bros.	£3,136	0	0
J. Chessum & Sons	2,718	0	0
G. Parker	2,575	0	0
B. E. Nightingale	2,568	0	0
J. Smith & Son	2,525	0	0
Rice & Son	2,517	0	0
J. Parsons	2,500	0	0
T. G. Minter	2,487	0	0
J. O. Richardson	2,486	0	0
Edwards & Medway	2,484	0	0
L. Whitehead & Co.	2,450	0	0
W. H. Lorden & Son	2,433	0	0
T. G. Sharpington	2,288	0	0
J. Hamm	2,192	0	0

*Stabling.*

G. Parker	995	0	0
J. Chessum & Sons	960	0	0
Foster Bros.	924	0	0
Rice & Son	918	0	0
W. H. Lorden & Son	900	0	0
T. G. Minter	905	0	0
L. Whitehead & Co.	895	0	0
J. Smith & Son	893	0	0
T. G. Sharpington	888	0	0
J. Parsons	887	0	0
J. Hamm	885	0	0
J. O. Richardson	881	0	0

## LEICESTER.

For construction of foundations, abutments, wing walls, & for two bridges over streams crossing Coalpit Lane. Mr. E. G. MAWBEY, borough engineer.

T. Philbrick	£1,821	0	0
J. Chapman	1,645	0	0
C. Chamberlain	1,607	10	0
H. Herbert & Sons	1,370	0	0
Richardson & Son	1,233	0	0
J. E. Johnson & Son	1,190	0	0
J. H. Smedley	1,125	0	0
Moss & Sons	1,099	0	0
JOHNSON & LANGLEY, Leicester ( <i>accepted</i> )	1,084	4	0

## LONDON SCHOOL BOARD.

For providing and fixing complete low-pressure hot-water apparatus to three halls, nineteen classrooms, corridors, cloakrooms and lavatories; also providing auxiliary apparatus to classrooms (all boys, girls and infants), including cutting-out and altering the existing low-pressure apparatus, Stockwell Road, West Lambeth.

Wippell Bros. & Row	£740	0	0
Comyn Ching & Co. Ltd.	697	10	0
Turner & Co.	692	0	0
H. C. Price Lea & Co.	665	0	0
E. Oldroyd & Co., Ltd.	619	0	0
Paragon Heating Co.	548	0	0
M. Duffield & Sons	530	0	0
Brightside Foundry & Engineering Co., Ltd.*	517	0	0

\* Recommended for acceptance.

## LOUGHBOROUGH.

For alterations and additions to the Loughborough police court. Mr. S. PERKINS PICK, architect, Leicester.

J. Dallow	£5,440	0	0
T. Barker & Son	5,439	0	0
A. Faulks	5,000	0	0
H. Herbert & Sons	4,808	0	0
W. F. Harding	4,880	0	0
Scurr-Jowett & Co.	4,852	10	0
W. Corah	4,643	0	0
W. Moss & Sons, Ltd.	4,599	0	0

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## MANSFIELD.

For erection of wards for the treatment of patients suffering from tuberculosis at the workhouse. Messrs. VALLANCE & WESTWICK, architects, White Hart Chambers, Mansfield.

J. Greenwood . . . . .	£1,600	0	0
S. B. Frisby . . . . .	1,600	0	0
Vallance & Blythe . . . . .	1,545	0	0
T. Fisher . . . . .	1,497	0	0
J. & F. Parsons . . . . .	1,418	10	0
G. R. Randall . . . . .	1,400	0	0
W. A. Vallance . . . . .	1,396	0	0

## MARKET HARBOROUGH.

For erection of cattle-market buildings (Contract No. 3). Mr. H. G. COALES, architect.

G. Martin . . . . .	£5,786	0	0
E. Dexter . . . . .	5,623	0	0
Goodman & Murkett . . . . .	5,597	0	0
E. Brown & Sons . . . . .	5,585	0	0
G. Henson . . . . .	5,585	0	0
W. W. Brown . . . . .	5,537	0	0
Herbert & Sons . . . . .	5,497	0	0
J. Main . . . . .	5,468	0	0
Hacksley Bros. . . . .	5,447	0	0
Richardson & Son . . . . .	5,419	0	0
J. Wingrove . . . . .	5,395	0	0
G. H. Eastwood . . . . .	5,311	0	0
T. HICKMAN, Market Harborough (accepted) . . . . .	5,225	0	0
Co-operative Builders . . . . .	5,167	0	0
C. Wright . . . . .	5,000	0	0

## NEWARK.

For sewerage works at Balderton, Newark. Messrs. HERBERT WALKER & SON, engineers, Albion Chambers, King Street, Nottingham.

J. Cooper & Sons, Ltd. . . . .	£17,510	0	0
G. Brown & Son . . . . .	13,900	0	0
J. F. Price . . . . .	13,070	0	0
Thompson & Wilkinson . . . . .	12,700	17	0
C. Baines . . . . .	12,100	0	0
Cope & Raynor . . . . .	10,840	14	0
Bower Bros. . . . .	10,600	0	0
J. H. Vickers, Ltd. . . . .	10,400	0	0
F. BARLOW, Nottingham (accepted) . . . . .	9,850	0	0
A. Jenkins . . . . .	9,382	0	0

## MILVERTON.

For alterations at the police court, Milverton, Warwickshire. T. PRATT, Leamington (accepted) . . . . . £385 0 0

## NORTHAMPTON.

For erection of infirmary and converting the old building into the administrative block.

A. J. Chown . . . . .	£34,550	0	0
J. G. Pullen & Sons . . . . .	34,459	12	0
G. Henson . . . . .	33,475	0	0
J. E. Johnson & Son . . . . .	33,200	0	0
T. Rowbotham . . . . .	32,777	0	0
H. Branson . . . . .	32,000	0	0
W. Higgins . . . . .	31,300	0	0
E. D. Sharman & Son . . . . .	31,280	0	0
G. W. Souster . . . . .	31,000	0	0
R. Cosford . . . . .	30,989	0	0
J. T. Wingrove . . . . .	30,700	0	0
H. Green . . . . .	30,467	0	0
A. P. Hawtin . . . . .	30,150	0	0
E. Brown & Son . . . . .	30,100	0	0
E. Archer . . . . .	29,278	0	0
H. MARTIN, Northampton (accepted) . . . . .	28,640	0	0

## NOTTINGHAM.

For piling on the south bank of the river Trent. Mr. ARTHUR BROWN, city engineer.

Naylor Bros. . . . .	£2,250	0	0
Claypham . . . . .	1,981	0	0
H. B. James . . . . .	1,792	19	0
W. Gradwell & Co., Ltd . . . . .	1,761	19	8
Whitaker Bros. . . . .	1,590	0	0
S. Thumbs . . . . .	1,550	0	0
T. Smart . . . . .	1,536	11	0
Bentley & Loch . . . . .	1,378	3	9
T. W. Pedrette . . . . .	1,320	0	0
G. K. Waghorn . . . . .	1,248	1	2
LEGGOTT & SPEIGHT, Sunderland (accepted) . . . . .	1,214	14	10

## SCOTLAND.

For widening part of Mid Street, Lochee, Dundee. Mr. WM. MACKISON, burgh engineer.

C. Hay & Son . . . . .	£175	0	1
R. Laing . . . . .	162	15	0
J. BRUCE, Burntside Street, Lochee (accepted) . . . . .	127	6	0

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H. CONSTABLE, Penshurst (*accepted*) . . . £2,097 0 0

**SHEFFIELD.**

For alterations and additions to the Gate inn, Wadsley Bridge, near Sheffield. Messrs. HALL & FENTON, architects, 14 St. James's Row, Sheffield. Quantities by architects.

R. S. Saville . . . . .	£510	0	0
T. Margerrison . . . . .	420	0	0
Dyson, Son & Gregory . . . . .	419	10	0
J. Bertram . . . . .	400	0	0
G. Allen . . . . .	394	10	0
J. S. Teanby . . . . .	363	0	0
G. & C. Earl . . . . .	358	0	0
W. ANSLEY, Whitehouse Lane, Sheffield ( <i>accepted</i> ) . . . . .	354	10	0

**STAPLEFORD.**

For rebuilding a bridge over the river Beane at Stapleford, near Hertford. Mr. JAMES FARLEY, surveyor, Old Cross, Hertford.

Wilkinson Bros. . . . .	£755	0	0
W. H. Hinkins . . . . .	608	0	0
A. T. Catley . . . . .	585	0	0

**STOCKTON-ON-TEES.**

For erection of banking premises in High Street, for the North-Eastern Banking Co., Ltd. Mr. W. H. LINTON, architect, 13 Exchange, Stockton-on-Tees.

J. Howe & Co. . . . .	£6,674	0	0
Allison Bros. . . . .	6,247	0	0
T. Hanby . . . . .	5,927	0	0
A. J. Cooke . . . . .	5,760	0	0
W. C. ATKINSON, Stockton-on-Tees ( <i>accepted</i> ) . . . . .	5,459	0	0
J. Davison . . . . .	5,250	12	9

**SWINDON.**

For tar asphaltting at the isolation hospital, Gorse Hill Messrs. HALLIDAY & ROGER, architects, 14 High Street Cardiff.

T. FREE & Co., Bristol (*accepted*) . . . . . £178 7 2

**SUFFOLK.**

For laying about 6,000 yards of 3-inch and 4-inch water-mains, with valves, hydrants and brick pits for same, and erection of a brick base for water-tank, with flooring and roof, Leiston-cum-Sizewell. Mr. H. MILLER, engineer, 16 Museum Street, Ipswich.

*Tower.*

Case Sea Defence Syndicate . . . . .	£633	0	0
Trueman . . . . .	543	0	0
Moran . . . . .	504	0	0
F. C. THURMAN, Walton, Suffolk ( <i>accepted</i> ) . . . . .	495	0	0
Burgoyne . . . . .	482	0	0
Grimwood . . . . .	465	0	0
Parkington . . . . .	450	0	0
Dean . . . . .	435	0	0

*Pipelaying.*

Grimwood . . . . .	1,118	0	0
Young, Witney . . . . .	975	2	6
Burgoyne . . . . .	893	13	6
Moran . . . . .	795	0	0
Trueman . . . . .	753	0	0
Parkington . . . . .	750	0	0
Case Sea Defence Syndicate . . . . .	615	7	0
Dean . . . . .	594	12	6
F. C. THURMAN ( <i>accepted</i> ) . . . . .	559	13	6

**TOTTENHAM.**

For alterations to 449, 451 and 453 High Road, and their conversion into houses and shops. Mr. AUGUSTINE C. GREEN, architect.

W. H. Howell . . . . .	£1,525	0	0
J. Groves . . . . .	1,479	10	0
Green & Boxall . . . . .	1,475	0	0
W. Easun . . . . .	1,450	0	0
W. J. Brysouth . . . . .	1,240	0	0
W. MOORE ( <i>accepted</i> ) . . . . .	963	10	0

For erection of billiard-room, saloon bar, &c., at the Railway tavern, White Hart Lane. Mr. AUGUSTINE C. GREEN, architect, 111 Fore Street, Upper Edmonton.

KNIGHT & SON (*accepted*) . . . . . £2,285 0 0



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### TROWBRIDGE.

Erection of a machine bakery at Court Street, Trowbridge. Mr. WALTER W. SNAILUM, architect. Quantities by the architect.

W. & Sons	£2,600	0	0
Howard & Wooster	2,177	0	0
Long & Sons	1,993	0	0
P. & Sons Bros.	1,895	0	0
G. Moore	1,697	14	0
E. LINZEY (accepted)	1,550	0	0
Architect's estimate	1,600	0	0

### WALS.

Extension of premises, Treorky. Mr. J. REES, architect, centre.

E. Jones	£790	0	0
J. REES, Treorky (accepted)	769	0	0

Construction of Bankdyffryn water-supply works, Cardigan. Mr. D. MORRIS, engineer, Cardigan.

J. EVANS, Bryntefi, Cardigan (accepted)	£325	0	0
E. A. Chase	317	10	0
J. Eregreine	273	12	6

Erection of the boundary walls of new cemetery at Hope, near Mold.

J. & Edwards	£182	12	0
Johnson	134	0	0
V. & R. Williams	130	0	0
E. D. PROBERT, Hope, near Mold (accepted)	115	0	0

### WALLINGTON.

For erection of seven shops and houses at Wallington, Surrey. Messrs. WARRAN & STUPART, architects, 385 Green Lanes, Harringay.

S. Horwood	£12,539	0	0
Cropley	10,750	0	0
C. H. Bursill	8,048	0	0
Hale & Co.	7,432	0	0
E. Frost	6,995	0	0
W. Roberts	6,697	0	0
W. Goddard	6,250	0	0
G. Jackson	6,236	0	0

Excavating and clearing site.

W. Goddard	750	0	0
C. H. Bursill	604	6	0
G. Jackson	540	0	0
Cropley	536	10	0
E. Frost	475	0	0
Hale & Co.	450	0	0
S. Horwood	392	0	0
W. Roberts	300	0	0

### WALLSEND.

For erection of a convalescent block, isolation block, side wards and covered ways. Mr. FLEMING DAVIDSON, architect, Station Road, Wallsend.

W. T. Weir	£2,770	0	0
Davison & Bolan	2,754	0	0
W. Kennedy	2,750	0	0
J. Ross & Son	2,550	0	0
W. C. Tyrie	2,520	3	0
Middlemis Bros.	2,520	0	0
S. Sheriff	2,500	0	0
W. Cook	2,404	0	0
J. W. Braithwaite	2,294	10	6
W. W. RICHARDSON, North Shields (accepted)	2,070	0	0

### WORTHING.

For painting the railings, seats, shelter seats, ladies' cloakroom, gentlemen's lavatory and band-stand on the Parade.

E. Lelliott	£106	14	0
A. CHURCHER (accepted)	78	0	0

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E.L.B.  
E.L.B.  
E.L.B.



**WORTHING—continued.**

For laying of 18-inch rock concrete tubes and building man-holes in connection with the discharge from the generating station to the sewage outfall works, in accordance with the Surveyor's specification.

A. Crane . . . . .	£1,382	8	0
E. H. King . . . . .	1,311	16	0
E. Kellett . . . . .	1,266	0	5
J. A. East ( <i>accepted</i> ) . . . . .	1,105	3	0

*Received too late for Classification.*

**HOVE.**

For paving works in Western Road and laying cab-stands in various streets in the borough. Mr. H. H. SCOTT, surveyor.

W. A. McKellar ( <i>accepted</i> ) . . . . .	£447	0	0
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For providing and laying asphalt paving in Church Road.

SEYSSSEL & METALLIC LAVA ASPHALTE CO. ( <i>accepted</i> ) . . . . .	£300	0	0
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**TOTTENHAM.**

For making-up Sussex Gardens, Etherley Road (remainder), Vale Grove, Chandos and Sirdar Roads and Stanhope Gardens (remainder). Mr. W. H. PRESCOTT, engineer.

*Accepted tenders.*

G. W. Rowley, Tottenham, Sussex Gardens, £211; Vale Grove, £301; Etherley Road, £213; Stanhope Gardens, £573.
E. Frost, Tottenham, Clarendon Road, £498.
C. Blomfield, Tottenham, Sirdar Road, £1,982.

THE Clydebank public baths, which form part of the municipal buildings scheme of the burgh, are now open. The building, which is situated opposite the new town hall, is a continuation towards the south of that appropriated to the fire brigade and firemen's houses. The pond, which is lit by means of a glass roof and the electric light, is 50 feet long by 25 wide. There are twenty-four retiring boxes for swimmers, and a gallery runs along the sides of the pond, as well as at the top end. The scheme also includes twelve slipper baths, eight of these being set apart for men and four for women.

**TRADE NOTES.**

MESSRS. ANDREW HANDYSIDE & CO., LTD., bridge roof builders, of Derby, have secured the contract for 400 tons of steel rings in connection with the new harbour works at Folkestone.

THE new scarlet fever block of the Sanatorium, Wigan, being warmed and ventilated by means of Shorlands' double-fronted patent Manchester stoves in glazed faience, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

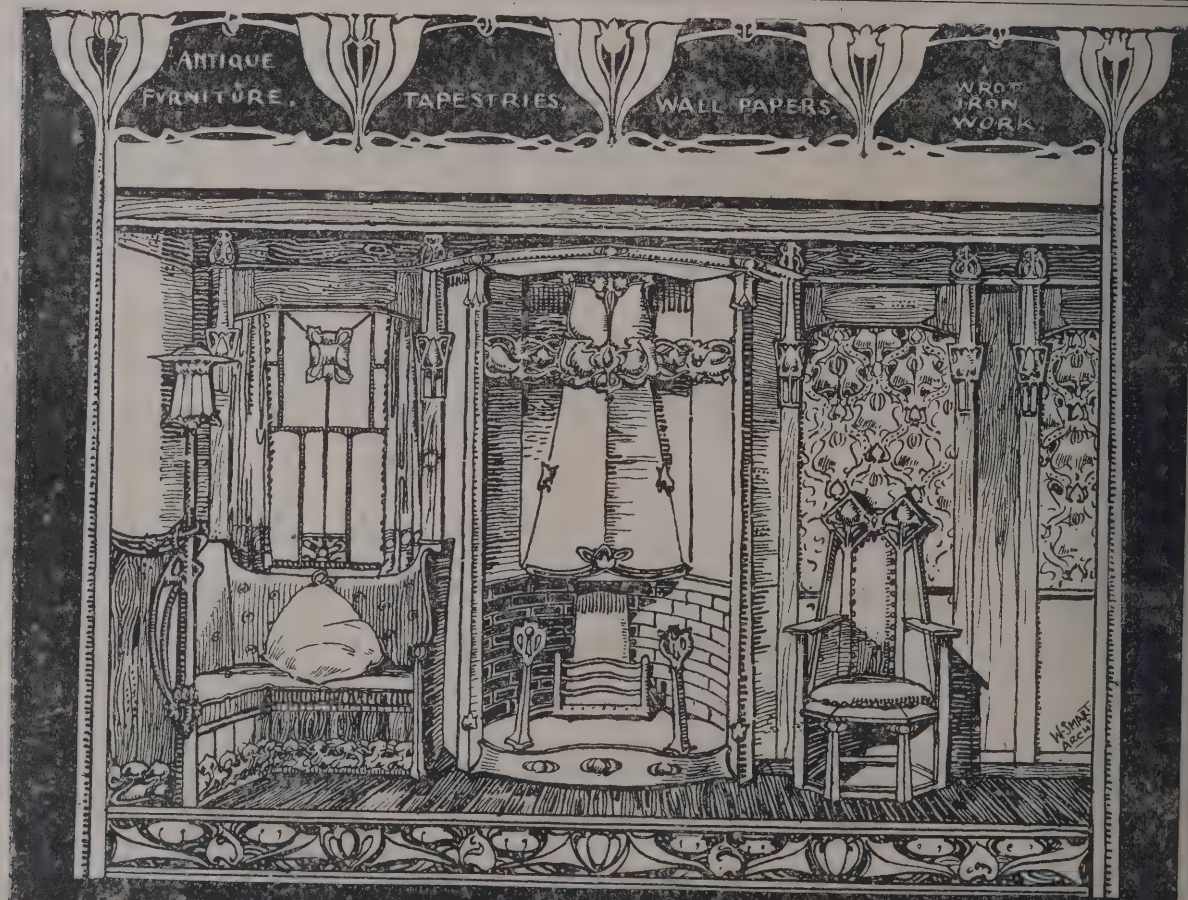
WE have received a new price list of steel hearth boxes of which Messrs. Statham & Sons, of Windsor Bridge, Salts, make a specialty, and for which they claim that it is really fixed, thoroughly effective and reasonable in price.

THE vicar and churchwardens of Sherburn-in-Elmet have ordered of Messrs. Wm. Potts & Sons, clock manufacturers, Leeds, a new Cambridge quarter-chime clock for their parish church tower as a permanent memorial of the Coronation, has to be working on Coronation Day.

MR GEO. WRAGGE is sending out a circular relating to his new Wardry casement, for which he claims that it retains the flat appearance on the outside which was a feature of iron casements used in the old houses of the Renaissance period, and at the same time they are guaranteed weather-tight in the most exposed positions.

MESSRS. MALKIN, BINNS & FOSTER, of Halifax, write that since beginning business some four years ago in the manufacture of woodworking machinery and appliances they have had to continually add new plant to cope with the increasing demand for their improved machines, and the pressure has now culminated in their having to remove to new premises comprising four times the working area they previously occupied. Their new works are at Haugh Shaw Road, Kirk Cross, Halifax.

MESSRS. J. H. SANKEY & SON, Essex Wharf, Cannon Town, have sent us a circular relating to their improved slip trap, for which they claim the following advantages:—Being made of best glazed imperishable stoneware, it will not corrode or become offensive; its inlet and outlet are in the same alignment; it supports its own weight; it is easily fixed by any workman; no plumber is required, as with lead trap; effects a saving of expense in fixing; has a clearing inlet; a special secure screw stopper; an effectual water seal; and its cost is only 3s. 6d.



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DESIGNS

WROUGHT-  
IRON WORK

**NORMAN & STACEY, Ltd.** DESIGNERS and DECORATORS  
252, 253, 254, 255 & 256 TOTTENHAM COURT ROAD, W. (Oxford Street End).



the danger of fire in large institutions is always serious, the loss of life which has unfortunately occurred in the as led the authorities to take special precautions. One best is the provision of portable hand fire apparatus, so any outbreak of fire can be dealt with promptly, and the Metropolitan Asylums Board has evidently recognised this, for have just placed an order for over 160 Merryweather hand pumps to be placed in London fever hospitals.

## BUILDING AND BUILDERS.

DATION-STONES have been laid of a new church and in connection with the Burnley Methodist Free Church

r Shaw, near Oldham, corner-stones have been laid of a Primitive Methodist chapel which is being erected, at a of 1,500l., on the site of the old chapel, built in 1835.

reports be true, a mania for hotel construction has struck York. No fewer than ninety hotels of various sizes are paid to be in course of construction, or will be before the of the year, at a total cost of 40,000,000 dols.

NEW Roman Catholic church is about to be erected at ford Hill. The work will be carried through in three the first, which will be undertaken immediately, is the ing of the chancel and transepts and the first bay of the . The dedication will be to St. Ignatius.

r Monday's meeting of the Johnstone (N.B.) Council, ost Lang in the chair, a number of competitive plans were e the Council relative to the extension and improvement e town hall. The plan marked No. 1, in the opinion of e town Council, was the best, and it was found this was by Robert M'Lelland, architect, Bath Street, Glasgow.

HE foundation-stone of a new Baptist chapel at Atherton, s, was laid on the 10th inst. The chapel will occupy the of the old building in Tyldesley Road. Seating accommoda- will be provided for about 700 people. The total cost will out 6,000l., 4,600l of which had been raised prior to day. At the ceremony and meeting which followed 378l. realised, and an effort is to be made to raise 1,000l. by a r in October.

A MEETING of the Strathdon (N.B.) Parish Council was held on Saturday, when a report, drawn up by Mr. Ross, Glenkindie, on the state of the wooden bridge over the Don between the church and Bellabeg was laid before the meeting and considered. As the report was to the effect that the bridge was no longer safe for vehicular traffic, the Council agreed to obtain estimates for the construction of an iron bridge, leaving it to a future meeting to determine whether the work should be proceeded with or not.

THE foundation-stones were on Saturday laid at Derby by the mayor (Alderman Woodiwiss) and the two borough members (Sir Thomas Roe and Mr. Richard Bell) of a Friendly and Trade Societies' hall. The premises, which are to be most up-to-date in character, will include a hall, to be called St. George's Hall, capable of accommodating 1,300 people, besides numerous lodge-rooms and rooms for social intercourse.

THE Kirkcaldy School Board have decided to proceed with the erection of a new elementary school in connection with the high school, and competitive plans have been received, and a special meeting of the Board has been called to make a selection. The Board are being pressed by the Department to proceed with the extension of Kirkcaldy technical school, and competitive plans for this work have also been received. It is estimated that the building of the two schools will entail a cost of about 20,000l.

AT last week's meeting of the Mersey Docks and Harbour Board a tender was accepted for the construction of a new graving dock in connection with the Herculeum system, at the extreme south end of the Board's estate. The successful tenderers were Messrs. Baldry & Yerburch, contractors, Westminster. It was stated that the new dock was to be about 740 feet long, and that it would occupy two years in construction. The amount of the successful tender was not mentioned.

AT a numerously attended extraordinary general meeting of the shareholders of the Imperial Insurance Company, Ltd. (Fire), a resolution was unanimously passed to adopt the agreement for the fusion, upon the terms and conditions arranged, of that company's business, goodwill and assets with those of the Alliance Assurance Company, Ltd.

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SIMPLE IN  
CONSTRUCTION.

MOST EASILY  
CLEANED.

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Filters attached  
the service pipe,  
without interfering  
with the ordinary  
draw-off tap.



House Filter H as sketched, 30/-  
Smaller Size F, 22/6

Architects are invited to  
see these Filters  
in operation  
at our Showrooms.

ANDREW WILSON writes as follows:—"The 'Tubor' Filters sold by the Berkefeld Filter Co., Limited, London, W., remove all germs from water. They therefore represent ideal filters, giving pure (i.e. germless) water, and thus prevent Typhoid and many other diseases."



**BUILDING ACCIDENTS.**

IN the yard of Messrs. Good & Sons, builders, on Monday afternoon, some men were engaged in removing a log frame saw, weighing about 4 tons, by means of a travelling crane, when the supports collapsed and the saw fell upon Frank Spencer and John Claxton, killing them instantly. Two other men, who were standing near the crane, were terribly injured, one having both legs broken and the other sustaining a serious internal hurt.

A SERIOUS accident occurred at a building in course of erection in Middleton Street, Ibrox, Govan, by which an apprentice bricklayer, named Andrew Bulloch, seventeen years of age, lost his life. He was working on the top of the north gable when he slipped and fell to the ground, a distance of 35 feet. He alighted on a heap of bricks, and received terrible injuries, from which he died in the Western Infirmary.

ANOTHER accident occurred at New Street station, Birmingham. The roof of the station is being painted, and a scaffold builder named Patrick Jordan was engaged, at a height of about 90 feet from the ground, in the construction of a scaffold for the painters. He missed his footing and fell backwards. He tried to get hold of a portion of the scaffold, but failed to get a sufficient grip, and he fell on the metals below, his head being terribly mangled. Death was instantaneous.

**VARIETIES.**

THEIR Royal Highnesses the Prince and Princess of Wales paid a visit to Rhyl on Monday for the purpose of opening the new Royal Alexandra Hospital.

It was announced at the Bournemouth Town Council meeting on Wednesday that there were nineteen applications for the new post of town clerk at a salary of 1,000*l* per annum.

THE death is announced as having occurred on Tuesday last of Sir George F. Duckett, Bart., in his ninety-second year. Sir George Duckett was a well-known archaeologist, and a frequent contributor to the proceedings of the antiquarian societies of Cumberland and Westmoreland.

THE freedom of the Plumbers' Company has been presented to Mr. Andrew Carnegie as a medium for the expression of national sentiment in regard to the enlightened method and exceptional magnitude of his benefactions in aid of higher education.

IN the Kirkcaldy post office, which has been in course of construction since the beginning of October 1900, premises most suitable for the growing postal business of the burgh have now been completed. The premises, which occupy a site in Hunter Street, are in the Scottish Baronial style of architecture, and built of selected white stone from Grange Quarries, Burntisland, at a cost of nearly 8,000*l*.

THE following gentlemen have been selected to appear before the Derby Town Council on June 4, when the appointment of town clerk will be made:—Mr. W. H. Andrew, aged forty, town clerk of York; Mr. G. T. Lee, aged thirty-eight, town clerk of Dewsbury; Mr. F. C. Lloyd, aged forty-one, town clerk of Huddersfield; and Mr. H. M. Robinson, aged thirty-six, town clerk of Shoreditch.

AT the recent examinations of the Surveyors Institution held in Glasgow, the following candidates qualified for membership: As Fellow—J. C. Peace, P.A.S.I., Kerse estate office, Falkirk; as professional associates—T. R. Cane, Craighall, St. Andrew's; Donald M'Lean, jun., Rhives, Golspie; G. Orr, Portland estate office, Kilmarnock; as students—J. V. Makins, 79 West Regent Street, Glasgow; John T. Craighall, Whitsome Hill, Chirnside (exempted from examination on production of leaving certificates necessary to satisfy the Council).

AT the close of last week's meeting of the Pollokshaws Town Council, Provost Leckie, who presided, made allusion to the fact that this was the last meeting of the Council which Mr. Campbell, town clerk, and Mr. Prentice, his deputy, would attend. He expressed the regret of the Council at parting with one who had served them for upwards of thirty years, and hoped that Mr. Campbell would enjoy many years of health and prosperity. Mr. Campbell and Mr. Prentice acknowledged the kindly expressions of the Council.

THE new church of St. Paul in Kimberworth Road, Rotherham, was consecrated on the 8th inst. It is to take the place of the mission church established in Midland Road some years ago. The site contains 1,320 square yards. The present building is only part of an important scheme, the plans for which have been prepared by Messrs. Stock, Page & Stock, London. Accommodation is now provided for 250 persons, and, when funds permit, two additional bays have to be added to the nave and side aisles erected. The total cost of the church as it now is is 2,800*l*. The builders are Messrs. Thornton & Son, of Rotherham.

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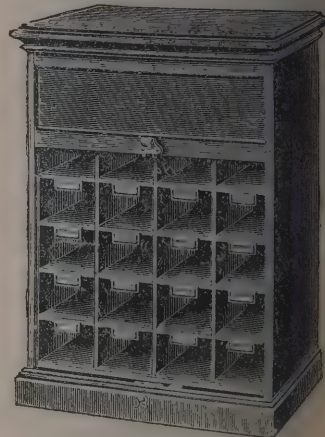


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COMMODOUS new drill hall, &c., for Nos. 11 and 12  
nies of the 1st Norfolk Royal Garrison Artillery (Volun-  
was opened on Friday last at Harleston, Norfolk. The  
the new buildings is a plot of land near the railway  
where from the designs of Mr. A. Pells, of Beccles, a  
of premises has been erected by Mr. A. F. Rayner, the  
ctor. The buildings comprise a large drill hall 100 feet  
th by 40 feet in width and 36 feet high in the centre,  
by a skylight running almost the entire length of the  
ontiguous to which are a dwelling-house for the instructor,  
noury, officers' room and store.

THE annual exhibition of work executed in the Board  
s of London will be held at the Examination Hall,  
ia Embankment, W.C. (adjoining Waterloo Bridge), on  
esday, June 18, and the three following days. The  
ion will be opened by Lord Reay, G.C.S.I., G.C.I.E.  
nan of the Board), at 3 o'clock P.M., and will include  
ens of drawing, colourwork, modelling, woodwork,  
arving, metalwork, needlework, infants' work, cookery,  
y, housewifery from the day and evening schools,  
rom the schools for the blind, deaf, and special instruc-  
nd also work from the truant and industrial schools.  
will also be included scientific apparatus which has been  
ected by the teachers and pupils.

NEW Wesleyan church has been formally declared  
at King's Norton, Birmingham. This building,  
forms part of an important scheme of extension which  
ast year entered upon by the Birmingham Wesleyan  
dists, was designed by Messrs. Ewen Harper & Brother,  
Birmingham, and built by Messrs. Harley & Son, at a total  
f about 3,500*l*. It is a nave and aisle structure, providing  
modation for 500 worshippers, and built of brick with  
facings, in the Tudor Gothic style of architecture. A  
spire raised to a height of 80 feet from the ground gives  
dignified appearance. The principal entrance has a  
ed and traceried archway, with mullioned window above,  
side spaciousness is imparted by the open timbered roof.  
has been left for extension by the addition of a chancel.

THE annual business meeting of the Glasgow local section  
Institution of Electrical Engineers was held on Tuesday  
ing in the hall of the Philosophical Society. Professor  
us Maclean presided. The report by the committee  
that the papers submitted during the session had all  
of a very high standard, and the publishing committee of

the parent institution had already published the president's  
address, Mr. Murray Morrison's paper on "Aluminium," and  
Mr. J. C. A. Ward's paper on "Mains," with the discussions  
that took place upon them. There was a net increase of  
thirty-one in the membership of the section, which now stood  
at 189. Office-bearers were appointed as follows:—Past chair-  
men, Lord Kelvin and Dr. Magnus Maclean; chairman, Mr.  
Henry A. Mavor; vice-chairman, Mr. W. A. Chamen; and  
hon. secretary and treasurer, Mr. E. George Tidd.

THE new Corporation baths which have been erected in  
High Street, Bolton, were opened on Saturday last. They  
adjoin the public library, and have a commanding frontage of  
about 112 feet, with two ranges of windows. The structure is  
of local brick, with Ruabon red terra-cotta dressings. The  
basement contains a large boiler-house and other usual  
accommodation. The plunge bath, which is on the ground  
floor, is 75 feet long by 26 feet wide, and is arranged in  
accordance with the rules of the Swimming Association.  
There are thirty-nine dressing-boxes, shower bath, attendants'  
room, &c., with a gallery over these for the use of visitors on  
the occasion of aquatic galas. The roof of the plunge bath is  
of the lantern type, of iron and glass. Nine slipper baths for  
men are provided on the same floor, the women's slipper baths  
being on the upper storey. A capacious laundry is furnished,  
and the caretaker's house is at one end of the main building.  
The entire pile has a neat and substantial appearance. The  
fittings and general equipment of every department of the  
interior of the baths are of the most complete and modern  
character, thoroughly adapted for their purpose. The archi-  
tect is Mr. R. Knill Freeman, the general contractor being  
Mr. John Halliwell, also of Bolton.

At Horwich, Lancs, on the 8th inst., a new church was  
dedicated to St. Catherine. The site of the new building is  
near Chorley New Road, and the portion completed consists  
of lofty nave, side aisles, vestries, and temporary chancel,  
leaving transepts, side chapel, chancel, and east end to be  
added at some future time. The present part provides about  
600 sittings, which number will be largely increased when the  
church is completed. In the basement a large parish room is  
provided, also lavatories, &c. Externally the building is in  
local brick, with red Ruabon terra-cotta dressings and north  
country green slates with red ridge. The windows are filled  
with lead glazing of ornamental design, and the clerestory  
walls are finished with rough-cast, the lower walls being faced  
with pressed brick with internal dressings of red Rainhill stone.

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Glass; also of Rough and Polished Prismatic  
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Glass 'Refrax' gives TWICE AS  
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The inside woodwork is of pitch-pine, left unvarnished, the inner boarded ceilings, which will be waggon shaped, being left to be carried out at some future time. The floors of passages to aisles are of red Ruabon tiles, and the main entrances are at the west end, handsome internal screens of pitch-pine fitted with lead glazing being provided to each.

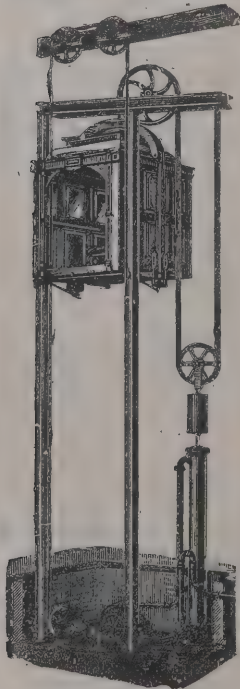
BULFORD Church, Wilts, the chancel of which has been carefully restored at a cost of 300*l.*, was reopened on the 8th inst. The church is an ancient edifice of stone and brick in the Early English style, consisting of chancel, nave, north transept, south porch, and a western tower containing two bells. The earliest part of the church is the chancel, which has windows of the twelfth century. The chancel arch is also Norman, and the north wall of the nave cannot be much later. It is thought that the great south porch is probably of the thirteenth century, and must have been intended for a tower. The restoration which has just been completed forms only a part of what has to be done as funds permit. The foundations have been underpinned and made secure, and the walls cleaned and thoroughly renovated. The old plaster ceiling, which covered a beautiful moulded oak roof, has been removed and the roof has been carefully repaired, new work being put in where necessary. The east window has been restored. The old stone mullions had fallen out, and they have been replaced by wooden ones, and part of the window had been built up with bricks. In carrying out the work some interesting discoveries have been made. A squint has been revealed in the north side of the chancel wall, and on removing the plaster it was found that the walls had originally been coloured. A portion of the wall has been left uncovered to show the colouring. The open roof is a distinct improvement to the church, and with the renovated windows the chancel now presents an appearance which will be pleasing to all who take an interest in the old building.

THE fine old church of St. Peter, Corby, Northants, has just been thoroughly restored under the care of Mr. J. C. Traylen, A.R.I.B.A., of Stamford, at a cost which has exceeded 3,000*l.* The fine old edifice has been thoroughly restored throughout, the new work being done as far as possible to harmonise with the old, which is about the fourteenth century date. All the roofs are of oak, that of the chancel being very handsomely carved, and all representing a free treatment of fourteenth century work. All the windows have been releaded, the old quarry glass being replaced as far as possible. A new

stained-glass window has been erected in the west end of new north aisle by Messrs. J. Hardman & Son, of Birmingham, the cost of the same having been borne by the Reunion and congregation in commemoration of the reopening of church. The whole of the church has been re-seated with pine of New Zealand pine, the seats being covered with felt. The old west gallery has been removed, and a new north aisle added giving seating accommodation for an additional ninety persons. In constructing the new north aisle the old wall has been taken down and superseded by three arches supported by octagonal pillars, while the old windows have been inserted in the outer wall. The chancel has been refloored with mosaic tiles, those under the altar being blue and black in zigzag fashion with gilt corners, the remainder being in black and white, and of the signs of Alpha and Omega. A new porch has been erected of pine, and the whole of the interior fittings are new. A new pulpit has been added, this being of alabaster Weldon stone, with a beautiful carved figure under the canopy representing St. John the Baptist.

THE demolition of the old lantern and dome of the Rock lighthouse is now being proceeded with. The octagonal wall which forms the light-room has yet to be removed, and this will take a considerable time, as the large stones will have to be broken into smaller pieces before being cast into the sea, so that no damage may be done by the stones washing against the cast-metal landing piers. Temporary light is now in operation. Not for ninety years since the lighthouse was built—has the light been changed. It is a comparatively small light, only half the strength of new flashlight which is to be permanently placed in the tower but it is an excellent piece of mechanism, the lens forming lantern itself, and a small clockwork machine underneath revolves the shade round the light, giving the characteristic red and white flash every half minute. The whole apparatus stands about 4 feet high and weighs about 3 cwt. A temporary pole has been erected from which to explode the fog signal when necessary. The beautiful old machine and case, along with other material, have been removed to Grant but the two fog bells still occupy their position on the balcony. It is understood that both bells and machine are to be sent to the Edinburgh Museum.

## ARCHD. SMITH & STEVENS.



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RUNNING.  
ESTIMATES ON  
APPLICATION.

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### MAY-OATWAY FIRE ALARM.

Since the recent practical test of this system at Ilford, bookings have been very heavy.

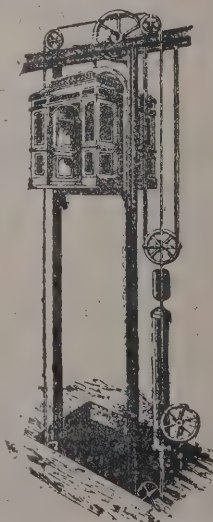
Dingle Station, the scene of the late fatal fire, is now protected by the May-Oatway System and connected direct with the Liverpool Fire Brigade.

The Manchester-with-Chorlton Guardians have contracted with the MAY-OATWAY FIRE APPLIANCES, LTD., to protect their Workhouse from fire.

No person need risk life or property by fire. The MAY-OATWAY automatic bedroom indicator will show on retiring that the house is safe, and wake you immediately and indicate its position when a fire breaks out.

THE MAY-OATWAY FIRE APPLIANCES, LTD.  
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HAND POWER  
PASSENGER  
GOODS

Newcastle Elevator  
Works,  
Elswick Court,  
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"PERFECTION SYSTEM"

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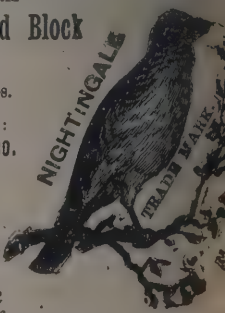
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# ROYAL OPERA HOUSE IMPROVEMENTS.

the commencement of the Coronation season at the House the owners have seen the completion of their extensive scheme of alterations and improvements, which included much of a structural as well as of a mechanical and artistic character.

The owners, the Grand Opera Syndicate, Limited (directors Mr. Grey and Mr. H. V. Higgins, and secretary Mr. Neilson), have had three years for the development of the scheme, the lease of which was purchased from Mr. Faber in 1899, the ground landlords being the Bedford Estate. The work was executed piecemeal, generally between the festive opera seasons and ball seasons, and the architect was Mr. Edwin O. Sachs, who in many respects also acted as engineer.

The exact figures of the expenditure are not available, but most of the work must have been considerable, as it affected every part of the structure, and included much of an expensive character, such as the entire re-equipment of the stage with modern mechanism and the entire lighting of the house by electricity. In respect to the execution of the work, we believe Mr. Sachs had the co-operation of a well-known German expert, Herr Brandt, for a portion of the stage-work, whilst Mr. Wingfield Bowles was responsible for the electric lighting of the house.

Numerable contractors were employed during the progress of the works, and among them were primarily—the builders, Messrs. Colls & Sons, of Coleman Street; the engineers, Messrs. Drew-Bear, Perks & Co.; further, the Thames Bank Works and Engineering Company; Messrs. Townsend, Martin & Makovski for the electric lighting; Messrs. Merryweather as fire engineers; and Messrs. Bertram as decorators.

The extensive alterations place the building on an entirely new footing, both in respect to its position as a property and its position among the opera houses of the world. That the house should be so unfortunately situated in a thoroughfare of the character of Bow Street in the midst of market produce is, of course, regrettable, but once within the doors of the theatre there is nothing to be found that does not meet with the ideas and requirements for an opera house.

The works executed under the direction of Mr. Sachs

extended as already stated from 1899 to the current season, and their nature is enumerated below from notes and particulars we have been able to gather from the progress made from time to time.

With the important work of the remodelling of the stage, offices, stores and wardrobes we dealt at some length a year ago, since when other important works have completed the scheme. Important amongst these is the electric lighting of the front of the house, where the principal corridors, the saloon and lounges are now electrically lighted, gas having almost been done away with. The gas chandelier has been replaced by a number of pendant electric lights which are very effective; they are run in two circuits planned in the form of two rings. The fittings are of a neat pattern. The switch-board for this part of the house is fitted independently of the stage switch-board, and has been placed below the vestibule on the Bow Street side, with access by a stalls corridor.

The rearrangement of the stalls, with new exits and the provision of a special stall corridor, was an improvement of considerable extent. This alteration gives the auditorium additional seating accommodation, *i.e.* two new boxes and some forty additional stalls. The stalls are now provided with three exits.

The exit to Floral Street for the pit and first tier box-holders has been remodelled.

New entrances have been cut into the Bow Street portico, and thereby the whole of the carriage arrangements have been greatly improved. The time occupied in filling and emptying the theatre is materially reduced.

The saloon has been improved by the addition of some large pictures and general redecoration.

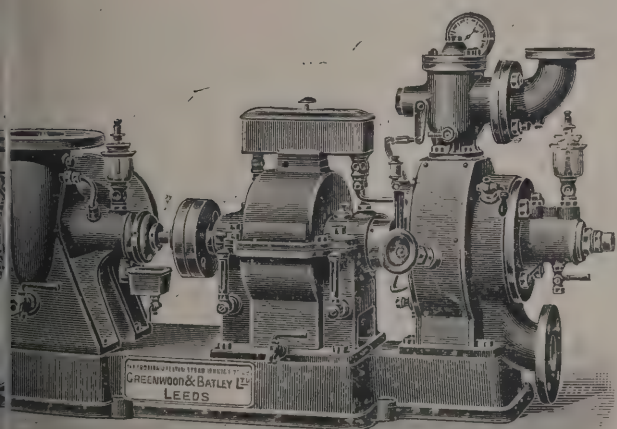
A conservatory lounge has been constructed over the main porch. It contains bars, and affords accommodation for smoking. It was constructed by Messrs. Barker.

The warming and ventilation scheme of the auditorium is on the Plenum system. By adopting the Plenum system, and doing away with the large chandelier which acted as an outlet in former years, the state of the draughts will no doubt be improved. The fans for the ventilation scheme are electrical fans, for which special mains have been run.

The orchestral alterations involved picking up the front of the stage with some light girders supported by steel columns, a space having to be formed underneath in the front of the stage to take a number of musicians.

The improvements in the decorations include the Royal

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box, Royal approach and Royal smoking-room. The corridors have been redecorated in green. New upholstery has been provided throughout, including the tip-up seats.

The installation of a red-silk drapery curtain by Messrs. Bertram in the proscenium opening has materially altered the appearance of the house in a satisfactory sense.

The sanitary arrangements have been thoroughly overhauled, and the principal lavatories added to and ventilated. The appliances are Doulton's. Several Blackman fans have been used to assist the ventilation.

The office accommodation at the corner of Bow Street has been remodelled, and now comprises an outer office, a secretary's-room, a director's-room and a telephone-room, with approaches both from Bow Street and Floral Street. The management, further, have now at their command an elaborate system of public and private telephones, speaking-tubes and bells. Every part of the house is now in close touch with the management. The box office has been provided with private telephones from the libraries, and a private telephone to the nearest fire station has also been installed.

A large asbestos curtain has been provided between the auditorium and stage, and was constructed by Messrs. Merryweather. The total area of the screen covered with asbestos is 3,286 square feet. The total weight of the ironwork is about 7 tons, and the counterbalance weighs about 2½ tons. The curtain can be worked either from the stage or from the stage-door keeper's room.

The above describes shortly the extent of the work; individual sections of it may still call for comment on a future occasion.

The Grand Opera Syndicate have shown a progressive spirit in undertaking these extensive operations, and Mr. Sachs, the architect, the various consultants, and the stage management, in whose hands the modernised building has now been placed, should be proud of the opportunity that has been offered them.

### THE AMERICAN GENERAL CONTRACTOR.

As our building operations become more complex and expensive, says the *Architectural Record*, new agencies must be employed to render them more effective. With the increased cost of structures has come the necessity for more perfect mechanical appliances for handling materials, a more highly

developed system of operating and more effective capacity handling men in large numbers. A few years ago the construction of a million dollar building was regarded as a great undertaking, but to-day there are numerous buildings in New York the cost of which involved the expenditure of several millions. The modern builder is not only architect, but engineer and artisan as well. In the field of construction he is an operator whose training demands the manipulation in a broad and general way of the whole operation, and the handling of the minute details as well. One of the most flattering evidences of competence in a builder is to have a contract awarded him on merit of his work rather than the fact that he is the lowest bidder. This speaks far more than any testimonial that was written, for it shows in the most practical way that his work is worth more to a client at a higher price than that of his competitors. Such a compliment was recently paid to Charles T. Wills, and no man has taken so large a part in revolutionising the building trade of New York. After plans for the New York Stock Exchange were finally accepted the question came up as to who should have charge of construction. Some of the committee suggested that the work be let to the lowest bidder, but this suggestion was not received favourably by the majority. They preferred to place the important work in the care of a builder whose works are accepted as the highest type of building construction. Representing an expenditure of three million dollars, with its construction embodying the highest achievements of modern engineering, the building committee of the Exchange were unanimously choosing for this important work Mr. Charles T. Wills, and architect, Mr. George B. Post, heartily endorsed their selection. The class of buildings being erected to-day is different from the character of the buildings ten years ago, and each presents a special problem. The builder of to-day must be both engineer and architect. He must bring to bear on difficulties which confront him a trained mind, with superior powers of organisation and fertility of resource.

Building in New York has from the beginning been regulated by economic considerations. Ever since the city acquired metropolitan characteristics the work of the builder has been increasing in importance. In no other city in the world has so much capital been used in producing residences and structures dedicated to commercial and pleasure pursuits. The yearly cost of building in the city of New York amounts to more than the yearly cost of the food for its inhabitants. So the builder is prominent in the metropolitan field. The ca

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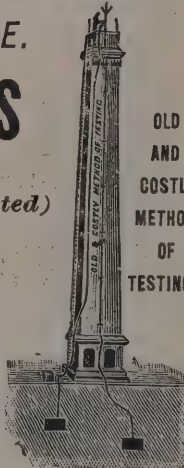
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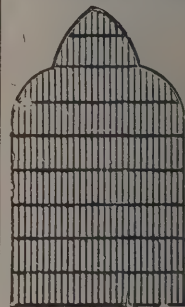
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is not far to seek. The enormous increase in land and the improvements made in building construction earned the buildings erected in New York thirty years to simple encumbrances. It is not a unusual thing in New York to see a handsome commercial building torn down to make room for a modern sky-scraper, which will prove profitable.

Less than twenty-five years a new architecture has been devised and perfected among us that has practically revolutionized all previous methods of construction. The problems confronting the builder to-day are of such a widely different character from all that the world has ever known before, that they constitute a new era of engineering science. And it is here they are the most varied and difficult problems that the world ever had to face, because they necessitate greater knowledge, experience, skill and resources than any nation of men ever had, or dreamed of having, that no fair-minded judge would hesitate to accord the modern New York the very foremost place in all the history of his profession. The high buildings in New York to-day are the architectural features of the city. That they are the safest in the world has only to inquire the rates of insurance on them to prove.

The difficulties both of design and construction encountered in our new public and commercial architecture fill pages, but our builders have attacked the problems of construction, overcome every obstacle and silenced every opposing voice. They have erected more imposing structures and contributed more new knowledge of constructive engineering than the world had learned in centuries before. We shall attempt to describe all the work that Mr. Wills has done, but shall allude to the most important of his contracts. From his apprentice days he has had a liking for the more serious problems of the structural arts, and his ability to overcome obstacles that would be the despair of less able men has secured him the favour and liking of the most prominent architects. To-day it requires that the contractor shall be not only a man of the most unquestioned financial responsibility, but also one of superior organising powers and fertility of resource to meet the difficulties that are sure to arise and which cannot be foreseen. Mr Charles T. Wills has carried out a long number of important contracts, including the finest office buildings, club-houses, railway depôts, residences, apartment houses, churches, factories and theatres, and to-day has many large contracts on hand for office buildings particularly. Among his numerous new contracts we must not

forget the building to be erected on the corner of Pine Street and Nassau, which will be an addition of which New York may well be proud.

### AN AMERICAN HOSPITAL.

THE Commissioners of the District of Columbia have selected Frank Miles Day & Bro., of Philadelphia, as the architects to furnish the plans and supervise the construction of the magnificent new municipal hospital to be built at head of Thirteenth Street, Washington, D.C., which will be, says the *Architects and Builders' Journal*, the handsomest and best equipped in the world. They will serve for a term of years, receiving compensation in accord with the final cost of the buildings.

Mr. Edmund Wheelwright, of Boston, the professional adviser of the commissioners, who is an expert on hospital matters, says that the plans show a thorough study of the subject, the problems of the situation being dealt with in masterly fashion. The front of the main building suggests old Independence Hall at Philadelphia. The building is capable of economic treatment or elaboration in accordance with the appropriations which Congress may make.

Mr. Frank Miles Day is one of the national officers of the American Institute of Architects, and is president of the local chapter in Philadelphia. He and his brother designed the magnificent new operating amphitheatre for the College of Physicians and Surgeons in Philadelphia, said to be the largest amphitheatre of its kind in the world, and having a seating capacity of 500. They also recently designed the Horticultural Building in Philadelphia, and have been engaged on many other important works.

The computed cost of the new hospital is now placed at 3,000,000 dols. The site is a beautiful piece of rolling woodland of some thirty acres, situated on Brightwood Avenue, directly at the end of Kansas Avenue, down which it will look, and adjoins the magnificent public park system of the Capitol, the Soldiers' Home being not far to the east.

The central group of buildings will be arranged about a quadrangular court on Brightwood Avenue. Directly opposite the gate of entrance will be the administration building, 200 feet by 60, flanked on the one side by the surgical building and on the other by the medical and autopsy building. Each of these will contain an amphitheatre seating 200, and will measure 200 by 80 feet. The style of architecture of this



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group, as well as of the thirty-three other buildings which will complete the hospital settlement, is the Georgian, red brick and Indiana limestone being used in all.

### THE BIRMINGHAM ASSOCIATION OF MECHANICAL ENGINEERS.

ON Saturday last a large number of members of the Birmingham Association of Mechanical Engineers paid a visit to Kidderminster and inspected the steam turbines at the British Electric Traction Company's generating station. Arriving at Kidderminster at 2.43, they were received by Mr. W. Griffiths, the company's chief engineer, who took them up to the station in two of the electric cars, which were reserved for them. The turbines at the station, of which there are two, were supplied by Messrs. C. A. Parsons & Co., of Newcastle-on-Tyne, and develop 500 h.p. The turbine engine is an attempt at quite a radical change, and seeks at one swoop to get rid of all the reciprocating parts, such as pistons, rods, cranks and side-valves. The high speed of revolutions which is admitted to be so desirable becomes at once attainable to such an extent that no less than 2,500 revolutions can be obtained with safety. The leading idea of the invention which is to effect such great changes may almost be said to be that of a windmill, adapted of course to the action of steam, which is capable of such great control and of such steadiness of supply as compared with that of the proverbially fickle element. A very large number of curved vanes, shaped very like the blades of a screw propeller, are affixed to the shafting in regular order and gradation. The part of the shaft thus fitted is enclosed in a steam-tight chest. The inner side of this chest is filled with similar vanes, which, when the chest is in position, fill up the space between the corresponding vanes on the shafting. The chest being closed, on the admission of steam at its end the jet impinges on the row of blades nearest to it, and they bar the movement. The blades fixed to the chest cannot, of course, make way for it. Owing to their shape, however, the others are impelled to turn aside, and in doing so they naturally cause the shaft to which they are attached to revolve. As they do so the steam first admitted works past them and begins to affect the following series of blades, and so on. The continued supply of steam prolongs the action upon the front row. Thus all the rows are quickly brought into action, and the speed of revolution increases till the full power of the steam supply is at

work and the engine attains its maximum speed. After inspection the party proceeded by the cars to Stourport, where tea was provided at the Tontine hotel. The president, Mr. Conaty, took the chair, and was supported by Mr. J. Cox and Mr. E. Hazel, past presidents. A cordial vote of thanks was passed to Mr. A. Lycett for the permission so kindly accorded to inspect the station, and to Mr. W. Griffiths for his courtesy to the party during the visit. The return to Birmingham was made by the 7.31 train from Kidderminster, a very enjoyable day being spent.

### NEW YORK SCHOOL PLUMBING.

THERE are in Greater New York over 400 public school buildings in charge of the committee on buildings of the Department of Education. In them, says the *Engineering Record*, the plumbing is supervised by a sanitary engineer, and in the older structures much of the installation has been replaced or modified to conform to modern practice, which the new buildings provides for numerous requirements beyond the usual toilet necessities. For this service various standard fixtures and details have been adopted, some of which are of special interest for other locations than school houses.

The Wadleigh High School in Harlem furnishes an example of quite elaborate work. Here water is supplied from two street mains through 3-inch traps with lead pipe and gate valve connections to galvanised iron screwed pipes to the pumps. Where these pipes pass underground or through concrete they are lead, and near boilers they are invariably galvanised iron. There are air chambers near the street main connections, and the house mains are connected to a No. 2 Hart gas-engine pump and a triplex Douglas direct-connected 3 by 4-inch electric pump. The pumps are cross-connected and discharge into 12-inch cylindrical chambers 4 feet long from each of which there are 2-inch risers to each of two rectangular steel storage tanks in the attic. The tanks are cross-connected and are respectively 10 by 10 by 8 feet and 9 by 9 by 6 feet. They have 1½-inch flange-connected outlets and supply all fixtures above the first floor. The electric pump is controlled by an automatic high and low-water switch at the tank, which is enclosed in a fireproof box, and the pumps are enclosed in canvas covers with straps and buckles. The wash basins, janitor's sinks and shower baths are supplied under tank pressure with hot water heated by a basement heater.

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circulation pipes to a 40-gallon galvanised iron boiler. There are two main hot-water risers and circulation pipes, each with an expansion joint in each storey and with vents opening into the storage tanks above the water line.

The fresh air inlet box for the main trap is supplied with controlled by a stop and waste cock inside the cellar.

The court-drain catch-basins are supplied with cold and with steam. Water supply pipes between floors are protected and covered with canvas; where they extend through the floors of pupils' closets they are enclosed in cast-iron pipes flush with the ceiling and extending 4 inches above the level. No pipes are enclosed in walls or partitions or are covered with plaster, wood or otherwise concealed. The feet of vertical soil, waste and vent lines terminate with T-pieces of the same size with screw plugs for cleaning out. Each floor drain is supplied with water through a  $\frac{3}{4}$ -inch common hose bibb cock and gate valve, both with removable handles. Outside rain-water leaders have at their feet 6 feet of rectangular cast-iron pipe. After completion all soil, waste and vent-pipe lines are cleaned by a wire brush, and are subjected to both smoke test and pressure test from water filling the pipes to the top of the vertical lines.

The drinking fountains have special faucets with self-closing push knobs which are adjusted to deliver when open a jet of water from which the pupil may drink without touching the faucet with the lips. The overflow wastes into a soapstone basin with a raised convex strainer waste. The chemical and physiological laboratory sinks are of Alberene stone with overflow, in cast-iron waste pipe, trap and fittings. The former are supported in bridle irons and have extra heavy pantry faucets, controlling gate valves and hose nozzles. Sinks in the biological and physiological laboratories and elsewhere are of cast-iron with cast-iron backs and overflows, and are supported in cast-iron brackets. They have wrought-iron waste, brass compression flange, hose bibb faucet and air chamber. The photographer's sink in the dark room is made of Alberene stone, supported on iron brackets, has cast-iron waste, brass pantry faucet and two extra heavy brass pantry faucets with hose nozzles and controlling  $\frac{3}{4}$ -inch brass gate valves. Adjoining this sink is a wooden trough lined with 5-pound sheet lead with burned seams. The trough is supplied with cold water through three  $\frac{3}{4}$ -inch brass compression faucets, and has a trailing overflow and a 1-inch lead waste pipe connected through the end of the stone sink by a brass street washer nozzle.

The toilet-room on the fifth floor is fitted with shower baths essentially like those for public school No. 1 at the corner of Oliver and Catherine Streets. The fourteen shower-bath rooms, about 3 feet by 6 feet in plan, are arranged in a double row, back to back with the showers set on the dividing partition. Underneath this longitudinal partition there is an open floor gutter towards which the floor is pitched from both rows of bath-rooms. The floor is of cement pitched to strainers, and calculated to be flushed with a hose. The end partitions are carried to the ceiling, and the intermediate ones have an open space above them and are covered over the tops of the rooms with galvanised wire netting in removable channel iron frames.

The doors have spring butts to keep them open normally. Each room contains a solid concrete seat under the shower, a pair of japanned clothes-hooks secured to the top rail of the door, and a rubber curtain which divides the room into a dressing and bathing compartment, and is supported with rings from a 1-inch iron pipe curtain-pole, which is secured by wall flanges to the partition slabs.

The showers are of a special pattern. Each is set in an inclined position, and has narrow slotted holes instead of circular spray openings, thereby producing flat instead of needle-shaped jets. The heads are nickel-plated, and are set, as shown in the detail, on galvanised-iron frames bolted to the partition frames, and have  $\frac{3}{4}$ -inch branches to the  $1\frac{1}{2}$ -inch hot and cold-water supply pipes. Each supply branch has a quick-opening lever-handle valve operated by a chain pull and commanded by a gate valve. The hot water is connected to the cold-water supply branch between the cold-water main and the shower, so that no hot water can be used until the cold-water valve is opened, thus preventing the danger of scalding the bather, but permitting the temperature of the water to be graduated by mixing hot and cold in any proportions up to half and half, or to use cold water only at the choice of the bather. A check valve is put on the cold-water supply branch between the hot-water connection and the main supply connection to prevent hot water from backing up into the cold supply main, and both branches are connected to the shower with unions, so that the latter may be easily removed. In the girls' baths the hot and cold-water branches have vertical extensions below the valves, and are fitted with flexible tubes and nozzles so that the water may be sprayed over the body by hand without using the shower and thus prevent wetting the hair.

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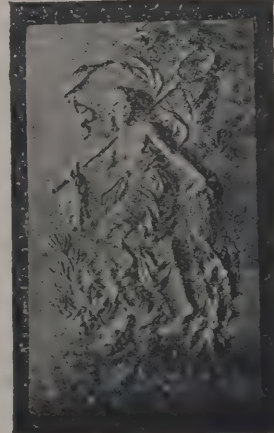
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The partition slabs 7 feet high have iron supports, and are raised a few inches above the floor. They are made of wire glass, with iron frames connected with iron angles and supported on angle-iron bases embedded in the floor concrete. The doors are made with 1-16 inch sheet iron, and have inside latches which may be raised if necessary from the outside by inserting a metal rod in a vertical slot across the latch. In some other schools the partitions are made of Alberene stone slabs fastened together with nickel-plated brass angles, bolts and washers, the bolt-heads being countersunk and covered with litharge and glycerine. The tops of the partition slabs do not extend to the ceiling, and the space above them in the plane of the doors is filled by wire netting.

The water for the shower-baths is heated in a 530-gallon horizontal cylindrical boiler supplied with a steam coil and having connections to an independent heater which has a 5-inch horizontal smoke-flue. This flue is connected into a tee in a vertical 12-inch cast-iron hub-jointed vertical pipe on the outer surface of the exterior wall. About 4 feet above the ground-level this pipe is reduced to 10 inches and extends with that diameter to the roof. The 12-inch pipe is only about 10 feet long and its lower end terminates in an elbow and horizontal section which passes through the wall and is closed inside the building by a screw cap. All accumulations of soot drop down into the foot of the 10-inch pipe, below the connection with the heater flue, and can be easily cleaned out by removing the cap.

In some instances there is danger of storm water backing up into the sewers, and a special swinging check valve has been designed to be placed between the floor strainer and the trap to prevent the water from entering the basement. The flap is made to swing very easily and care is taken to set the strainer plate exactly horizontal, which insures the valve seating itself and remaining always closed except for a flow of water into the sewer.

Janitors' sinks are made of Alberene stone mortised into the stone floor slabs, which thus answer for the sink bottoms. This makes a very simple, strong sink, which is easier to use especially for emptying pails of water than one which is elevated, and has no space underneath to catch and retain dirt and dust. The floor slab is a single piece continuous over the whole area of the alcove or closet in which the sink is placed, and is pitched to wastes inside and outside. These wastes have screwed flanges and lock nuts and strainers, and are trapped to the soil pipes. The closet walls are panelled with Alberene stone slabs 4 feet high, one of which forms the back

side of the sink. Wherever possible a narrow space is between each side of the sink and the wall, to afford room for brooms, &c.

In some schools troughs are provided for the model pupils in which they may wash their hands or mix the cement. When iron sinks were used for this purpose difficulty was experienced from the waste-pipe and trap being obstructed by the large quantities of clay sediment, so an arrangement has been devised where the clay or muddy water is received in a long narrow stone trough and the overflow must pass over a sort of catch basin, which intercepts the sediment before it is discharged into an open sink at a lower level, which is trapped as usual into the soil or waste-pipe. Both the overflow and waste discharge directly over a cast-iron sink which is set with the upper edge overlapping and close to the under side of the end of the trough. The overflow is a short flanged thimble with two lock nuts and gaskets, screwed up tight against the stone slab, and an elbow at the outer end to make a spout over the sink. The trough is 7 inches wide on the bottom, inside, and at the outlet end is a sediment basin, 10 inches square and 13 inches deep inside, suspended from the trough by a horizontal top flange gasket and bolted to the stone slab. At the bottom the corners of the basin are filleted in to a circle and threaded to receive a screw cap. This basin is found efficient as a trap which collects the sediment and leaves the overflow effluent nearly clear.

The drinking fountains have one or more jets set horizontally on the wall just above the upper edge of a stone sink supported on stone brackets and having, when more than 6 feet long, intermediate iron brackets, as shown in the detail. The sink is set over a stone floor slab 4 feet wide which is drilled to a strainer and waste pipe, and the sink has a waste pipe with a special flange connection to the bottom slab and a very heavy convex strainer, which screws into the inside of the upper edge of the brass waste outlet.

The attic storage tanks have standing overflows, and former trouble was occasioned by wood and rubbish which fell into the tanks and floating over the tops of the pipes obstructed them so as to prevent a free discharge. To remedy this the tops of the overflow pipes are now fitted with hemispherical caps attached to curved arms screwed to the inside of the tank and the outside of the pipe.

Mr. C. B. J. Snyder is the architect for the school building and Mr. Wm. H. Dewar is the sanitary engineer for the Board of Education.



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# The Architect.

## THE WEEK.

RE lately mentioned that a test case had been prepared by the District Surveyors' Association and the Westminster City Council in order to have the position of the surveyor defined in respect to the inspection of the seats which are now being constructed for the use of people who are desirous to see the Coronation processions, and more especially in Westminster. Three questions were proposed for the consideration of the Court, viz.:—(1) Whether the powers, duties and liabilities of the surveyors with respect to the supervision or inspection of wooden structures falling within section 84 of the London Building Act, 1894, had been transferred to the City Council and its officers; (2) whether wooden structures falling within section 84 were works of which the district surveyor should have a notice under section 145, and as to which he had duties of inspection and supervision independently of the terms of any license; (3) whether the right to receive the fees for such supervision and inspection had been transferred to the City Council and its officers, or had lapsed, or was still retained by the district surveyors independently of the terms of the license granted. The answers given by the Lord Chief Justice, and in which Mr. Justice DARLING agreed, were as follows:—(1) In so far as the duties depended on the terms of the license, it is not a question of transfer. It was a question of duties imposed on the officers of the City Council by the terms of the license. Therefore the district surveyors did not have the right or power of performing the duties imposed by the license unless the license expressly imposed duties on them. The answer to the question was that they were not transferred, and the district surveyors had no powers, duties, or liabilities under the licenses which were granted by the City Council. (2) He thought that the district surveyors were entitled to have notice under section 145 of the London Building Act, 1894, but not of all the things specified in that section, because they were not all applicable. He did not mean to suggest that the district surveyors could exercise functions which had no relation to the character of the structure being erected. (3) The right to receive the fees clearly had not been transferred to the City Council and its officers, but he did not think that the right had altogether lapsed. The reasonable and proper thing would be for the County Council to exercise their powers of allowing a less fee because the duties would be less. If in a proper case a district surveyor, for good cause on information received, had a duty to inspect, in order to see whether any provision of the Act had been infringed, he would be entitled to his fees, but he did not suggest that the district surveyors would be entitled to claim fees in respect of every one of these structures because they had certain duties under the Act.

MR. JUSTICE CHANNELL considered the answers should be:—(1) Nothing had been transferred, but so far as any duties would formerly have been imposed upon the district surveyors by the licensing of such structures to the County Council, no such duties were now imposed on them. (2) The structures were works of which the district surveyor was entitled to have notice. (3) If, in any case, the surveyor did inspect properly and not go to the purpose of getting his fee, he was entitled to his fee. The proper way for the County Council to meet this case was that, as the operation of taking away the licensing from them was very greatly to diminish the duties which would fall on the district surveyors, the County Council should make a direction, under section 150 of the Act, imposing a smaller fee to be given to the district surveyor in cases where the structure was licensed by the other authority. It cannot be said that the judgment is as clear as is desirable, but it is evident that the powers and duties of the district surveyors are diminished, but to what extent has not been fully defined. A district surveyor is entitled to his fees, but only in "proper" cases. Whether the decision of the Court will affect other structures besides those now in process of construction for temporary use has

yet to be determined. At present it might be considered there was responsibility resting on the district surveyors, but their freedom to perform the duties it involved is restricted, and will be paid for on a diminished scale.

THE amazing productivity of RUBENS is well known. It seems incredible how he was able to paint so many pictures, and at the same time to give attention to diplomacy. Nor was he ever a veteran, for before he reached his sixtieth year he was deprived of his power of painting by gout. M. MAX ROOSES, who is devoting himself to researches for the biography of the painter, has been able to demonstrate that RUBENS also was a student of ancient and modern literature, and could be considered as one of the scholars of his age. His father was compelled to fly from the Netherlands to Cologne and then removed to Siegen, where the painter was born. By his father, who was a lawyer, he was taught Latin. When his mother returned to Antwerp after her husband's death, RUBENS was only a boy of eleven. She destined him for law, and in consequence he studied the classics, and was well acquainted with the works of VIRGIL, CICERO, PLUTARCH and TERENCE. He entered as a page in the household of the Countess LALAGNE, but at his own desire he became a pupil of VERHAEGHT, a landscapist. After a time he studied under VANSEN, and in his twenty-third year he went to Italy. He lived for a long time in foreign courts, but when busiest he contrived to find time for literary studies. After his return to Antwerp, a visitor found him in his atelier almost as much engrossed with LIVY as with the picture on his easel. His contemporaries valued him not only for his pictorial power but for his knowledge of history and archæology. He spoke several languages besides Flemish; among them were Italian, which he preferred; French, which was then the language of diplomacy; Spanish; and, in fact, could hold conversation with natives of all the countries he visited. He had so great a love for antiquity, says one of his early biographers, that his agents purchased throughout Italy a prodigious quantity of statues, medals and precious stones. Whenever he sought repose it was in the contemplation of them. His collection was reckoned as among the most valuable in Europe.

THERE is no branch of engraving which has so many claims to be considered peculiarly English as mezzotint. The origin of it is commonly ascribed to Prince RUPERT, but ELMES may have been correct when he said:—"The mode of impressing pictures by light and shade on copper, commonly known by the name of engraving in mezzotint, owes its improvement, if not its origin, to WREN. WREN's nephew, in the "Parentalia," wrote of his uncle:—"He was the first inventor of the art of graving in mezzotint, which was afterwards prosecuted and improved by His Royal Highness Prince RUPERT, in a manner somewhat different, upon the suggestion, as it is said, of the learned JOHN EVELYN, Esq." Whoever was the inventor, there are no mezzotint plates which are superior to those which came from English hands, and of which an admirable collection is now on exhibition in the Gallery of the Burlington Fine Arts Club. Examples will be seen by JAMES MCARDELL, the Dublin engraver, who was a favourite with REYNOLDS, for he suggests the master's broad style, and on that account no doubt Sir JOSHUA said he should be immortalised by him. But he also engraved after other masters, English and foreign. His works, however, never gained him admission into the Academy. Another excellent interpreter of REYNOLDS was VALENTINE GREEN, who, although he received lessons from a provincial line-engraver, was self-taught as regards mezzotint. WILLIAM DOUGHTY was also successful in his prints after REYNOLDS. GREEN was painter to GEORGE III. RAPHAEL SMITH was engraver to the Prince of WALES; his plates were in such demand that he became a publisher, and one of his speculations was the Morland Gallery. He must always have worked in a hurry, and perhaps he never acquired the monumental character of MCARDELL or GREEN, but there is undeniable charm about his portraits, especially when the subjects were fine ladies. One of his pupils was WILLIAM WARD, who was excellent in his translations of MORLAND and other artists. The art is not difficult to practise, and could easily be popularised.



## THE NEW "UNDERTAKERS."

AN expression in the old schools was, "Beware of a man of one book." It signified that a student who set extraordinary value upon a single treatise was likely to make it a centre or kernel of knowledge around which he was able to aggregate whatever was remotely, as well as closely, related to its subject. The best knowledge is one of relations, and there is no doubt that the simplest thing can be made to serve almost as well as the most important for the purpose of a collector or of an assimilator of wisdom—that is to say, a scholar. Judging by what has occurred since 1897, it would not be unreasonable to assume that the Workmen's Compensation Act is destined to act like "the one book" of former times, and to become a nucleus for a body of English law of almost immeasurable extent. This arises from the slovenly manner in which the Act was drawn. As Lord BRAMPTON has said, the Act "is so framed as to provoke rather than minimise litigation, and those who were responsible for the language of some of its enactments little knew the amount of labour they were entailing upon those whose duty it might be to interpret them."

The Act was intended to simplify the arrangements for compensation to workmen who suffered through accidents caused by an employer's defective organisation. It was only necessary to make application before a county court judge, and unless there was a kind of opposition that was not anticipated the amount of compensation to be paid could be determined quickly and without much cost. But already there is a startling array of cases under the Act, and a great many have not yet reached final decision. They are in various stages of procedure, and at a later period some will be gradually brought to light when the round of the courts is over. For example, the significant appeal case in which judgment was given in the House of Lords on Friday last, related to an order that was made by a county court judge as far back as October 1899. The case has therefore been dragging its slow length along during two years and a half, and as lawyers know, there are other actions which have been passing from tribunal to tribunal through a longer term.

The issue to be determined in the case in question appears to be of the simplest. Messrs. COOPER & CRANE in 1899 entered into a contract for the erection of a building; they sublet the slating to a man named WRIGHT. One of his labourers, named BRADY, was engaged in carrying slates when a lift broke, and he sustained injuries which caused his death. The widow sought compensation. Messrs. COOPER & CRANE did not dispute their liability as contractors. They sought, however, an indemnity from their sub-contractor. The county court judge held their claim was justified, and gave judgment in their favour. The sub-contractor appealed, and the Court of Appeal exonerated him because he was not an "undertaker" within the meaning of the Act. The question which has taken over two and a half years to decide is, What is an undertaker under the Workmen's Compensation Act?

If an architect were called upon to give an opinion, he would be likely to say that in all cases relating to scaffolding, lifts, gangways, cranes and the like it would be preferable in the majority of cases if the responsibility were cast upon the general contractor. Aids and appliances of that kind are often costly, and a sub-contractor, who may be only an energetic workman without plant, when he is compelled to form a temporary structure will endeavour to have it of the simplest and least costly form. Sub-contractors' men sometimes are not of the class which trades unions protect, and they incur risks which the regular building workman would never face. In preparing the Act it might have been easily enacted that sub-contractors' liability in most cases should be confined to labour, but the legislator rarely thinks it is necessary to seek the advice of specialists. If the Workmen's Compensation Bill had been revised by a committee of architects and builders, litigation would have been greatly diminished, and in fact would only occur under unusual circumstances. But the Act is now beyond remedy, or at least years must elapse before an amended Act can be passed.

It may matter little whether there is doubt about the party who is to pay 217½, but as we have remarked, the unlucky Workmen's Compensation Act seems to be a

magnet which attracts a great many puzzling points in law, or, rather, it has the fatality of making points puzzling which were hitherto supposed to be familiar and plain. For instance, in endeavouring to define what was the meaning of undertaker, Lord BRAMPTON said that there were two sets of persons who might be assumed to occupy that position, viz. "The building owner who takes upon himself the construction of the building he requires, or the persons who, through the medium of a contract with him, engage to take upon themselves the obligation to execute that work for him." His Lordship carefully refrained from touching on the subject of the responsibility of a building owner, which implies the possibilities of a wider sphere for litigation than has heretofore been utilised. The Lord Chancellor, on the contrary, declared himself to be uncertain about the meaning which Lord BRAMPTON attached to the phrase "building owner," and it may hereafter cause some trouble before the term receives its new signification in reference to the Workmen's Compensation Act. We do not like to contemplate anything that will alter the value of terms used in building, and for that reason we are obliged to consider the judgment given in the House of Lords.

The Parliamentary draughtsman who employed the word "undertaker" was introducing a designation which was not customary either with architects who supply the materials for contract deeds or with solicitors who prepare the deeds. It was not contemplated to make any change in building routine, and the term should therefore be taken as a synonym for a word which has been already used. Now, an undertaking implies the existence of two parties, viz. the party who undertakes or contracts to build and the party who undertakes in return to pay the amount agreed on. If the former should make arrangements for subletting a part of what he undertakes, we have a transaction which is independent of the party who has to pay, or, in other words, of the building owner. The latter or his representative, the architect, can only in the majority of instances regard the sub-contractor and his assistants as ordinary workmen. He cannot compel them to execute better work or employ more expensive materials, for they have not entered into any undertaking with him or with the building owner. Accordingly in everyday building practice the undertaker in the eyes of the builder or his architect is simply the man who signed the contract deed, and is known commonly as the general contractor, and who, from assuming that position, becomes responsible for his sub-contractors and their men. It is unnecessary to say that the employment of a sub-contractor can be prohibited or become allowable only by the consent in writing of the architect. The legislators to whom we are indebted for the Workmen's Compensation Act must have been acquainted to some extent with the conditions of building routine, and they were hardly likely to attach much responsibility to men whose existence was problematic, and who in many cases would not be in a position to pay compensation.

In the fourth section, in spite of the astounding looseness of the phraseology, it is stated that the contractor, which means the general contractor, is to be liable in respect of any accident arising out of or in the course of any employment by a sub-contractor, just as if he were the direct employer of the men injured. The arrangement is a departure from the ordinary common law, which limits a man's liability to his own servants. In return it is provided that the undertaker or general contractor "shall be entitled to be indemnified by any other person who would have been liable independently of this section." We cannot resist saying that we believe the compensation offered by the last provision was not to be wrung from sub-contractors, who generally are not men of means, but was aimed at the building owner, in the expectation that by some negligence on his part or on the part of his architect he could be held responsible for accidents. Lord BRAMPTON'S views may not go so far, but he says that if it had been intended that sub-contractors should be considered as undertakers, with all the obligations which followed, "it is impossible to suppose it would not have imposed those obligations and expressed such intention in clear, intelligible language."

Lord DAVEY, in his judgment, said that in the definition of undertaker, which he admits is of little assistance in



construing the Act, he does not find anything which requires the undertaking or engagement to be directly with the building owner or excludes a sub-contractor to whom the contractor for the whole building has let a certain portion of the work. Such a person, he adds, undertakes the work he has engaged to do as literally and truly as if his contract was directly with the building owner. These words may be interpreted as meaning that a contractor is entitled to abandon the time-honoured practice of his business, and to enter into contracts with others without the knowledge of the building owner or his representative, and the sub-contractor in consequence becomes an undertaker. His Lordship admits that it may be difficult in the case of a building to suggest when the sub-contractor may or may not be an employer to whom the Act applies. If his Lordship had in his purview recognised the existence of other matters besides those connected with the Workmen's Compensation Act, we venture to think that by placing a sub-contractor on the same footing as a contractor the organisation for building is likely to become exceedingly complicated. Under present conditions we have to deal with the general contractor alone, and by allowing him to make arrangements of his own without authority a way is opened which can cause incalculable inconvenience to all concerned in building operations.

The Lord Chancellor, who usually takes a very practical view in the interpretation of Acts of Parliament, was not happily inspired in dealing with the case. He seemed to be eager to confute the whole of the reasoning on one side by an *argumentum ad absurdum*. His Lordship assumed that no one undertook the construction of the building, and then an accident occurred. Who was liable? The answer he supplied was that nobody was liable, and the workmen would have no remedy. If there was no one to construct the building it is not clear to us how an accident could arise, even in supposition. There is no question that the general contractor is made responsible for any compensation which may become necessary, but it is not clear that the Act intended that a sub-contractor was to be elevated to a contractor in order to repay the sum awarded. To architects it is of little importance whether the general contractor is repaid or has to deduct the amount of compensation from his profits, but it is a serious concern for them in the interests of the building owner if a sub-contractor over whom they have no authority should be recognised in law as a contractor, and at the same time be free from the responsibilities which are usually imposed on those who accept that duty. Even Lord BRAMPTON was not able to realise all the consequences of the point at issue, for he said:—"In most cases I have no doubt it is immaterial to the building owner whether his undertaker employs his own materials and workmen or engages another to do isolated portions of the work for him; but the building owner has no contractual relations with the sub-contractor, and can only look upon him as a mere employé of those with whom he has himself contracted." It makes, however, a very material difference, for the sub-contractor is rarely recognised (we exclude the cases where specialists and attendees are engaged) by the architect, and is unknown to the building owner. To place a man who is without direct obligations to the building owner on a level with the general contractor is an innovation which is not likely to be advantageous to the class of sub-contractors, or care will have to be taken that those undertakers alone are employed over whom architects have direct control. Then, as on the Continent, contracts are entered into for each trade, there is little difference in the positions of the various classes of undertakers, but at present, at any rate, England adheres to a long-standing custom in building, and until it has ceased arrangements on a different basis are unnecessary. However, the judgment of the majority of the House of Lords must be respected, and a contractor entitled to claim an indemnity for compensation from his fellow-undertaker, who formerly was known as his sub-contractor, but is now elevated to a higher grade through his obscurity in the Workmen's Compensation Act.

## RESTORATION IN FRANCE.

WHEN describing the proposal for an imaginative restoration of the church of St. Michael, Linlithgow, we referred last week to the method adopted in France. In the new number of *L'Art* there is an earnest protest from M. CARL, the sculptor, relating to restoration in general, and especially of the cathedral of Saint Dié, which confirms our conclusions about the defects of the official French treatment of ancient buildings. The case cited by M. CARL would be considered an extreme one, for at Saint Dié the different styles or transformations of French architecture from Gallo-Roman times to the middle of the eighteenth century were embodied. For the historian of art it was, therefore, a compendium of French work exemplifying the changes of taste, but as a consequence of the extraordinary variety of the parts, it presented to the purists of the Historic Monuments Commission the spectacle of a multitude of excrescences which should be removed without hesitation and replaced by imitations of the earliest style. The purists have succeeded. The old church has been deprived of the characteristics which were imparted to it by several generations of Frenchmen, but it is assumed to be nearer to its original condition. In other words, the works of many artists have been disturbed in order that a theory of a nineteenth-century official about the appearance of the cathedral six or seven centuries back may be expressed in enduring materials.

Saint Dié is not known to English tourists. It is found in the Vosges midway between Nancy and Colmar, and therefore close to the frontier. Strangers have an uncomfortable notion about the risks of travelling in the border region, which of late years has caused the beautiful city of Nancy to be avoided, although work is to be seen there unlike any found elsewhere in France. Saint Dié having fewer attractions is generally neglected. It always seems to have been treated as an out of the way place, and on that account the cathedral possessed peculiarities which called for preservation. For instance, before it was recognised as an episcopal seat, the *grand prévôt* exercised the authority of a bishop, and that office was so esteemed that princes of Lorraine and high nobles were proud to accept it; even a pope was, it is said, at one time provost of Saint Dié. In course of time the world might place a lower value on the position, but the clergy would endeavour to uphold their rank. In theory, at least, they would regard themselves as still lords of Saint Dié and its dependencies, although the real power had passed to secular hands.

One of the features which was most obnoxious to the eyes of the Historic Monuments Commission must have originated in a survival of the self-esteem of the clergy. An altar at the end of the choir was removed, and in its place was erected the episcopal throne. The change was made in the early part of the eighteenth century, when there seemed to be no restraint on the extravagances of the Rococo. It is, therefore, not difficult to imagine the character of the baldachin and other surroundings of the throne. The aim was to avoid all created examples by exhibiting as many unexpected curves as could be devised. Above, the mystic triangle was introduced amidst clouds and cherubs' heads, but attached to it we see emblems which might have appeared over the doorway of a military fortress. In Nancy JEAN LAMOUR, the blacksmith, twisted iron as easily as if it were a reed, and at Saint Dié the stucco-workers were still more enamoured of curves and turnings. The usual precedents for the arrangement of the bishop's chair were set aside; but Gallicism claimed to have a power of its own in church affairs, and it would probably have been maintained that what was done in placing the bishop as the terminating point of the axis of the cathedral rather than at one side was in keeping with primitive ritual. M. CARL said the respect for the bishop was not diminished by his becoming the central figure of the cathedral, and the faces of the old canons bent over their breviaries were in no way affected by the neighbourhood of the capricious arabesques.

M. CARL raises a larger question when he asks why the ornament and sculpture of the time of LOUIS XV. should be considered less fitting for a Christian church than Gothic ornament. The sculptors of the eighteenth century produced representations of apostles, prophets, evangelists, cardinal and theological virtues. Were not the figures



preferable, from their suavity, to those of Mediæval artists, in which demons were seen as the agents for punishing not only ordinary mortals, but kings and queens, monks and bishops? The curves and counter-curves could only by imagination be looked upon as profane; they had not the severity of the vertical lines and mouldings of the Gothic artists; but, for all we know, congregations may have been as indifferent to one as to the other. It is absurd to suppose that at any time laymen or clergy in churches scrutinised details as if they were travelling students of architecture who wished to gather suggestions for future use.

A sculptor cannot, it must be allowed, be taken as an adequate judge of architecture or of architectural ornament. His standard of excellence is the human figure, and the variations in it which are possible are comparatively few in number. The Mediæval sculptors at one stage conformed to peculiar types which seem to be as stiff and immovable as parts of columns, but in course of time they sought after a nearer approach to reality. M. CARL can believe in the excellence of the sculpture of the LOUIS QUINZE period, but with that sculpture came architectural details which are marked by a divergence from similar work of the Gothic fashion. The baldachin and its surroundings are valuable if we accept them as evidence of the status desired by the clergy of Saint Dié in the eighteenth century, but there is no doubt the work is incongruous if compared with what was executed during the Mediæval Ages. If, however, those innovations are overlooked and are entitled to be preserved, then it must follow that an infinite number of cases in which the novelty was less remarkable, but which have been removed, testify that destruction as much as restoration was aimed at by the officers of the Historic Monuments Commission.

There are many instances where the casting out of valuable work because it was too old or not old enough are more flagrant than those relating to Saint Dié. Unity, or rather the desire to insure an ostensible synchronism in all parts of a building, is dearly bought when it becomes necessary to sell by auction the grilles which formerly guarded the entrance to the cathedral at Troyes. The cloisters, which were erected in the eighteenth century as part of the cathedral of Sens, are now placed round the lawn in the bishop's palace. ANATOLE FRANCE records that he found in a gateway at Bordeaux two large figures, one of the eleventh century and the other of the thirteenth, which were taken away in the restoration of a cloister of the twelfth century because they were not exactly in the style of that period, and two modern imitations of twelfth-century work were substituted for them. The sacrifice in this instance was for the sake of an abstraction, and was not likely to compensate the trouble taken. French architects are too apt to forget what was said by ADOLPHE DIDRON:—"In dealing with ancient monuments it is better to consolidate than repair, better to repair than restore, better to restore than embellish, but in no case should we add or diminish."

In restorations advanced ideas of ritual and considerations of utility should, however, be recognised to some extent. The present has its rights over an inheritance. Gallicism has been superseded, and few survivals of a spirit that was once powerful in ecclesiasticism can now be met with in France. Finding a bishop's chair in a place where an altar would be expected was enough to excite surprise, and we doubt if the most zealous anti-restorer would be eager to see a continuance of the arrangement which was introduced in the cathedral of Saint Dié, still less would he desire to see it imitated elsewhere. For the sake of uniformity of ritual, which is of great importance in church affairs, the baldachin was no more than a slight sacrifice to modern ideas, and when anything has served its purpose it is hardly worth preserving in a prominent place, thus making an idol of the work of human hands. But there are other removals which were not dictated by expediency and do not increase the utility of the cathedral. The building will not in consequence hold larger congregations or induce a more reverential spirit among them. All that has been done was contemplated with the intention of insuring more general unity, which is the idol of French officialdom. The latest victim is the cathedral of Saint Dié, but, as M. CARL apprehends, the work will continue in other cities until all that has survived of ancient French art will have disappeared, and only maladroitness substitutes will remain to

delight the future spectator. That the new imitations will succumb in turn is no consolation for the loss of ancient remains.

## ARTISANS' DWELLINGS FROM THE PRIVATE POINT OF VIEW.\*

WHEN the committee of the Architectural Association did me the honour of asking me to read a short paper on this subject, I had some diffidence in accepting the invitation on account of my very limited experience and knowledge of the matter, and also because most of the ground has been so recently covered by our good friend Mr. Blashill in his most admirable and exhaustive paper on "Working Class Dwellings in Blocks," read before this Association only two sessions ago, and the series of papers on the same subject read by Mr. Owen Fleming and others a few weeks afterwards at a meeting of the Royal Institute of British Architects in this room.

My plea of knowing so little about it was met by the reply that others knew less, and I was prevailed upon to undertake the task by the assurance that some of the members knew nothing about it. It is, therefore, to those members that I must chiefly address my remarks, while craving the indulgence of those who are better informed.

As most of you will probably have to carry out artisans' dwellings for private clients before doing so for public bodies, it may be useful to consider the subject from the private point of view. In planning buildings, we all know that among the chief difficulties are the restrictions of the sites, and it seems to me that the question of sites is one of the principal differences between the subjects of the two papers presented to-night.

Whereas the sites for municipal artisans' dwellings are usually planned as part of a large scheme, with wide streets and open spaces, the sites for buildings of this class erected by private individuals are frequently plots of ground hemmed in by buildings on two or three sides, and with comparatively narrow streets in front. The private client naturally wishes to use the site—for which the rent is probably heavy—to its utmost limits, and the problem for the architect is generally to get the largest possible amount of accommodation that the site will allow (for, of course, the smallest possible amount of outlay), rather than the best type of building which, though economical of itself, may waste any portion of the available site.

Consequently, what would be considered the standard minimum sizes for rooms in municipal artisans' dwellings would not be adhered to in the case of private buildings of the same class, but a lower or smaller standard would be considered sufficient, varying, of course, according to the limits and restrictions of the site.

Practically, it amounts to this: one has to take the plan of the site and consider what is the largest cubic space on it that can possibly be occupied by buildings, having due regard to questions of light and air, and the various sections of the Building Act or regulations, such as the height of the building and width of street, the angle of  $63\frac{1}{2}$  degrees, and the open space in the rear, and the numerous other points affecting workmen's dwellings.

If the street be narrow, it may be possible to plan a larger, because higher, building by setting back, provided that the site be deep enough.

If the site be very deep it may be possible to erect parallel blocks; but there are many difficulties and restrictions with regard to this which cannot very well be gone into in this paper.

It may be well to consider the evolution of the artisans' "dwelling," as it is called, from the simple cottage, or row of cottages. I need hardly describe the latter in detail, as all of you are, no doubt, quite familiar with them. It is evident that, where space is limited, as in large towns, one can get more dwellings on a site by building them one above another than side by side, and the first step in this direction is the type of building which we may call the cottage flat. The simplest example of this type is perhaps the two-storey building, as shown on the plans of those erected on an estate in North London.

Each division between the party-walls contains two separate self-contained tenements—practically a complete cottage on each floor—each with its own approach from the street and front door, and its own yard and small garden behind. The ground-floor tenement contains an entrance passage, front room 12 feet 6 inches by 12 feet, with bay-window, back room 12 feet 6 inches by 11 feet, coal place under the staircase leading to the upper tenement, kitchen or living room, 11 feet 3 inches square, food store with a small window, scullery with a sink and copper, and a water-closet. The upper tenement, with its back and front staircases, contains the same accommodation, with an additional small room over the two front entrances. The average total cost of these buildings was about

\* A paper by Mr. Louis Ambler, read before the Architectural Association on Friday evening, May 9.



each couple of dwellings. The ground-floor tenement for 8s. per week and that on the first floor for 9s., the owner paying the rates, &c. The rate of interest on the total outlay is about 6 per cent.

I may here remark that buildings of this class should always be directed by contract if they are intended to pay. In the case of the first block or group were put up by contract for less than the amount of my estimate of 400% for each double tenement, calculated at 5d. per cubic foot, and any client thought he would get them better built without a contract he was persuaded by a relation, who owns a large amount of cottage property, to employ a clerk of works and have the buildings put up without contract, but according to the specification, the clerk of works buying the materials and employing the labour. The result was that the cost was 450% for a couple of dwellings, and the experiment of building by contract method was abandoned. Evidently the clerk of works did not buy materials so cheaply as a builder, nor get as much work out of the workmen, who would do more for a shilling, knowing that he had taken the risk of a contract, than he would for a clerk of works who simply paid them by the hour and took no risk.

The "clerk of works and no contract" system may be all right well for a house which the owner is building for himself, where he can perhaps supply part of the materials off his own estate. Then his only object is to have the best work—more or less regardless of cost; but in the case of artisans' dwellings to be built to pay it is a very different matter, and I believe that the contract system is the only feasible method of doing such work for private individuals.

A further development of the cottage-flat type of dwelling can be seen in the plans of those in Lisson Grove, where each tenement occupies two storeys instead of one, each having its own gate and entrance from the street, and each its own portion of the yard space in the rear.

The lower tenement occupying the basement and ground floor comprises a five-roomed dwelling, having also a scullery with a sink and copper, a storeroom, coal place and water-closet, two of the rooms being 12 feet square, two 11 feet 6 inches by 10 feet 6 inches, and one 8 feet 3 inches square. The upper tenement occupies the first and second floors, and is reached by an enclosed staircase from the front street door, and has an outside open air staircase down to the yard at the rear. The accommodation is similar to that of the lower tenement, but the rooms on the top floor are rather larger, and the walls being thinner, and there is one additional bedroom over a portion of the staircase, &c.

The cost of these buildings was at the rate of 6½d. per cubic foot or an average of 60% per room, sculleries and other offices, being thrown in.

The lower tenement is let for 11s. a week, and the upper for 13s., this being at an average of about 2s. 2d. per room, inclusive of rates and taxes. The buildings pay at the rate of 6 per cent. on the total outlay.

It should be mentioned in respect of the cost per cubic foot of these buildings that an exceptionally low tender was obtained, also that owing to older buildings existing on both sides of the site there were no party walls at each end to build, added to which there were no breaks or projections whatever, either at the front or rear, for the projecting windows shown in the front elevation were not allowed by the County Council.

We now come to the third type of artisans' dwellings, that is, the block of tenements having a common staircase. As staircases, landings and passages are not directly rent-producing, they must necessarily be reduced to a minimum, and the larger number of rooms approached by one staircase, the more economical is the arrangement, provided that space be not wasted in passages. The other most important point in the arrangement, with regard to economy, is that the building should be as possible a simple parallelogram, two rooms deep, and without any breaks or projections either back or front, as these involve thick walls all round, and add considerably to the cost. The two points are illustrated in the drawings of the dwellings in Southwark. The site was rather deep, but the front was in front very narrow, so that it was necessary to set back the building from the centre of the street, and to build the single block as deep as possible, in order to obtain the largest amount of accommodation that the site would allow.

For economy of staircase and passage space, the front entrance was planned at the level of the half-pace landing, and it will be seen that by this arrangement no space is wasted on the ground floor.

On the other hand, the third room built out at the back is comparatively expensive, as it has thick walls all round. A more economical block of buildings could have been planned for the site, with only two staircases instead of three, but this would have meant the loss of six rooms on each floor, twenty-four rooms in all, and the large ground rent did not warrant the curtailment of accommodation, involving also the loss of a large space behind as well as the large area that had to be built up in front.

The dwellings are planned as tenements of three rooms, except three of two rooms on the ground floor, but they are so arranged that they can be let as separate tenements of one room, or any number up to six, the front room being the single tenement, the two back rooms the double-roomed tenement, and so on.

The front and middle rooms are each 12 feet by 10 feet 6 inches, the back room 10 feet 6 inches by 7 feet 6 inches.

The middle rooms are fitted with hob-grates, so that a small amount of cooking may be done in the case of this and the back room being let together, this room then becoming the living room (as well as bedroom possibly).

No sculleries are provided, but a sink was arranged on each landing, out of the way of the traffic. These sinks, however, were omitted in execution, and only the water-supply, with draw-off taps on each landing, remained.

One washhouse, with two coppers and washing-troughs, is provided for each block containing twenty-three rooms, and the tenants use the washhouse in common, the days and times of such use being arranged by the resident superintendent, the general practice being that the tenants of each floor use the washhouse on the same day, thus making the four middle days of the week suffice for that purpose. The washhouses are locked up from Friday night until Tuesday morning, and only opened occasionally on a Monday to oblige a tenant for some special reason.

The yards in the rear afford ample drying space.

In these buildings no food stores were provided, owing to the very limited space; but I believe that cupboards for this purpose, with coal-bunkers underneath, have since been fixed in the recesses between the chimney-breasts and the outside walls in the living-rooms.

It will be seen from the elevations that hardly any attempt was made to give any architectural character to the design beyond a little variety of colour and texture, as the object was to obtain the largest amount of accommodation for the smallest outlay, and to provide only a decent-looking but perfectly plain exterior.

These dwellings cost 8½d. per cubic foot, or 69% 10s. per room, but they were built in 1898, when building prices were at record heights. The rooms are let at average rentals of 3s. per week, including rates and taxes. The buildings pay 4 per cent. on the total outlay.

All buildings for the artisan classes should be as fire-resisting as possible, and the construction should be solid throughout, with no hollow spaces for dirt and vermin to collect.

The floors should be of cement breeze concrete, with the boarding nailed directly on to the concrete, the boards of the lowest floor being tarred underneath.

I have found 1 part of Portland cement to 6 parts of clean, sifted gas breeze suitable for floors, and the same in the proportion of 1 to 5 for staircases and landings; the floors 6 inches thick being finished with a floated face in cement and fine sifted breeze to receive the wood flooring, and, where not boarded, finished with 1 inch thick smooth Portland cement floated bed.

The concrete of the upper floors and landings has ½ inch solid square wrought-iron rods embedded therein, 1 foot apart, 2 inches above the underside of the floors, the rods being in as long lengths as possible, and laid on fir beams, usually about 9 inches by 6 inches, fixed about 4 feet apart, and notched at the top to form a key for the concrete floors, chases at least 1 inch deep being left in the walls for the same purpose. These floors are much less expensive than the usual steel or iron joist and concrete fireproof floors.

All window and door frames and linings should be bedded solid, and casements are preferable to sashes, on account of the hollow spaces in the sash-frames.

Casements are, however, frequently broken off their hinges, or the hanging styles are often broken, by being flung open too violently, but sash lines and beads suffer similarly, so there is not much to choose between them on that score.

Skirtings should all be of cement, and no woodwork should be used where it can reasonably be avoided. Staircase balustrades and handrails should be of iron. If of wood they are frequently used for firewood.

Ranges and coppers should be portable, so that they can easily be taken out and replaced when necessary. Service water pipes should be of iron, as far as possible, not lead.

Granite plaster, laid in two coats, is much harder than ordinary lime plaster in three coats, and costs very little more.

I think the best finish for plaster walls in these buildings is washable distemper, the staircases and landings having high painted dadoes. Some people prefer the living rooms papered; the tenants certainly do.

For all external painting I like ivy-leaf green, and for internal woodwork, the most economical and serviceable treatment is staining, say American walnut colour, and varnishing.

Sanitary fittings should be of the plainest, simplest, and strongest quality, and lead waste pipes and soil-pipe connections



should be avoided. The former should be of earthenware, and the latter of galvanised cast-iron, made to the required length and angle.

Cross ventilation is essential in all parts of the building, by means of windows and doors, not ventilators or air-bricks, which the tenants stop up if they can get at them. Ventilating air-bricks are, however, desirable close to the ceilings of the water-closets, and where the top landing window of a staircase is much lower than the ceiling, a ventilating-shaft from the highest level of the ceiling may be an advantage.

Open-air staircases are now almost universally condemned, and I think them objectionable, as a rule.

Dust shoots are most undesirable, in my opinion, and the pail or dust-bin emptied every day meets all requirements in that respect.

As regards the broad question as to whether these buildings pay, whether they are a good investment or not, much depends on the site and its possibilities and restrictions, the value or rent of the ground, the cost of the buildings, the position and surroundings, the neighbourhood, the character and proximity of other buildings, and, above all, the wise and careful management of the property.

It is clear that private individuals who put up buildings of this class in small blocks on limited and restricted sites are at a disadvantage compared with municipal bodies and large trusts who can deal with huge blocks and vast areas.

In these large schemes there is more scope for architectural treatment than in small ones.

The varieties of groups and masses, tall gables, oriel windows, turrets, and other architectural features are rarely possible to the private builder of these dwellings, unless imbued with more than the average amount of philanthropy and the means to carry out such buildings on a large scale.

I have endeavoured in the preceding remarks to avoid repeating what has been said in recent papers on the same topic, as far as possible, but I fear that certain truisms and repetitions of many of the dicta before laid down are almost unavoidable in a paper of this nature.

I hope I may be forgiven for any trespasses committed in this respect, and it only remains for me to thank those architects who have kindly lent some of their drawings to illustrate the subject of my short discourse.

The PRESIDENT said that before discussing any points raised by the two papers he would make known the report of the scrutineers on the election of officers for the next session. The voting papers in the ballot numbered 317, but nine had been declared invalid. The results were as follows:—

#### *House List, 1902-3.*

*President:* Mr. H. T. Hare. *Vice-presidents:* Messrs. W. A. Pite and L. Ambler. *Committee:* Messrs. W. H. Seth-Smith, G. H. Fellowes Pryne, F. D. Clapham, G. B. Carvill, W. H. Raffles, E. Guy Dawber, R. H. Weymouth, John Murray and Hon. A. McGarel Hogg. *Hon. Treasurer:* Mr. Francis Hooper. *Hon. Librarian:* Mr. J. MacLaren Ross. *Hon. Secretaries:* Messrs. R. S. Balfour and H. P. G. Maule.

Mr. FRANCIS HOOPER moved that a vote of thanks be passed to the retiring President. He assured the meeting that he did not rise to propose a formal vote of thanks on their behalf. For two years it had been their good fortune to have as their President one who had given much valuable time in the service of the Association. So great had been his work during the period that Mr. Seth-Smith could stand shoulder to shoulder with any of the best of their past presidents. There was the day school, of which they heard very gratifying reports, and the men who joined the classes have satisfied Mr. Bolton and his assistants by the amount of enthusiasm they have shown in their work. The second scheme which Mr. Seth-Smith had placed on a firmer basis than any past president had done related to the new premises.

Mr. SETH-SMITH, in reply, said the Association was inspired by a very lofty ambition, which was nothing less than that London should be a city of beauty. Their endeavour was powerful enough to make the best architects in London willing to promote its attainment. He had caught the infection of enthusiasm, and had followed the example of many abler than himself; therefore no special credit was due to him for drinking deeply of the joy which such work brought with it. He expressed his heartfelt thanks to his colleagues of both years for their support, including their exemplary and indefatigable secretary, Mr. Driver, who by his own efforts had obtained 139*l.* for the new premises fund. In conclusion, he moved a vote of thanks to the hon. secretaries, the librarian, the editor and assistant editor of A. A. Notes, the education committee, the Technical Education Board for Workshop Demonstrations, the Royal Institute of British Architects for the use of the meeting-room, to Mr. E. W. Wonnacott for working the lantern, and to others who had assisted the work of the Association in various ways.

The CHAIRMAN then opened the discussion of the two

papers. He said the problem raised in dealing with artisan dwellings was a great one, and it was looked upon by state men as being one of the foremost questions of the day which must soon receive practical attention. It seemed unavoidable that a large percentage of the 'population' should live in abject poverty. People might talk philosophically about the sacrifice of the lower to the higher type of humanity, and try to prove that the sacrifice of the very poor enabled the higher type to become more highly trained, resulting in a reaction leading to discoveries which would improve the condition of the poor. It was rather in the quiet working out of such a problem that they might hope for improvement.

Dr. SYKES, who proposed a vote of thanks to the author of the papers, said there was an undertone in Mr. Fleming's paper which showed that he felt that the attacks made on municipalities in the matter of housing had been from the point of view that they held a position financially superior to that held by the private individual, and Mr. Ambler in his paper laid great stress on the true fact that it was a difference of site values. There was a tendency in certain working-class dwellings to build piles of rooms one on top of another, and to arrange the sanitary and domestic conveniences as in an ordinary house. This was not desirable; in building such dwellings the aim should be to make homes for the working classes. It would be well to substitute the word homes for dwellings. It was important to make these dwellings as private as possible.

Mr. GUY NICHOLSON seconded the vote of thanks, which was supported by Messrs. W. J. H. LEVERTON and H. P. G. MAULE.

#### SOCIETY OF ANTIQUARIES OF SCOTLAND

AT the last meeting of the session of the Society of Antiquaries of Scotland the first communication read was notice of the excavation of a burial cairn at Greenhill, in the parish of Balmerino, Fife, by Mr. Alexander Hutcheson, F.S.A.Scot. The cairn is on the property of Mr. Henry Scrymgeour-Wedderburn, of Birkhill, and the operations were carried out at the expense of that gentleman. Several cists were laid bare, as well as several collections of cremated remains unenclosed by any cist, each collection, however, with one exception, being accompanied by an urn of food-vessel type. Seven urns in all were discovered, all however more or less broken. Several small and thin beads of bone of the same character as those found in the Horned Long Cairn at Yarrow, Caithness, were got in one of the collections of bones. A collection of about eighty jet beads of the "bugle" variety was found lying in the bare rock near the south-west side of the cairn. A skelb of flint, shaped something like a rud arrow-head, accompanied one of the collections of burned bones. The urns, with one exception, were of the common wide-mouthed variety. The exception was what I believed to be the smallest urn ever discovered. It measures less than one inch in height, and only a little more than an inch in diameter, and weighs less than half an ounce. It swells slightly below the lip, then curves inward to the base where it measures only three-quarters of an inch across, and is ornamented there with a series of notches, which are repeated round the lip with scores running diagonally between. It differs entirely in appearance and form from the class of urn known as "incense cups," which have hitherto held the field as the smallest specimens of fictile art known to Scottish archaeology, but the smallest of these has probably a dozen times the capacity of the Greenhill little urn. It was found placed alongside one of the larger urns in a pit dug in the subsoil, and covered with a weighty slab of whinstone. No other example has been recorded, and the discovery is therefore of much interest to antiquaries.

In the second paper Mr. M. M. Charleson, solicitor at Stromness, described a chambered cairn which he had excavated last summer in the parish of Firth, Orkney. The mound, which is situated on Kewing Hill, and is locally known as the Fairy Knowe, was found to be a circular chambered cairn, somewhat analogous to Maeshowe in the construction and arrangement of the chamber, which was over 11 feet in length and 5 feet in breadth, the walls beginning to converge to a beehive shaped roof at a height of about 4 feet, the highest portion now remaining being about 7 feet above the floor. Four oblong cells, also roofed on the beehive principle, branched off the four sides of the main chamber, their entrances being about 2 feet square and within a few inches of the floor, while within the cells are about 6 feet high, three of them being about 5 feet in length and the fourth 11 feet long. The entrance passage from the outside to the main chamber is 11 feet in length and little more than 2 feet square. No artificial objects were found, but in the chambers and passages were many bones, human and animal, the latter being remarkable for the large number of the skulls of dogs among them.

The third paper was by Dr. James T. Richardson and



James S. Richardson, Tighnamara, North Berwick, and gave an account of prehistoric remains and cist burials discovered there near Gullane. Flint implements and arrow-heads having been found in the sandhills between Gullane Ness and North Berwick, through the courtesy of Mr. Hamilton Ogilvy careful inspection was permitted, with the result that numerous prehistoric burials were found in various parts of that area, mostly enclosed in cists, and covered by small cairns of stones. One such cairn, about 6 feet in diameter and 1½ feet high, contained an oval cist, with rudely built sides and covered by a slab of large size. On the floor lay the remains of three adult skeletons. At its northern end, but quite outside it, beneath the sand, were four human skulls, and beneath them the skeletons to which they belonged. No artificial relics were found with these interments, but on the surface of the wind-swept hollows among the sandhills the authors had collected upwards of 100 flint implements, arrow-heads, knives and scrapers, many of them highly finished and in perfect preservation.

Mr. Alan Reid, F.S.A. Scot., contributed a description, with drawings, of the building known as the King's Cellar at Inverkilns. It is a long, narrow erection, built of undressed stones, two storeys in height, the upper storey being now reached by an outside stair of modern construction. The door windows are of last century date, having been made when the vault was converted into a school. This upper room is sidily floored on the arched roof of the cellar beneath, and has a pane pointed ceiling, the arch of which rises from a few feet above the floor to a height of about 18 feet. The lower storey had been entered by a couple of arched openings in the front, which are now built up, and the original access to the upper floor had been by an outside stair leading to a pointed doorway in the eastern gable, now also built up. At the north-east corner are the remains of a corbelled round tower, which contained a stair, and was evidently higher than the wall. Over the modern door is inserted a slab with a finely sculptured shield of arms and the date 1581, but it does not belong to the building. The arms are quartered, Pitcairne and Murray, and are probably those of Commandator Robert Pitcairne and his wife, Eufame Murray, of Tullibardine.

Mr. Angus Grant, Drumnadrochit, gave notices of two ancient sepulchral slabs, with Calvary crosses of the early Celtic period, at Kilianan and Kilmore, and a fine sepulchral slab, carved in relief, also at Kilmore, Glenurquhart, Inverness-shire. A notice of the hoard of coins of the Edwards recently discovered in ploughing at Kinghornie, near Bervie, was given by Mr. George Macdonald, curator of coins, and a notice of the coins and their contents at Cairnhill and Doune by Dr. Joseph Alston.

## ARCHITECTS AND CHURCH BUILDING.

THE annual court of the Incorporated Church Building Society was held on the 15th inst. under the presidency of the Bishop of London.

The Bishop of Southwell, in moving the adoption of the report, said it was a great part of the work of the Society to improve the nature of the buildings which were erected, so that they might really be churches, and not be buildings which rather hindered than promoted the elevation of spirit of the people who came to worship in them. He felt convinced that the people who lived for more than half a century grew in reverence even with regard to their personal treatment of church buildings. He did not think that the Society could yet do without some architectural advisers. The choice of an architect for the building of a church was sometimes decided by mixed motives. He observed that the architects themselves had been starting the notion that there ought to be a college of architects for the elevation of architecture, the queen of arts. There ought to be some kind of collective court of judgment which would make known, and in that way become a feature of the nation. The conventional pictures of John Bull, which we accepted and naturally as representing ourselves, were very much those which represented material self-satisfaction, and were governed with a general sense that every man ought to do his duty, rather than they were those which represented any kind of spiritual or intellectual refinement or care for things which might seem somewhat sublimated. He thought that English people needed a great deal of instruction with regard to church architecture. In such church architecture there ought to be, not simply scientific and engineering truth, but artistic beauty. English people in general very much required to be taught that fact. In all the churches which he had had the pleasure of inspecting and opening, that which had pleased him most on the ground of artistic skill was one which Mr. Caröe had built for a comparatively very small price, and he had endeavoured to put that church before his people as a model which they ought to adopt and follow. He would recommend that this Society should adopt the much-abused expedient of

advertising a little more. He did not advocate a "black list," but he thought that the Society ought to advertise the prominent merits of those artists who could really do the work which was wanted.

Mr. W. D. Caröe, M.A., F.S.A., seconded the motion. He felt that thanks were due to the compilers of the report for the lucidity with which the affairs of the Society were stated in it. He had been asked to say a few words from an architect's point of view. He had had great pleasure in listening to the admirable remarks which the Bishop of Southwell had made on the architectural side of the question. They had had a year and a half's work of the Society's new instructions to architects, and an opportunity had been afforded of gauging their efficiency and usefulness. The condition of church building and architectural practice had largely changed with the recent rapid growth of provincial and country towns, but when the old rules were framed church work was mainly confined to a limited number of architects very much of one school. The number of architects had multiplied out of all proportion to the increase of church building, and it followed that a large quantity of church work was now done by men who, from the very nature of the case, had had comparatively little practice in it, and who had had very little training to fit them for that class of work. Circumstances had conducted to a low average level in the work produced. There ought to be something of a monumental character in the architecture of a building devoted to the service of God, and the gift of monumental creation belonged only to the few. The new rules of the Society, or new instructions to architects, had been found to be required in consequence of the change which had arisen in architectural practice through provincial towns desiring to employ their local architects. But no rules would improve architectural taste. The improvement must come from the clergy and the people. The rules were not intended to stereotype architecture and to induce architects to constantly repeat themselves, without reference to locality or fitness. Fine architecture was not necessarily expensive. Elaboration was expensive, but elaboration was not an essential of fine architecture. No work was cheap which needed constant repair. The cost per head of churches was a misleading calculation. If a church was built to seat 700 persons, it could, in his opinion, be built for 10*l.* a sitting if a western gallery formed part of the structure. Churches with an appreciably smaller number of sittings than 700 could not be built at 10*l.* a sitting. With regard to the preservation of ancient buildings, he hoped that the clergy would give the matter fuller attention as a scientific study. The new rules of the Society contained some special reference to the subject. The Bishop of Rochester had made an attempt to improve the standard of taste in church fittings. He (Mr. Caröe) hoped that the improvement might extend to the taste displayed in church windows which were added to churches after they had passed beyond the control of the Society.

## SHAFTESBURY ABBEY.

ON Saturday Lord Stalbridge presided at a meeting at Shaftesbury to consider excavations it is proposed to carry out at Shaftesbury Abbey. It was stated that in July 1861 a partial excavation of the site was made by Mr. Batten, agent to the Marquis of Winchester. When the foundations of the choir and the apsidal chapels on either side, as well as those of the crypt, were brought to light many objects of interest were found, including a gold hoop ring set with emeralds, a chalice, and a number of heraldic floor tiles and portions of sculptured monuments. A small portion of the abbey, barely a quarter, was disclosed, and it is now proposed to carry out a thorough excavation of the whole site. The Corporation of Shaftesbury have contributed 50*l.* towards the cost of the work. The work will be conducted under the supervision of Mr. Doran Webb, F.S.A., president of the Wilts Archaeological Society. Amongst those who have consented to act on the committee are Lord Stalbridge (chairman), Viscount Dillon, president of the Society of Antiquaries; Mr. H. P. Blackmore, president of the Salisbury and South Wilts Museum; Mr. C. H. Read, keeper of British and Mediæval Antiquities, British Museum; Mr. S. Shaw Stewart, the mayor of Shaftesbury; Mr. A. T. Carpenter, Mr. H. C. Forrester (treasurer) and Mr. J. Bennett-Stanford (hon. secretary). It was decided to begin the excavation on June 9, when Lord Stalbridge will turn the first sod.

A Concert is to be held at Wyndham's Theatre on May 30, under the organisation of Lady Londesborough, to assist the fund which is being raised to pay off the debt on the fine Norman church at Thwing.



## NOTES AND COMMENTS.

It is proposed to hold an exhibition of Early Flemish art in Bruges from June to September of this year. There is an English committee, with Lord BALCARRES, M.P., as chairman, and already promises of loans of forty-five pictures have been obtained. Among the contributors are the Corporations of Liverpool and Glasgow, Lord NORTHBROOK, Lady WANTAGE, Sir FREDERICK COOK and Mr. GEORGE SALTING. It is needless to say the public galleries of Belgium, churches and convents, will furnish works. It has also been arranged to obtain pictures from The Hague and Amsterdam, and without doubt from other Continental cities. The paintings will be placed in the Government buildings on the Grande Place of Bruges, while goldsmiths' work, ivories, sculpture, manuscripts, miniatures, lace, &c., will be shown in the Hôtel Grunthuse. It is well known that HUBERT and JOHN VAN EYCK resided in Bruges as well as in Ghent, and they are reputed to have been the inventors or improvers of oil-painting. Their principal work, *The Adoration of the Lamb*, which dates from 1432, is not likely to be in the exhibition, but it is no great distance to Ghent, where the two central divisions of the picture are found. The reliquary of St. URSULA, painted in gratitude by HANS MEMLINE, and which is a perennial source of income to St. John's Hospital, Bruges, is also likely to be withheld, but nobody will hesitate to pay a few pence to see so renowned a gem. The English National Gallery contains several examples of early Flemish painting, but they are not as much appreciated as they merit.

A COUPLE of months since an American General named SOOYSMITH, in an after-dinner oration, endeavoured to startle the other guests by becoming prophetic about the dangers of steel in the construction of buildings. The words served journalists as a text for a few alarmist articles, but investors were indifferent, and the erection of lofty buildings and steel structures continues to be carried on without cessation. The steel structure is a necessity in American cities, although it may not be as yet required in Europe. The brave General could only speculate, but the architects and engineers who have been connected with that class of building from its initiation have satisfactory evidence that the danger does not call for special attention. Every kind of material employed in building is liable to decay owing mainly to the agency of the atmosphere. But when parts of a building are withdrawn from that action, and are, in fact, carefully concealed, their decay becomes diminished instead of being increased. Inquiries have been made of several architects, and they have related their experience. The representative of one firm said:—"A short time ago we made an examination of the steelwork in the Tacoma and Pontiac buildings, erected a number of years ago, for the purpose of investigating this point. We found the steel absolutely unimpaired, and as this is in line with the result of similar investigations made by others, I think there is every reason for believing that corrosion is so distant a menace as to be undeserving of consideration." Another said:—"We have taken out and examined steel that has been in a building twenty-four years, and we found it as good as new and put it back again. So far as our experience has gone we have failed to discover that corrosion is a menace to the modern steel-constructed building."

In their report for 1901 the committee of the Incorporated Church Building Society mention that the committee of honorary consulting architects, to whom the Society is so greatly indebted for examining and reporting upon the plans submitted to them at their monthly meetings, have lost during the past year through death their chairman, Mr. JAMES BROOKS, who for so many years was such a staunch and valued member of their body. A special resolution of sympathy has been sent to his relatives, and the vacancy on this committee thus created has been filled by the election of Mr. TEMPLE MOORE, whilst Mr. J. P. SEDDON, whose long and valuable services the Society gratefully recognise, has been appointed chairman of this committee. The members are at present Messrs. BODLEY, R.A., CARÖE, FAWCETT, FERGUSON, HODGSON FOWLER, INGELOW, MICKLETHWAITE, MILEHAM, MOORE, PRYNNE, OLDRID

SCOTT, SEDDON, NORMAN SHAW, R.A., and ASTON WEBB, R.A. During the past year the sum of 5,242*l.* has been granted. Since the Society was established in 1818 it has aided the building of churches to the extent of 895,68*l.* It has therefore been instrumental in co-operating in the erection of no less than 2,365 additional new churches, and in assisting in rebuilding, enlarging, or otherwise improving the accommodation in 6,235 other churches or consecrated chapels of ease. By these means more than two million additional seats have been secured, by far the greater part of which are for the free use of the parishioners according to law. The additional expenditure on the part of the public has amounted to 15,281,887*l.*

In his last report Lord CROMER, when describing the work done in the Egyptian Archaeological Department, said that "at Karnak the whole of the fallen columns have been removed and the foundations levelled and cleared. An experiment on a small scale is to be tried in the course of this year by rebuilding some of these columns upon new and better foundation." His lordship is prone to minimise the work he has inspired in Egypt. The labour that was needed to bring some order into the chaos which was the consequence of the collapse of eleven of the great columns in October, 1899, cannot be realised from the few words to be found in the report. It was decided to collect all the fragments as if they were precious, and to deposit them temporarily in an improvised hall. One of the columns consisted of thirteen drums besides the capital; the total weight being over 140 tons. There were, however, nineteen capitals and nearly 500 drums which had to be gathered. An attempt was made to place the drums in order as well as could be ascertained, similar to what was done in one of the Pompeian temples. The architraves were so shattered it was impossible to dispose of them in an orderly way, but all has been accomplished which an anxious desire for preservation could suggest. The temple and the repository have been enclosed, and a visitor is no longer at the mercy of beggars and vagrants. We cannot see the ruins as they appeared prior to 1899, but owing to the care taken by M. MASPERO and his officials, what has survived will be less liable to accidents than formerly.

## ILLUSTRATIONS.

PENRYN CASTLE, NORTH WALES.

THE WHITE HOUSE, MORETON-IN-MARSH: GARDEN FRONT.  
ENTRANCE FRONT.

ENTRANCE, ROYAL COURTS OF JUSTICE, STRAND, W.C.

DESIGN FOR QUEEN VICTORIA MEMORIAL.

BENEDICTINE MONASTERY, FARNBOROUGH, HANTS.

THESE buildings are to be erected on the south side of the priory church of St. Michael, which contains the tombs of His Imperial Majesty NAPOLEON III. and His Imperial Highness the PRINCE IMPERIAL. The building forms a quadrangle about 180 feet in length each way. On the south side of the cloister the ground floor is occupied by the refectory offices and principal staircase. The west front contains the entrance hall, guest parlours, &c., and the north side the library, &c. The two upper floors contain the cells for the monks. Between this building and the church the chapter-room and bell tower will be erected. The style is an adaptation of Early Gothic architecture, chiefly suggested by the magnificent abbey erected by Dom MELLET, O.S.B., at Solesmes, one of the most remarkable and original buildings erected in modern times. Externally it will be faced with Kentish rag stone with capitals and bases of columns in Portland stone, the columns themselves being mostly black Connemara marble.

The section now in course of erection includes the south-west tower, principal staircase, entrance hall and parlours, with cells in the upper storeys. The contract was 4,252*l.*, and the contractors Messrs. G. GODSON & SONS. Mr. BENEDICT WILLIAMSON is the architect.

DESIGN FOR PUBLIC BATHS AND LIBRARY, YORK ROAD, LEEDS.



# PEOPLE'S BATHS.\*

title of the subject of this paper is one that is seldom, ever, heard of in connection with bathing establishments in this country. Here our public bathing establishments are public baths. Before America, so far as the United States was concerned, commenced to build public baths, men were sent to inspect the baths throughout bathing. After much time and money had been expended in knowledge, the New York Association for Improving the Condition of the Poor decided to build a bath on the spray shower system. This they did; the baths were erected in Market Place, and were named the People's Baths. This appears to be the first occasion on which the "People's Baths" was used. It is now generally known to public baths which are provided with the spray and bath, but having no swimming-bath.

The subject is one worthy of the consideration of architects. We all know that public bodies representing the health authorities throughout the kingdom are at present keenly interested in anything which is conducive to the health and of the people.

The spread of education is being felt; what sufficed for our fathers will not do for us; we want better food, better clothes, better houses; we want cleanly bodies, and if we have no means of getting the latter in our homes, we want public institutions where we can bathe. A few years ago only large cities and towns had their public baths, now we find small towns with public bathing establishments. In the course of time every parish council will require and must have its public bathing establishment.

It cannot be expected that a small parish can afford to have public baths at a cost of 10,000*l.* or 20,000*l.*—if they did where would the utility be? What they want is an installation of public baths costing a sum of money so small that places of bathing institutions within the reach of all such bodies. Again, in cities and towns already provided with bathing establishments, the judicious introduction of people's baths will supplement the existing baths and be a means of taking the bath to the people. It is more than probable that the next ten years will see a very rapid development of the public baths throughout the kingdom. The subject is therefore one of consideration.

When I became a member of the baths committee of the Liverpool Corporation I have devoted considerable time to the subject we are about to deal with. I am of opinion that the most suitable bath for the purpose of cleansing the working classes is the spray and shower bath, and I am pleased to say that I have, together with the other members of the committee, been instrumental in introducing this type of bath to the city of Liverpool.

It is not the intention within the limits of this paper to enter into the question of design, every architect is entitled to his own opinion on such a matter, but to deal with the principles and details of construction, together with the engineering of people's baths.

Before entering into the foregoing questions it may be well to go back to the history and development of the shower and spray bath. It appears that it originated in Germany. The first establishment to attract attention was erected in the barracks of the Kaiser Franz grenadier regiment of the guard in Berlin, in 1878, at the instance of Dr. Munich, a military surgeon. The bath was for the use of officers and men. It cost 100*l.*, and was capable of bathing 300 men per hour. The bath was planned by Mr. David Grove, sanitary engineer, Berlin.

In the year 1883, at the Exposition of Hygiene in Berlin, Dr. Lassar exhibited a people's bath house. It was constructed of corrugated iron without any architectural pretensions. It measured 36 feet 1 inch long by 16 feet 5 inches wide and cost 300*l.* It contained ten shower-bath cabins, each having a dressing-room; the usual ticket offices, separate ticket office for males and females, and administrative department. During the three months that the exposition lasted no less than 100,000 persons made use of this bath. After the exhibition it was purchased by a manufacturer for the use of his workpeople. The Berlin Society for People's Baths exhibited at the Berlin International Exhibition of 1896 a model of an establishment of people's baths, plans of which may be seen on the wall. The establishment provided accommodation for ten persons, having two baths for each sex. This model was awarded a prize of 100 marks (50*l.*) for the best plan or model of a workmen's

people's baths of the foregoing (Lassar-Grove) type have been constructed in many German cities. In Austria, Vienna was the first city to establish these baths; the first was erected in 1877 and was purely experimental. So great was the success of this bath that additional baths were built, and to-day Vienna

has a number of people's baths. In America people's baths have been erected in the following cities:—New York, Yonkers, Buffalo, Dunkirk, Boston, Brooklyn (Mass.), Philadelphia, Chicago, Newark and many other cities.

In England, however, no complete installation of people's baths has to my knowledge been erected, although several instances occur where the shower and spray bath has been introduced into existing and new public baths, viz. Norwich, Cheltenham, Liverpool. Some years ago Manchester introduced what they termed "tub baths" into one of their establishments which was situated in one of the poorest districts. These baths consisted of a shallow circular tub having an internal diameter of 2 feet 5½ inches and a depth of 9½ inches; they were raised above the floor and were provided with hot water, and included a warm shower bath. Besides these tub baths a range of lavatory basins were fixed. After twelve months' trial it was found that the tub baths and lavatories were failures. It appears that the district in which these baths were situated was chiefly populated by Jews; this would to some extent account for the non-success of the baths. The general experience of the bathing of Jews is that they more than any other sect prefer the use of the slipper bath, and with the water at a much higher temperature than is required by ordinary bathers; they (to use the words of the general superintendent of the Manchester baths) prefer to have a soak as well as a wash, and refused to use the tub bath on any account.

## Norwich.

The Norwich baths when erected were called Stand-up Baths; details of one of the cubicles are shown on the wall. The bath comprises a cold shower, a lavatory basin with hot and cold water, and a footbath sunk in the floor. The arrangement of the supply to the foot-bath is rather novel, the water being supplied through the lavatory basin; that is, the lavatory basin waste is connected to the footbath. The idea is not at all a bad one; a set of valves and one waste pipe serve the two purposes. The waste plug to the footbath is actuated by means of a treadle lever worked by the foot. These baths have been very successful.

## Cheltenham.

The borough of Cheltenham added six spray baths to their Alstone Baths in 1897; plans of the same are shown on the wall. They were designed by the borough surveyor, Mr. Joseph Hall. The dressing-rooms and spray-rooms are formed in cubicles, each bath-room has two dressing-rooms, the spray-room cubicle has the top covered with glass, having a ventilating sash in it, which can be opened or closed as the bather may desire. The idea is good; the glass roof prevents draughts on the bather; it also raises the temperature of the spray-room. The footbaths are raised above the floor of the room to the level of the underside of the seat, a seat being formed on the back and two ends of the bath; the seat slopes to the bath. The bath is an oblong bath, 2 feet by 1 foot 6 inches, enamelled fireclay. The spray bath consists of four fine rose nozzles, two at the back and one at each side, fixed at such a height that the water strikes the bather no higher than the shoulder whilst in a sitting position; the bather controls the temperature of the water by means of screw-down valves; it appeared that there was some danger of scalding taking place. The ventilation of the bath is on the Plenum system. These baths have proved a huge success.

## Bristol Baths.

The drawings exhibited on the walls include the drawings of the spray baths at present being erected for the Corporation of Bristol. These baths are constructed on Kane's system. The chief feature of this system is that the dressing-rooms and the bath-rooms are kept at different temperatures. Mr. Kane states that "the absence of a modern and efficient system of heating and ventilating our cleansing baths means the absence of warmth and comfort," and if the habit of bathing is to be encouraged, especially among the poorer class where it is more required, then the better construction of bath compartments is a factor which cannot be neglected in future schemes. The plans of Kane's baths illustrate a method of constructing bath compartments so that the bath-room is separated from the dressing-room. Mr. Kane also states that he is altogether in favour of suitably designed spray baths, but believes it to be absolutely essential that the bathing compartment, both as a means of more thoroughly cleansing the body and as a preventive of chills to the bather, ought to be maintained at 100° Fahrenheit, and the dressing-room 60° Fahrenheit. On examining the drawings of these spray baths for Bristol, one cannot help admiring the Bristol Corporation for getting what they consider to be the best, irrespective of the cost. It will be observed that the floor space per bath together with the dressing-room and corridors is 70 feet super, whilst the cubical contents per bath is nearly 1,700 feet. It is a question whether the extra cost entailed in erecting these baths will be warranted by the additional number of persons who may make use of them, and it will be exceedingly interesting to see the result.

\*A paper read before the Society of Architects on May 22 by Walter W. Thomas, vice-president S.A., deputy-chairman of the Liverpool Corporation baths committee.



*Liverpool.*

The Corporation of Liverpool, in the year 1892, constructed several shower and spray baths at their Charters Street refuse destructor for the use of the workmen employed at the destructor. These baths have been very much appreciated by the men, and it goes to show that at works of this description, *i.e.* any works where the nature of the employment is of a dirty character, baths ought to be provided by the proprietor of the works to enable the workers to leave the premises in a condition fit to associate with their families. In 1900 the Corporation fitted up at their Margaret Street baths three spray and shower baths in order to carry out experiments before proceeding to construct an establishment of people's baths. The experiments were continued for over twelve months, and the experience gained has been utilised in the designing of their Beacon Street People's Baths.

*Beacon Street Baths.*

The Corporation have just erected in one of the poorest districts in the city a complete installation of people's baths. The district in which these baths have been erected is in close proximity to the docks, and the establishment it is hoped will be largely used by men who are employed at the docks, and by the families of those who reside in the vicinity. The establishment stands on an area of 450 square yards and cost 3,500*l.* It comprises seventeen shower and spray baths and four ordinary slipper baths. The baths are all situate on the ground floor; there are separate entrances for males and females, also waiting-rooms, lavatories and conveniences. The baths are arranged in sections so that they may be used for males and females according to the demands of either sex. A caretaker's house and laundry is also provided, together with the engineering department.

From the drawings exhibited on the wall it will be seen that the two entrances are at the extreme sides of the building, whilst the pay office and attendants' hall is situate in the centre of the building. Doors lead from the pay office and attendants' hall into both waiting-rooms, and also into the caretaker's living-room and into the laundry. It may appear to many of you that the laundry ought not to be placed in the position it occupies, and that it ought to have been situate outside the baths building, or at least as far away from its present position as possible. The reason of it being where it is is of considerable consequence in the working of the establishment. It is the intention that the staff of the establishment shall consist of a caretaker and his wife, with the assistance of a youth. These three persons will do all the work in connection with the establishment, from the issuing of tickets, attending bathers, stoking the boiler, to the washing of towels, &c. It will thus be seen that it was absolutely necessary that the pay office should be under observation from every room in the house, and also from the laundry, so that, however they might happen to be occupied, the attendants would command the pay office and baths.

The first floor comprises two bedrooms, cold-water tank-room and store-room. In the basement are the stokehole and steam boiler, and a heating cellar, in which is placed the apparatus for heating the water, &c.

The baths halls are top-lighted, and are heated by steam radiators and steam pipes in the roof. The baths are formed in cubicles; the division walls of the bath and dressing-room are built in Shepwood enamelled bricks, with rounded angles and semicircular ends; there are no door frames or doors, so there is nothing to decay. It is the intention, instead of having doors, to provide rubber curtains between the bath and dressing-room, and some washable material between the dressing-room and corridor. The dressing-rooms to shower and spray baths average from 3 feet 9 inches by 3 feet 3 inches to 4 feet 10 inches by 3 feet 9 inches, and the bath-rooms 3 feet 9 inches by 3 feet 3 inches to 3 feet 9 inches by 4 feet. Each dressing-room is provided with hat and coat hooks (these are made of galvanised cast-iron, and are built in the brickwork), and wood seat; the floor of the dressing-room is granolithic, and is sloped to the bath-room, so that it drains into the footbath; it is covered by a movable wood grating similar to those found on board ship. The spray and shower bath-rooms are provided with an enamelled footbath of special design. It is designed so that the minimum quantity of water will suffice to enable the bather to wash his feet therein; it is fixed in the floor, and the top edge is slightly below the level of the floor; it is fitted with plug and chain and overflow. The spray and shower bath are each fitted with warm and cold water; the spray mantel is fixed on the wall of the bath; the shower bath is simply a ring shower; the shower is in the form of a ring, and not of a cullender; thus the water falls in a gentle shower on to the shoulders of the bather, whilst the top of his head and his face are perfectly free from water, thereby getting over the trouble of water striking the head, thus obviating the consequences of shock to the system, and doing away with the difficulty in breathing generally experienced whilst under an ordinary shower bath.

The arrangement for the manipulation of the hot water is such that it deserves special mention, special and mixers having been designed for the purpose. The arrangement is shown on the photographs exhibited on the walls, and is such that when it is once set by the attendant, the bather can only obtain the warm water of the temperature desired and no warmer, thus avoiding any possible chance of being scalded, whilst he can gradually cool it down until cold. The bather controls the valves by means of pulls in number, viz. warm and cold to both the spray and shower bath, and in order that he may have his hands free to pull himself with he can fix the pulls down by means of hooks on the wall of the bath-room. The soap dish is of enamelled clay, and is built in the wall.

The slipper bath-rooms are similar to the ordinary bath-rooms found in public baths, and therefore require no explanation other than why they are provided. The reason for their provision is twofold—first, that as it is impossible for a person to wash a child in a shower or spray bath, some provision ought to be made to enable the parents to wash their children in an establishment of this kind, *i.e.* this reflects on children not old enough to bathe in our free open-air baths, which Liverpool was the first to introduce. And again, some baths are taken on the advice of medical men as a means of curing certain ailments, therefore it was deemed necessary to provide slipper baths to a small extent should be included in the scheme.

*Drying Clothing.*

Arrangements are also made for the drying of bathers' clothing during the time occupied in bathing. Thus, on any day, any person who has been out in the rain may, after bathing, have his clothing dried and thereby be able to return to his home clean in body and with dry clothing. This is an important feature, and one that ought not to be lost sight of in designing a bath of this class.

*Engineering.*

The engineering of this establishment is very simple, consisting of one Cornish boiler, 8 feet by 4 feet, to provide steam for heating water, heating atmosphere and laundry requirements, and drying bathers' clothing. One Royal calorifier and storage cylinder combined, capable of heating 1,000 gallons of water per hour, from 32 to 180 degs. Fahr. has a storage capacity of 180 gallons. The condensed steam from the calorifier and heating pipes and radiators is pumped back by means of a small donkey pump into the steam boiler. A cold-water storage tank of 1,500 gallons capacity is provided.

*Materials.*

The building is constructed in brick and stone, the walls and halls are faced with white enamelled bricks to the height of 6 feet. The divisions are built with enamelled bricks 2½ inches thick (Shepwood), the floors are granolithic, and waste water from the baths is carried away by what is almost an open channel to the outside of the building, where it passes through an interceptor into a manhole which is connected with the sewer by means of a syphon. The whole of the piping for water service is of lead, and the fittings are of copper and brass.

*Planning of People's Baths.*

The planning of people's baths depends chiefly on the shape of the site available, but as the hall and rooms required may be of any form, no unsurmountable difficulties will be experienced with any ordinary site; care, however, ought to be taken to have the arrangements as symmetrical as possible. It is advisable that there should be two entrances, one for either sex, leading into a waiting hall, from which access to the bath is obtained. The bath hall ought to be in sections or blocks so arranged that they may be used for males or females as required. Should there be ample room at disposal the size of the dressing-rooms would not be too large if made 4 feet 4 inches by 3 feet 6 inches, and the bath-rooms could be the same size; the minimum size of either room should not be less than 3 feet 6 inches by 3 feet 3 inches; the corridors may be from 4 feet to 6 feet wide, 5 feet is a fair good width if the corridor is not over 30 feet long. The plan of the Liverpool People's Baths may be taken as a fair example when two entrances are provided.

The engineering requirements are not extensive and may be of several descriptions. The crux of the question is to obtain an adequate supply of hot and cold water. The hot water may be obtained by heating cold water with steam in a calorifier from a steam boiler, or by the household or greenhouse circulating system; if either of the latter systems are adopted, provision must be made in the laundry for boiling towels.

*Materials.*

The question of deciding what materials to use in the construction of baths is undoubtedly one that gives architects and engineers considerable food for thought, not so much from



of knowledge of suitable materials, but from the trouble-  
 question of cost.

Public bodies require buildings good and substantial, yet  
 their architect or engineer suggests that for a public bath  
 ought to take the place of wood, and enamelled bricks or  
 ought to take the place of plaster or ordinary brick-  
 and that all pipes ought to be either copper or lead, and  
 then they begin to think their adviser is extravagant or  
 ambitious. It is not so, however; the best and most  
 materials are the cheapest in the end. Buildings  
 to be constructed so that the annual charge for the  
 nance of the fabric is reduced to the minimum, at the  
 me the materials should be such that they give to the  
 ment an air of cleanliness and comfort.

A public building should be erected that will not last at  
 irty years (the term for which a loan is granted), without  
 ssary cost to the ratepayers.

### *Utility of the Spray and Shower Bath as a Bath for the People.*

1. The best medium for cleansing the body.

2. Provides for the comfort of the bather.

3. The economics of the system.

With regard to the first point, undoubtedly the best means  
 oughly cleansing the body is by means of a Turkish  
 not only is the surface of the skin cleansed but the  
 of the pores of the skin are cleansed and the body is left  
 in condition much to be desired. In considering the best  
 for our purpose we must consider the class of people we  
 cater for and the nature of their employment. When  
 consider this we can only arrive at one conclusion, and that  
 we have to cater for a class who have to earn their  
 money the sweat of their brow; only the very small minority  
 of elementary lives, consequently the question of cleansing the  
 of the skin as cleansed by the Turkish bath may be left  
 the question; perspiration during their labours keeps the  
 of their skin in order. What we have to do therefore  
 to cleanse the surface of the skin. That being so the  
 ay and shower bath is the best medium, viz.:—The  
 re from the ring of a shower bath falls in a gentle  
 ur shower on the shoulders of the bather, the  
 he commences to wash at his head and washes down his  
 his finishing the washing at his feet, and whilst this is pro-  
 ing the soiled water is carried away in the drain. Having  
 his head and down to his chest he may, if he so wishes,  
 the remainder of his body with the warm water from the  
 but in either case he terminates his wash with a clean  
 ly. So far so good, but now comes the special advantage of  
 ay and shower. Up to the finish of the cleansing opera-  
 nly warm water has been used. The bather now takes  
 the two handles controlling the warm and cold water;  
 gradually opens the cold and closes the warm supplies until  
 d is full open and the warm closed, thus securing for  
 the most invigorating tonic that it is possible to obtain,  
 ter the pores of the skin which have been opened by the  
 water and the washing are closed he is in a fit and  
 p condition to have his rub down and put on his clothing.  
 The foregoing is sufficient to prove that the shower and  
 ay baths are an excellent medium for cleansing. Now it  
 perhaps well to show why the ordinary slipper bath is  
 al to the spray and shower. Imagine a man who has  
 employed in some dirty occupation and whose body has  
 the extent owing to perspiration been rendered filthy by  
 at with his work; this man takes a hot slipper bath, what  
 result? He gets into the bath, soaks himself, washes  
 off his body, which in consequence thereof becomes  
 the liquid he is bathing in; it is an impossibility for  
 at an to leave the bath clean. He has simply fouled the  
 and bathed in it.

The comfort of the bather is obtained by the following,  
 cleanliness and cheerfulness of the bathing establishment,  
 of light and air, pure atmosphere kept at a proper  
 rature or temperatures, privacy, proper waiting-rooms,  
 ng-rooms and bath-rooms.

The bather completing his bath with a cold shower and spray  
 at take cold after bathing, and this bath it is proposed to  
 the working-men of Liverpool and their families at the  
 cost of one penny.

### *The Economy of the Shower and Spray Bath.*

In comparison to the slipper bath the shower and spray  
 by far the most economical. Given both a dressing-  
 and bath-room, it occupies only half the floor space of an  
 ry slipper bath-room, therefore the building cost per spray  
 nder bath is considerably less than per ordinary slipper  
 The cost of maintenance is also very much reduced.  
 ordinary slipper bath consumes on an average 50 to 60  
 of water, not including the shower where one is  
 ad; the shower and spray bath, even when most lavishly  
 does not consume more than 10 gallons of water. In  
 situations the quantity of water consumed is of vital

importance, particularly when a dry season like last year is  
 experienced, but even to those places that are blessed with an  
 abundant supply of water the quantity of water used is of great  
 importance, inasmuch as the cost of fuel for heating must be  
 five times greater for ordinary slipper baths than it is for  
 shower and spray baths. The number of attendants required  
 to work the baths is in favour of the shower and spray baths,  
 as there are no baths to be filled, and what is of the greatest  
 importance there is not the slightest possibility of drowning  
 taking place, certainly not accidentally, and even if a bather  
 wished to commit such a rash act as suicide he would have the  
 greatest difficulty in accomplishing it.

One shower and spray bath will do the work of at least two  
 slipper baths, the time occupied in taking the shower and spray  
 bath being half the time occupied in taking a slipper bath; in  
 most cases it will be found that the proportion will work out at  
 three to one.

There are many more points connected with people's baths  
 that I could introduce into this paper did time permit. I have,  
 however, already trespassed too long upon your time and  
 patience, inasmuch as the subject might have been much better  
 handled by a more experienced man than myself. If, how-  
 ever, what I have put before you to-night helps any one of you or  
 induces you to take an interest in and make a study of how  
 best to design baths for the people, my object will be attained.

If the baths now built become popular with the working  
 classes, I hope before long the Corporation of Liverpool will  
 erect others at distances of about  $\frac{1}{4}$  to  $\frac{1}{2}$  a mile along the entire  
 system of their 7 miles of docks, the entire cost of which  
 would not exceed the cost of one of their existing large  
 public baths, which averages from 20,000*l.* to 30,000*l.*

## ARCHITECTURE IN SYDNEY.

AT the opening meeting of the present session of the  
 Institute of Architects, Sydney, an address was delivered  
 by the newly-elected president, Mr. G. Allen Mansfield. He  
 said:—

I claim that it is both our privilege and our right to exercise  
 an influence on some of those conditions which go to the build-  
 ing up of a nation. If this be so, it brings us at once to a  
 serious consideration of the relations between the architect and  
 the State. The history of every nation past and present affords  
 abundant evidence that architecture plays a prominent part in  
 its civilisation and in the development of its taste. Its build-  
 ings form a record of its culture or its barbarism. They are a  
 measure by which men can judge of its place in the scale of  
 nations, a vivid expression of the intelligence of its people. If  
 it be the duty of the rulers of a State to foster all that con-  
 tributes to the enlightenment of a community and to the exalt-  
 ing of its standard of civilisation, it surely follows that the  
 encouragement of the noble art of architecture stands in the  
 foremost rank of the obligations that a Government owes to  
 the people, to the land, to itself and to history. To fail in that  
 duty is an offence against the country. To assume of set  
 purpose an attitude unmistakably hostile to the development  
 of our art by other than strictly departmental routine falls little  
 short of a crime. Yet such is the attitude assumed by the  
 Government of New South Wales to-day. Let those who are  
 responsible for it say why; let them dare to avow to the world  
 what secret springs of self-interest prompt them to so manifest  
 a violation of one of the clearest obligations they owe to the  
 country at large.

Of all the buildings that give character to a State, those  
 which we are in the habit of calling "public buildings" rank first  
 in prominence and importance. Is it then fair, is it reasonable  
 that the creation of these landmarks of our State should be  
 restricted to the efforts of one man, no matter how able that  
 man may be? Is it just that to one mind, aided doubtless by  
 able officers of his department, there should be entrusted that  
 work which should be truly representative of the people as a  
 whole? In a State, one-man art is a calamity. In a Common-  
 wealth it would be a national disaster. Not so were the glories  
 of the great cities of the world evolved—the monuments of our art  
 ancient and modern which reflect the genius of a people. Not  
 from the brain of any one or any ten men can a national senti-  
 ment be crystallised. A régime so discouraging to ourselves,  
 so unfair to our fellow-countrymen, who are taxed to pay for  
 our great works, should not be tolerated, it should be swept  
 away by the force of public opinion. It is not for us to go cap  
 in hand and plead for some kind consideration at the hands of  
 a Government. We claim as a right a share in the great work  
 of writing in brick and stone and marble some records of the  
 art of our time.

We are passing through a period of lavish expenditure on  
 public works, such as must for all time leave its mark upon the  
 State, and in the near future sums will be expended so vast as  
 to demand the thoughtful and serious consideration of those  
 who are charged with the expenditure as well as those from



whose pockets the money will come. The more it behoves us to make every effort to arouse the public mind to the enormity of the present narrow and selfish policy that precludes all possibility of expansion and crushes all ambition in the breasts of the young aspirants to future fame in their profession. I have on previous occasions stated publicly that the pernicious system here adopted by the Government is one of its own devising, its own brilliant inspiration. It has no parallel in any other civilised country on the globe. On the occasion of the visit of the representatives of our Institute to the Minister for Works, while the principle for which I contend was not seriously disputed, it was stated that in the practical application of that principle difficulties arose which rendered its adoption troublesome if not altogether undesirable. I affirm that such difficulties are altogether chimerical, and that in the hands of competent and impartial advisers they would disappear. Reviewing the attitude of our State Government to its private architects, the question presents itself with surpassing interest, whether in the creation of the capital city of our Commonwealth the Federal Government will be influenced by the same narrow and illiberal views that actuate the Government of New South Wales. Of this I have but little fear. So far as the practice in other States is known to me, a different spirit prevails, and it is more than probable that means will be found to make that city a worthy representation of Australian art, a city reflective of national talent rather than of departmental industry. It nevertheless behoves us and our professional brethren of the other States, to watch closely the development of the arrangements under which this great national movement will be set going.

That a controlling power is necessary to secure harmony and to mould the enterprise into a fitting shape must be admitted as an undoubted necessity. Herein, however, the danger lies. A controlling body once established is, as a rule, prone to arrogate to itself too extensive powers. To exercise the difficult and delicate task of judicious guidance of the whole vast scheme there are needed men of broad and comprehensive minds, of patriotic spirit and far-seeing wisdom, and free from any taint of self-seeking. Can it be doubted that the nation can produce the men? To endeavour to find them is the duty of the Federal Government. The constitution of such an organising power necessarily involves the representation of various professions, it demands the combined knowledge and experience of several forms of art and science, with some assistance perhaps from the purely "business man." Architecture, the fine arts, engineering, sanitation, must all take part in the great work. Possibly a Royal Commission would be the most convenient form for the governing body to assume. This, while formulating the general outlines of the scheme, and establishing conditions which will prevent any confusing and clashing of individual efforts at a later stage, must still contrive to give such opportunity for the individual skill of the sons of our art in all the States as shall tend to work out an expression of national character.

Among the subjects to which I hope the attention of the Institute will be directed during the ensuing year is that of an improved Building Act. Not necessarily an entirely new Act, because, on the whole, the one under which we have been working since the year 1879, viz. "The City of Sydney Improvement Act," meets very fairly the requirements of the case. In some not unimportant respects, however, it needs amendment and revision. In the first place, the present title of the Act should be abolished and one more expressive of its primary purpose be adopted. The natural title of the Bill is surely "The Metropolitan Building Act." The whole of the provisions for the establishment of the clumsy and effete "City of Sydney Improvement Board" should be swept away. The Board has practically effaced itself, a result inevitable to a body founded on a principle wrong in itself and impossible of application. In a new or revised Act, I trust due consideration will be given to this point. It seems to me that a board of appeal would be properly constituted which consisted of three members only, viz. an architect, a builder and a business man. This body should have no power of initiation, and should sit only when called into action by an appeal.

A matter which cannot be overlooked by the framers of a new Act is that of regulating the height of buildings; here a sound judgment and a careful consideration of the various interests involved are highly necessary. While restricting the number of storeys to a limit manageable in the event of fire, it must not be forgotten that the city of Sydney has special conditions of its own which demand attention. Sydney, as a whole, covers a considerable area, but the Sydney par excellence—the heart of Sydney, the Sydney which is the centre and pivot upon which all its outer fringes hang—is of very limited extent, and by no possibility does it admit of any expansion. The headquarters of Government, of all our great financial institutions, of shipping concerns, of insurance companies, and of all commercial interests will always find their home in the area bounded by the waters of the harbour on the west, and on the north by the Domain, and Hyde Park on the east, and by, shall we

say, Bathurst, or at the very furthest, by Liverpool Street south? Within these limits the mainsprings of all that constitute the life blood of the community will ever be focused. No city railway, no North Shore Bridge, will effect any change in this respect. For all practical purposes this Sydney may be regarded as an island. Hence it follows that to place too rigid a restriction upon the height of buildings would be a grave error. That the operations of all the various business centres above enumerated, and hundreds of others that inevitably cluster around them, will grow with giant strides in the near future is certain. More men will be needed to cope with growth of trade and more space for the work in under healthy conditions. As it is impossible to extend the area of this space by lateral expansion the only resource lies in the multiplication of area by more and more floor space up to such a limit as shall stop short of a danger. It is not for me here to state the provisions of an Act. Let it suffice to allude to a few points which must not be overlooked—such as increased powers to the city authorities to enable them to deal with advertising hoardings and the hateful sky signs. To assist the Council to secure the passage of such an improved Bill at an early date should be a congenial task to this Institute, there is reason to believe that that body would gladly welcome any assistance which we can give them to this end.

Nor must our attention be limited to the boundaries of the city proper. The suburbs equally claim consideration. Within the jurisdiction of the Metropolitan Board of Water Supply and Sewerage are no less than fifty municipal boroughs, many of considerable importance, and in themselves closely approaching to the magnitude of a city. It is a reproach to our system of self-government that up to this day there is little or no control over the buildings with which many of them are crowded. Nor is it the first time that I have publicly advocated the importance of this question.

#### M. AUGUSTE RODIN.

ON the 15th inst. the committee of the Rodin Statue Fund gave a dinner to M. Auguste Rodin, the sculptor, who worked St. John the Baptist has recently been added to Victoria and Albert Museum, South Kensington.

Mr. George Wyndham, M.P. (the chairman), in proposing "The Guest of the Evening," explained the origin of the assemblage, and said that Mr. John Tweed had suggested the artists of England owed it to England, to art, to themselves to obtain for South Kensington one at least of Rodin's masterpieces. Then Mr. Ernest Beckett presented a masterpiece to the museum. But the British artists were to be denied, were not to be disappointed of so engaging a proposal. They in their turn secured the St. Jean. So now we were met to crown these operations with a banquet to the man who inspired them. In respect of modern sculpture, and, above all, of modern French sculpture, we had in this country to contend largely with faith without works. Let them imagine the situation of a young British sculptor. He had, it was true, in the British Museum an incomparable treasure-house of Greek masterpieces. He had in South Kensington many reproductions of Greek sculpture and of Renaissance work, including some reproductions of that truly great master, Jean Goussier. But, coming to modern French sculpture, what had he? A cast of Barye; a small torso of Le Gros; nothing of Houdouin or Carpeaux, of Puget, of Rude; and, until this movement of Rodin. He hoped that next year they would be able to get together a collection of Rodin's masterpieces. Was it beyond the bounds of possibility that the movement, crowned for the time by that dinner, should issue, as a next stage in the long road they hoped to recover, in creating so sunlit pavilion where the masterpieces of Rodin might for time be bathed in that radiance of the sky which could also reveal the magic of their contours and their values? He was the strenuous and perfect workman, knowing all there was to know of the truth, and therefore of the beauty, and therefore of the power, of the human form; knowing, too, all there was to know of the aptitude of clay to receive, of marble to declare his own intimate interpretation of those large secrets of the universe which escaped the narrow definition of logic and language.

M. Rodin said that even twenty years ago, when he visited London, he was received with a kindness and courtesy of which he had retained a most lively recollection. He was then greatly impressed and influenced by the beautiful and instructive collections of art he found here. The Greeks, especially, he found had produced with fidelity the form of man becoming divine, and he thought people would never be sufficiently permeated with the idea that everything that was true to nature was beauty. Those who lived in the very midst of that beauty too often failed to recognise it. Only by persistent labour and by a long and comprehensive contemplation of nature could



to see a new world open out before them. Thus in the Temple of Sety, explaining its purpose and design. The usual exhibition will be held during July at University College.

rench Ambassador, in replying to the toast of "France," said he was extremely touched by the sympathy which had been expressed for his country, and he could assure them that such sympathy would be appreciated by all Frenchmen. He would thank them, also, in the name of his country for the honour they had done to one of its sons by choosing M. Rodin for honourary member of the Académie des Beaux-Arts. In choosing M. Rodin for honourary member of the Académie des Beaux-Arts, the French Government had ratified in the judgment of posterity.

### LIVERPOOL CATHEDRAL.

The Bill promoted to give statutory authority for the purchase of the St. James's Mount site and the erection of a cathedral for the diocese of Liverpool came last week before the House of Commons. The preamble was proved by Mr. Morley, chairman of committees of the House of Commons, and Mr. Chavasse, Secretary of the cathedral committee. It was stated that £156,000 has been subscribed towards the cathedral, and that a meeting held at the Town Hall had adopted the site of the cathedral. With the exception of St. James's Mount site, the site belonged to the Corporation, and in regard to the cemetery the cathedral committee proposed, with the consent of the trustees, to take over the trusteeship. They considered that the cemetery should form part of the cathedral. It was now very little used. Pending the establishment of a dean and chapter the cathedral was to be in the Ecclesiastical Commissioners, and the bishop was to be dean. An additional provision was submitted that when it was certified that any portion of the cathedral was fit for the celebration of divine service the Ecclesiastical Commissioners were empowered by Order in Council to transfer the pro-cathedral of St. Peter to the new cathedral, to substitute the church of St. Nicholas for that of St. Peter's Church, and to dispose of the building of St. Peter's Church. With this amendment the Bill was ordered to be reported to the House for third reading.

### EXCAVATIONS IN EGYPT.

On the 15th inst. Professor Flinders Petrie delivered his annual public lecture at University College, describing the excavations of the Egyptian Exploration Fund during the winter at Abydos in Upper Egypt. In previous years, he had shown the order of the prehistoric period had been determined, the series of Royal tombs had shown the earliest of the kingdom. The present year's work had confirmed these ages and proved how the end of the prehistoric period had been determined. A town founded in the age of the early dynasties. A town founded in the age of the beginning of the kingdom, three centuries before Menes, was behind the earliest sanctuary, that of Osiris. This was repeatedly rebuilt, and a stratified mass of remains gradually accumulated at the average rate of 20 inches a year. This deposit has now been explored and all the flint tools, amulets and other objects compared. We possess the continuous written record of 7,000 years of Egyptian history, united to the earlier stages of civilisation, covering a couple of thousand years before the written history. It has yielded hundreds of pottery jars and bowls of a variety of shapes, some hundreds of flint tools, the tools with which the stone bowls were manufactured, pottery fireplaces decorated with patterns, examples of the tiles made for wall decoration, the amulets, ornaments, and all of the beginning of the historic times. A large grave full of vases of stone and pottery were found in the town; these will be reconstructed in original form in different museums. The Temple of Osiris, dates as far back as the beginning of the eighteenth dynasty, about 1500 B.C. The temple ruins were inscriptions and statuary ranging from about 3,000 years, including some fine architectural pieces of the seventh and eighteenth dynasties, a striking red granite of a king of the twelfth dynasty, some portraits of the thirteenth dynasty kings, and some broken statues of goddesses, which show a hitherto unknown revival of very pure style of the thirtieth dynasty. The next lecture will deal with the discoveries in the cemeteries, which include the largest

tombs known in Egypt, and the work around the Temple of Sety, explaining its purpose and design. The usual exhibition will be held during July at University College.

### THE PALACE OF KNOSSOS.

THE following important communication from Mr. Arthur J. Evans appeared in the *Times* of Tuesday:—

On February 14 last I was able, thanks largely to the generous assistance given through the Cretan Excavation Fund, to resume the work of excavation in the prehistoric Palace of Knossos. It may be said at once that the results of this season's work have, so far, not fallen below the high level of the two preceding years. Great difficulties have, indeed, been encountered both from the persistent and quite exceptional rainy weather, and from the constant necessity of propping up and even of partially reconstituting walls in order to preserve the remains of upper storeys which distinguish the recently excavated parts of the Palace from almost all ancient buildings. The conservation of these seemed such a plain matter of duty that neither labour nor expense has been spared to this end; and, thanks to the constant watchfulness of my assistant, Dr. Mackenzie, and the architectural resources of Mr. Fyfe, the difficulties and not inconsiderable dangers of the work have been so far overcome that throughout a whole quarter the upper plan of the building is now almost as clearly marked as that of its ground floor.

Those who have followed the former course of the excavations may remember that their result had been to uncover an eastern wing, which seems to have been mainly reserved for State and religious functions, business and storage, a great central court, and beyond it to the east a part of what seemed to be the royal residential quarter. At the close of last season's work a staircase had come to light here leading down by a triple flight to a hall with double tiers of colonnades, and beyond it a larger columnar hall or Megaron. On the upper level north of these ran a corridor, beneath which another corresponding passage of lofty dimensions has now been cleared out, originally lit by a large window opening on the light-well of the larger hall. The clearance of this was marked by the discovery of a very extensive deposit of inscribed clay tablets—the largest, indeed, yet discovered—including about 100 perfect documents dealing with Palace accounts. The decimal system is here much in evidence, and a large proportion of the tablets deal with percentages. With these were several large clay impressions of what must certainly have been a royal signet ring, exhibiting a goddess and her attendants, of which a counterfeit matrix was found last year in another part of the building—a proof that fraudulent procedure was not unknown even in the household of Minos.

The spacious chamber bordering this corridor, which from the signs cut on its walls I have called the "Hall of the Double Axes," was found to have a double portico at its further end, facing both south and east. In its south wall had been already visible last year a doorway leading to a finely-paved passage with a "dog's leg" turn, as if to insure the privacy of some important room beyond. Here has now been uncovered a quite original chamber flanked on two sides by a high stylobate, which also serves as a base for seats, between the original pillars of which light was obtained on the one side from a portico, on the other from an area with a back wall stepping back above. On the west side of the room an opening in the balustrade gives access to a small bath-chamber, above the gypsum lining slabs of which a fine painted frieze of spirals and rosettes was still partly clinging to the walls. Remains of a painted terra-cotta bath were found near. Of the wall-paintings that originally adorned the room itself and the portico beyond very interesting remains were also found, though in a fallen condition. Quite an aquarium of fish has here come to light very naturalistically rendered, including parts of two large dolphins and many smaller fry, some of them complete. This discovery supplies the counterpart to the fine fresco showing flying fish found by the British school in the prehistoric settlement of Melos—a work which must now be definitely assigned to an artist of the Knossian school. Here, too, as those different tones of blue had to be mainly reserved for the fish themselves, the sea-water itself was indicated by azure wreaths and coils of dotted spray on a white ground. The expedient is most artistic, but could anything be less "classical"?

The upper part of an elegant lady in a yellow jacket and light chemise introduces us to a different class of subject. Her flying tresses and outstretched arm suggest violent action, and this is still more perceptible in the subject of another fresco fragment showing a more nude female figure in the act of springing from above and seizing the horns of a galloping bull. Remains of a series of scenes exhibiting female terrors were already found towards the close of last season's dig, and it has



now been possible to reconstitute a complete panel of one of these fresco designs. The whole is a *tour de force* of ancient circus shows. A Mycenaean cow-boy is seen turning a somersault over the back of a charging bull to whose horns in front clings a girl, in boy's costume, while another girl performing behind, with outstretched hands, seems to wait to catch her as she is tossed over the monster's back. The fallen body of a man beneath another bull brings out the grimmer side of these Minoan sports.

A very interesting feature of the newly-discovered hall, which will be specially appreciated by Homeric students, is a private staircase opening to its north wall and leading up by a double flight to upper rooms. On the west side of the hall opens a passage leading to what must have been the most secluded part of this residential quarter of the palace. Here, again, remains of the upper-floor levels are well preserved, and a stone bench is still in its place against the wall of one of the upper rooms. The innermost of this group of chambers have as yet been incompletely excavated, but the work here has already been productive of some important results. At one point are remains of what appears to have been a wooden staircase, the upper part of which was found literally choked with broken seal impressions from what must certainly have been a secretary's office on the upper floor. One of these impressions, though only a fragment, is of great interest as bearing part of the impress of a late Babylonian cylinder, thus supplying direct proof of correspondence with the East. A very remarkable feature of this quarter of the Palace is the elaborate drainage system. The well-paved floors are underlaid by quite a network of stone channels, in places crossing each other at different levels and roomy enough to allow a man to crawl along them. A succession of stone shafts leads down to these from the upper storey, in one case apparently connected with a latrine, of which a curious and in some respects very modern example also occurs on the ground floor. In another part of the palace sections of a terra-cotta drain-pipe have been found of a most advanced form, provided with stop-ridges.

South of the truly royal group of chambers above referred to is another quarter, with smaller rooms, perhaps mainly occupied by servants and minor officials. Archives were also kept here, as is shown by the discovery of parts of two hoards of inscribed tablets. One contains lists of persons indicated by the man-sign; the other refers to the armoury, and exhibits, besides the linear characters of the inscriptions, outline figures of swords. In addition to these finds of tablets, the pottery of this and the adjoining region has produced some quite new illustrations of the prehistoric writing of Crete. Besides graffiti, a fragment of a Mycenaean vessel shows a painted inscription analogous to those of later Greek vases, while the inside of a cup is filled with three lines of linear inscription written in ink, like those of Egyptian ostraka. Near the magazine containing the tablets was another with vases in the earliest Palace style, some of them painted with very naturalistic lilies. An adjoining chamber contained a kind of domestic shrine of the highest importance in its bearing on the local cult. On a small dais, beside a tripod of offerings, and with a miniature votive double axe of steatite before her, rose a painted terra-cotta figure of a goddess, pillar shaped below according to the old religious tradition, and with a dove on her head, while in front of her stood a male votary holding out another dove. That a goddess was associated in the Palace cult of the double axe further appears from a gem on which a female divinity is seen bearing this symbolic weapon in her hand.

On the eastern slope of the hill the limits of the palace have extended themselves beyond all anticipation. A good deal of denudation has here taken place, but among the finds are remains of a large architectural fresco with realistic imitation of veined marble, and store jars more capacious than any yet brought to light. A stone spout jutting out from a neighbouring wall and connected by a conduit with an oil-press above explained at once their contents and their means of filling. Further down, and here forming the outer eastern boundary of the palace, are massive lines of supporting walls; at one place five are within another at intervals of only a foot or so, and a bastion with ascending flights of steps flanked by curious water-runnels.

Some excavation has yet to be carried out in the central parts of the eastern quarter, and the boundaries have yet to be delimited towards the north-east; but there is every hope that the main work may now be completed by the end of the present season. The remains already brought to light cover an area of about five acres, and their exploration may be said to have opened to the eyes of history a new world, already ancient when Homer sang, but presenting a civilisation in some respects strangely modern. It would seem, indeed, as if the brilliant and unexpected character of the finds was likely to maintain itself to the last. The exploration now proceeding, of the basement spaces within the upper eastern terrace has brought to light, below the level of the later palace, walls belonging to

a still earlier royal dwelling. Within these were found vases of the older class, the decorative designs and contour of which sufficiently attest the high architectural development attained here in this still more archaic In this early stratum was also found a miniature vase of and porcelain, the thimble-like receptacle of which contained some perfume as precious as attar of rose too, as if to illustrate the continuity of the local remains of a miniature pillar shrine of painted terra-cotta doves perched on its roof. But one of the later paintings, at a slightly higher level than this, contained a tectural record of still more universal interest. It remains of a mosaic, consisting of small porcelain tiles which in its original form seems to have represented a shield—the walls and houses of a city, a river, a vine, trees, warriors with bows, spears, and throwing besiegers and defenders, and various animals. But the surprising part of all are the houses of which the city was composed. Fragmentary as are their remains, it has been possible to reconstitute about a couple of score of these. The character of the structure—stone, timber and rubble—is accurately reproduced; and the walls show the ways—a whole street of a Minoan city rises before us as it originally stood. But what is even more surprising is the fact that the elevations of these prehistoric structures can be thus recovered for us intact from the gulfs of time, altogether modern character of some of their features are three-storeyed houses (some of the semi-detached showing two contiguous doorways) with windows of four or double windows of three panes each, which seem to show that the inmates of the houses had actually some space for glass.

## THE WINCHESTER REGALIA AND PLATE

I HAVE much pleasure in rendering to the Field Club information as to the regalia and plate of the famous city, and in doing so it will be satisfactory to know by means of the Press a permanent record will be made. Beyond doubt the city possessed very ancient maces and valuable plate, but, save some Stuart freemen's gifts, none have been spared. Charles I. received much to help his army, and Winchester was Cavalier till overawed, and, on the restoration of the Monarchy, Charles II. did not replace the gifts of his father. I propose to briefly review the regalia history from transcripts of the civic MSS., and the mention of it does not reach back beyond 1594, when it is recorded that Richard Adderley was appointed to the place and room of Constable's sergeant, and to have the mace and profits of the office unto belonging. The sergeants evidently carried small maces like the ward maces carried still in the Metropolis. None of these has come down to us. In 1596 20 nobles were devoted to the repairing, new making and amending of maces, which seems to indicate antiquity, perhaps as far as the Plantagenets, and much wear or ill usage. William Adderley, a sergeant's mace in 1598 in connection with a curious entry relative to a hunt after recusants—a form of execution and enforced finance much in evidence in Elizabeth's reign, and the ruin of several Hampshire Catholics. A sum of the entry will be interesting and amusing, and I found the house was in Kingsgate Street. The date of the spirit and cry was Sunday, November 26, when there was a visit from the Lord Bishop and other commissioners, and a dinner was made by the mayor, Richard Adderley and Christopher Gray, constables, assisted by Thomas Bedham, Sergeant Adderley, Richard Adderley and others in the house, late Pottinger's, where information was given that sundry recusants dangerous to the State were harboured. The searchers found old Mrs. Goldsmith, a widow, and the widow of Mr. Martin's son, and the servant of old Mrs. Goldsmith, a daughter of one Church, of Michelmersham. In the course of the search the servant said someone had stolen her purse and four shillings. The mayor was assured the maid had invented this of spite. The mayor, out of his regard for the city's peace, searched every person without avail, and thereafter repaired to the cathedral. After the sermon the search was renewed, when Richard Adderley, one of the sergeants, found himself likely to be discovered, and his conscience touched on his knees and prayed forgiveness as he was the thief. The mayor summoned his fellows by tolling the town bell twice, the result Adderley forfeited gown and mace and was imprisoned in Westgate, where we will leave him and follow the history of the old maces. In 1599 Richard Lorey, of London, goldsmith, was paid 13*l.* 6*s.* 8*d.* for mending the three maces of the city with silver gilding and making. In 1632 Thomas H. goldsmith, of London, altered the maces for the sergeant

\* A paper read by Mr. W. H. Jacob, J.P., before the Ham Field Club and Archaeological Society.



at a cost of 12*l.* 3*s.* 8*d.* In 1651 26*l.* was spent in the maces with Republican or Commonwealth baubles, 1660 they were again purged of the Roundhead maces and made regal at a cost of 26*l.* We now come to the clearing up of the regalia and disposing of them as old sad event certainly, but the transaction has come down in detail, and the year of sale and production of the fine before us was 1722-23:—

	£	s.	d.
1722. Paid to Mr. Gilbert Beare, for mending the old maces to pieces—weighing and them up.	0	15	0
2, 1722. Mr. Waldren, carrier, carrying the London	1	1	0
at 3 <i>d.</i>	0	3	9
payment to B. Pyne, goldsmith, of London, for ces.	19	1	10
of the fines bag for trades towards the maces	45	17	8
723. Paid to Mr. B. Pyne	24	0	0
	90	19	3

present maces are fine examples of work of their kind. de several maces—amongst others for Gravesend and ge. The largest mace in England is that of Oxford, nes, and next come equal in size Winchester and each 63 inches. The oldest mace in Hampshire is ne at Southampton, time of Henry VII. Before we t maces there is a laughable story of some admirers of t family, and evidently alludes to the first appearance y's mace:—"Civitas Winton. The information of rleton, sergeant-at-mace, upon oath this 3rd day of er, 1722, that on Friday, Aug. 31st, about one hour Majesty had passed through the city, he saw Anthony , junior, carry in procession on his shoulder a large with the roots on it before George Todd, victualler, in Street. He saw it brought out of the Red Lion and efore the said George Todd, and he verily believes it ed before the said Todd with intent to ridicule the nd aldermen of the said city, who had just before d their mace before His Majesty." No doubt it was a erilous one then; in the interest of James II.'s son. ts review the plate. Of this there must at one time n a good lot, for freemen made presents. Corporate against the mayor's dignity were fined in plate, and n purchased the privilege of exercising their crafts or s by presents. There is a notable example of an y citizen on July 9, 1630, when William Wiltshire, assaulted the mayor, and was fined 30*l.*, which was duly n the coffer by Mr Lancelot Thorpe, and the money eployed in purchasing a silver basin and ewer, weighing z. The same year William Withers, on being sworn a a gave 2*s.* towards a great silver salt, and in 1632 a Cropp paid 5*l.* to provide two out of three silver beer In 1643 Charles's troubles are recalled by the follow- y:—"Taken then out of the coffers these several s of plate and delivered to Mr. Jasper Cornelius, ap- o receive the same for His Majesty's use, by virtue of d sent by His Majesty to the mayor and aldermen for a of money or plate for the maintenance of the army by ent of the mayor and all the aldermen. The plate is e mentioned:—

	Oz.	Dwts.	Grains.
the silver ewer, weighing	32	4	1
three silver beer bowles	34	4	1
three silver wine bowles	14	4	3
the gilt bowl with cover	31	4	2
the great silver salt	28	—	—
the silver tankard	19	4	2
the silver bason	74	—	—
	235	4	1

—58*l.* 16*s.* 3*d.*" Need we say that the loan has long been written off as a bad debt, even as was Charles II.'s at Child's Bank. There are still some freemen's gifts of corporation plate—chest, and now shown before us. On er 6, in the year 1660, and of the king's return, amidst alutuous joy of the people who welcomed freedom from t, Sir John Norton, baronet, Sir Humphrey Bennett, and Lawrence Hyde, of Catherington, esquire, and os Mason, esquire, of Woodiham (Odiham), were made e Guild of Merchants, and called to the Bench. The e water dish and biscuit-box, if so it may be called, was of three of the above freemen, who are commemorated

Donum Johannis Norton, baronetti;  
Humphredi Bennett, equitis aurati;  
Laurentii Hide, armigeri.

gift is a very handsome one, and still useful at civic tis. There are two handsome gifts of worthy citizens— steward's, the Earl of Northbrook's, splendid example n work in silver, and a goodly and capacious loving ven by Alderman H. Webb, as a memento of his

mayoralty and the Diamond Jubilee of our much-loved Queen Victoria. Mr. R. Moss has graced the Sessions Hall with a grand pair of Doulton's vases and a present of a coronation table cloth with a history.

There are examples on view of the bribes or payments offered the civic authorities for permission to practise trade without being apprenticed and free of the city. In 1672 one Bennett Creed was presented for making use of the trade of a silk weaver contrary to the ordinances of the city, whereby he had incurred a penalty of 40*s.* a month—"Item, we present Mr. Bennett Creed for entertaining Edward Berne, a journeyman." Written in the margin are the words—

To be considered off.

A warrant to have him before the Mair.

Our silk weaver compromised the offence by the gift of the elegant little wine vase and cover before you. "The gift of Bennett Creed to the city of Winchester" is engraved on it. In 1673 Thomas Stubington, desirous of exercising the oleaginous and not pleasant mystery of a tallow chandler, was allowed to do so. "He was to use the trade and no other, he paying to the city a dozen of silver spoons, price 6*l.*, the spoons to be paid within one month, otherwise the ppsal to be void." He paid, and you see the fine old spoons good and capacious enough, whether for soup or green peas. Finally, the MSS. inform us:—"The city plate, which has now become by length of time unserviceable, be weighed up and exchanged for the same weight in ounces, in useful and convenient plate, and the expense of exchange paid out of the coffers." The foregoing gifts happily escaped. The above entry was in 1759. Alas! that the old silver fell a prey to Georgian Goths. It weighed 222 ozs. and realised 55*l.* 10*s.* 3*d.* The new plate, a substantial lot, cost, inclusive of the convenient technicality "fashion," 78*l.* 19*s.* 10*d.*; deduct old silver, 55*l.* 10*s.* 3*d.*; actual cost, 23*l.* 9*s.* 7*d.* The sauce boats, salts, spoons, glasses and engraving are to be seen. Long may they grace the civic Board, and yearly may we have such a mayor as now fills the civic throne and carries out, aided by the mayoress, the duties of the Sovereign's lieutenant in this Royal city, to which he, like his predecessors, is wedded by the fine old gold ring of Alderman White, charged with the city arms. The donor filled the mayoralty thrice, and on October 21, 1653, his widow gave 2*s.* 6*d.* to make up a gold ring given by her late husband—"full three pounds." Thus ends the story of our regalia and plate.

## TESSERÆ.

### The Cathedral of Old Sarum.

THE long-perished cathedral of Old Sarum was of considerable interest, both in an architectural and in an historical point of view. Lanfranc in his wise policy caused the seats of many English bishoprics to be transferred from insignificant to more important places, by decree of the Council of London, held in 1075. At that time Herbert of Lotharinga was Bishop of Sherborne and Wilton, having some time before united the sees. Coming under the operation of this decree, he commenced the building of a new cathedral within the precincts of the castle of Sarum, his future episcopal city, so that it was one of the earliest great churches built under the Norman dynasty. Herbert soon died, and was succeeded by Osmund, who, having exchanged the life of a noble for that of a churchman, and having been eminent for his sanctity, was canonised in the fifteenth century, leaving a name memorable in the English Church as that of the compiler of the Sarum Use, so long the most generally received ritual of the English Church, and the use in which our present service-book is founded. St Osmund in 1092 completed and dedicated the cathedral in honour of St. Mary. Five days afterwards the roof was destroyed in a storm. During the whole of the turbulent twelfth century this continued to be the cathedral of the diocese, though situated on a bleak and circumscribed area, and within the walls of a fortress where the churchmen were exposed to all the insults of a barbarous soldiery. At length, however, in 1220 Bishop Roger Poore laid the foundation of the present cathedral of Salisbury, in a spot which was then meadow land, and in 1226 translated the bodies of St. Osmund and of two other predecessors into the new church. Edward III. gave letters patent to Bishop Richard de Wyville, granting to him and the dean and chapter "all the stone walls of the former cathedral church of Old Sarum, and the houses which latterly belonged to the bishop and canons of the said church, within our castle of Old Sarum, to have and to hold, as our gift, for the improvement of the church of New Sarum and the close thereunto belonging." It is supposed that the upper portion of the tower and the spire was built with these materials. The dimensions are given as follows:—Total length, 270 feet; length of transept, 150 feet; of nave, 150 feet; eastern aisle, 60 feet; breadth of nave, 36 feet; of aisles, 18 feet; whole breadth of transepts, 60 feet. There are vestiges of cross foundations towards the west end, crossing the aisles.



## Subject in Early Italian Art.

The early sepulchral art of Italy clings to nature, and symbolism direct from nature, aiming at the character of natural objects. Its vines are from nature; its sheep are made as like sheep as the painter or mosaicist can manage; its doves are just like real doves, and its palm trees like palms. Even the later Byzantinism retained reference to nature and truth in conventional work. Moreover, it seems clear, from passages from De Rossi, that the Christian artists of the later empire were like the Gothic Christians in this other great respect, that they desired to bring all things into church to represent all their ways and thoughts in their sacred places. Of course peaceful and weak men did this in a different way from warlike and strong men. The Veronese churches show us how the Lombard Goths did their work. Let us take De Rossi's account, and see how secular things and crafts and pursuits are represented by Græco-Roman Christians in the catacombs as in Gothic churches. "It is a fact I have constantly observed," he says, "in the subterranean cemeteries that Christians of the earliest time made use of sarcophagi, without any especial Christian symbols upon them, and probably the work of heathen hands, containing images of the stars and seasons and scenes of pastoral life and agriculture, some even of the chase and some of a comic character. The Christians gave their own sense to scenes of husbandry and shepherd life, personifications of the seasons, dolphins and sea monsters. Anything that was free from idolatrous imagery, or did not actually represent Pagan deities, they freely made use of." And he goes on with curious illustrations of the Christian desire to find foreshadowings of the history of their own faith in ancient legend. We all know how Orpheus, in particular, is used in the Callixtine and other catacombs as a symbol of Our Lord; so also with representations of Hercules, Deucalion and others. The Christian symbolist, or parabolic artist, had no more hesitation in using a heathen myth to impress a fact of Christian history than he had in using Pagan paint or Pagan brushes to record it on the cemetery wall.

## Progress of Greek Sculpture.

Few there are who could recognise in the rude primæval efforts of Greek statuary the visions of breathing life which have been moulded by the hand of a Phidias or a Praxiteles; how transcendently surpassing the inert masses of early caricature are the glorious creations of their consummate skill. Even the trained mind is dazzled by such astonishing results, while the undisciplined mind receives them as convictions of inspiration. Men are willingly captivated by the wonderful; less so by the realities of laborious study. They find it fatiguing to accompany the steps by which eminence is attained; unpleasant to destroy the charm of spontaneous creation. The splendid fiction by which Minerva is said to have sprung, in the full panoply of martial vigour, from the brain of Jove, may have furnished to the Greeks a fair type of omniscient might, but it never can be the symbol of the patient process of perfection which has preceded and accompanied the noblest achievements of man. If, in the triumphs of the plastic art, the Greeks were indebted to a vast fund of original power to perceive and of skill to amend inaccuracies—pure taste to select and ability to execute the beautiful—still beyond these natural and acquired gifts they owed much to the influence of time, and to the experience afforded by the very failures of their predecessors.

## GENERAL.

**The Visitors** to the museums and National Gallery were largely increased on Monday last as the weather was unfavourable to out-of-door enjoyment. The totals for this year were:—Victoria and Albert Museum, 15,491; British Museum, 10,469; Natural History Museum, 10,325; National Gallery, 8,487; and the Tate Gallery, 4,119. The respective numbers for the preceding Whitsuntide Bank holiday were 6,818, 4,865, 5,108, 6,480 and 2,482.

**M. Paul Merwart**, painter, who was one of the victims of the volcanic eruption in Martinique, was by birth a Russian, although his parents were French. He studied in Paris under M. Lehmann and M. Humbert. He was attached to a scientific commission, and was the last tourist who ascended the crater before the eruption. In his last letter he wrote:—"The crater has not, perhaps, said its last word."

**The Governors** of Westminster Hospital have obtained a process under the Building Act against the erection of a stand by the Middlesex Guildhall. The Governors complain that the stand would be directly in front of a portion of the hospital.

**A Thirteenth-Century Mansion** in the Rue du Mirail, Bordeaux, has been purchased by the directors of the local Mont de Piété.

**The Will** of the late Mr. William Larnier Sugden, of the firm William Sugden & Son, architects, Leek, Staffs, has been proved at £6,743 5s.

**The German Emperor** has announced his intention of presenting a statue in bronze of Frederick the Great to the United States, to be erected in Washington on a site selected by the American President. The statue will be a replica in bronze of the marble statue by Professor Schwanthaler, which is in the Berlin Avenue of Victory.

**The Navy League** has received a letter from the Admiralty of Works acknowledging their letter of May 15 on the subject of the Nelson column and the tube railway schemes at Trafalgar Square. The Board state that they are fully alive to the necessity of guarding in every possible way the monument of the column. They will satisfy themselves that the monument is safeguarded before the First Commissioner advises them to give his assent to any Bill.

**An Exhibition** of the objects discovered in the tomb of M. De Morgan is now open in the Grand Palais, Paris, to placing them definitely in the Louvre. One of the objects is a stele of basalt inscribed with the code of the law of Khammourabi, who is supposed to have lived prior to Abraham.

**M. Cognet**, sculptor, delivered a lecture at the Louvre on Friday last on "The Position of Sculpture in the History of Art and of Civilisation."

**The Sanitary Institute** have made an appeal for funds to carry out an extension of Parkes Museum, Margaret Street, in order to adequately represent the many branches of health work. It is estimated that a sum of 25,000*l.* is required for this purpose, towards which about 8,000*l.* has already been raised.

**The First Commissioner of Works** has stated that the amount of the building contracts and arrangements for the Victoria and Albert Museum so far is about 76,000*l.*, of which 52,000*l.* has been spent. The present contract for the building up to the ground floor is to be completed by October next, and will, it is expected, be then finished. The contract for the superstructure of the main building is to be made in the autumn, and will extend over about four years. The penalties under the two principal contracts already made are 35*l.* per week.

**A Collection of Paintings** belonging to the late M. Huybrechts, has been sold in Amsterdam. They realised 975,300 frs. The highest price, 52,000 frs., was obtained for a portrait by Jordaens.

**The Westminster City Council** have decided to purchase workmen's dwellings in Regency Street, comprising 344 dwellings, containing 793 rooms, at an estimated cost, including 32,000*l.* for the land, of 100,200*l.*, and have instructed Messrs. Joseph, Son & Smith, the architects, to proceed with the working drawings. The housing committee estimate the annual income of the buildings to be 3,524*l.*, or sufficient to pay interest at the rate of 3*l.* 10*s.* 4*d.* per cent. per annum.

**The Cases** in the Louvre containing examples of jewels are now all connected with electric bells in such a way that the slightest attempt at tampering with a case is loudly signalled to the conservator's room.

**An Industrial Exhibition** of an international character is to be held in Athens from September to November of the present year. The site selected is close to the Temple of Athena, and the exhibition will be under the patronage of the King of the Hellenes. The general director is M. John Deanwood.

**An Exhibition**, containing 1,700 portraits which have been got together and arranged by Señor Garcia, director of the National Archaeological Museum, in the Palace of the Kings of Madrid, was opened on Tuesday by the King of Spain.

**The Commission** for the statue of the late Lord Nelson, which is to be erected in Windsor, has been given to Mr. Goscombe John, A.R.A. It was originally entrusted to the late Mr. Onslow Ford, who died within a few days of his selection.

**The Court of Common Council** have resolved to purchase a vacant land at the western end of Cheapside by public auction. The site is to be let temporarily for the erection of stands from which to view the Royal Procession in June.

**The Exhibition** of the Royal Cambrian Academy of Art, which has been opened in Conway, and contains an unusually large number of paintings and drawings. The exhibitors are mostly confined to Welshmen. The works seen are mainly landscapes.

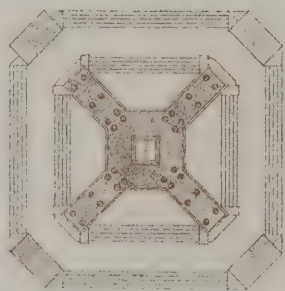
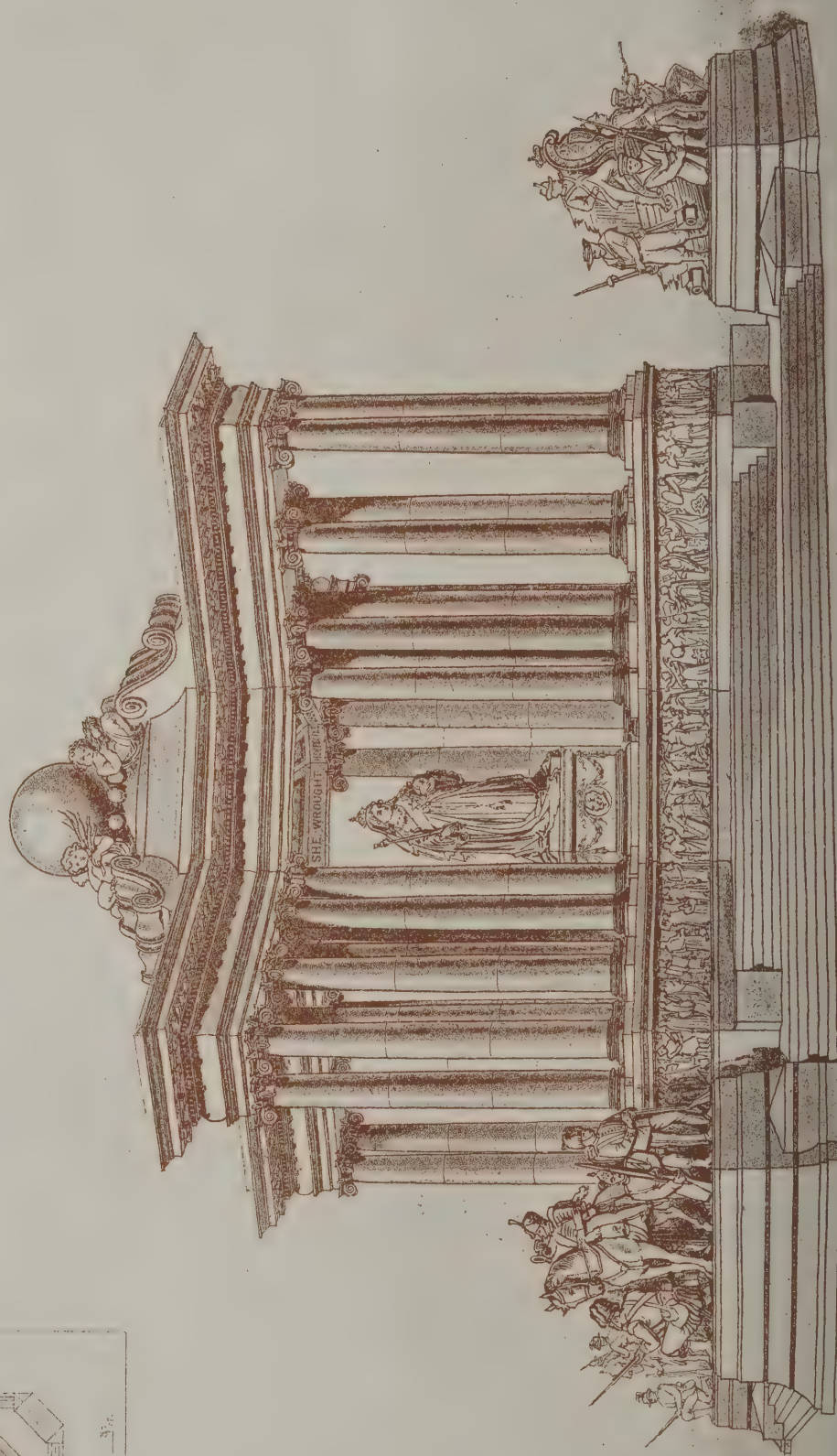
**Mr. George Buchanan**, civil engineer, died last week in London. His most important undertaking was the carrying out of the Kimberley water-supply, when he was chief engineer.

**The Foundation-stone** of St. Matthew's Church, Southsea, was laid last Wednesday with full Masonic ceremonies. The architect is Mr. J. S. Micklethwaite, F.S.A., and the church, which is to seat about 1,300, will be Gothic in style. A portion of the church is to be built at first, to accommodate about 800 worshippers.



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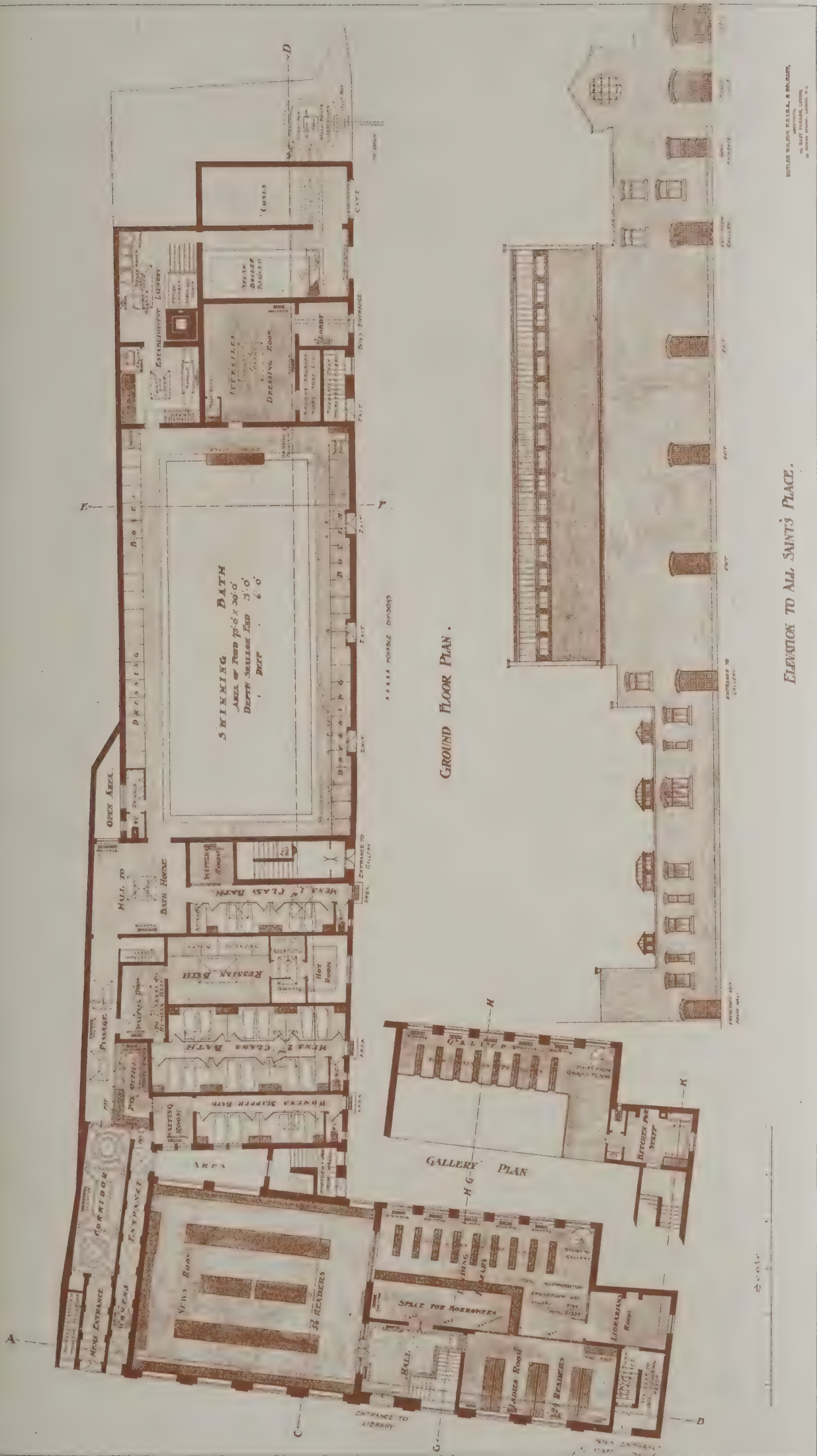


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THE

**Architect and Contract Reporter.****EDITORIAL NOTICES.**

*view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*respondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

**TENDERS, ETC.**

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

**COMPETITIONS OPEN.**

**CREWE.**—June 12.—Designs are invited for new municipal offices and council chamber. The author of the design which is adjudged best will receive a premium of 50*l.*, and he will be appointed to carry out the design; second premium, 25*l.* Particulars will be supplied by the Borough Surveyor, Municipal Offices, Crewe.

**DEPTFORD.**—Aug. 30.—Competitive designs are invited for a town hall and municipal offices. Premiums of 100*l.*, 75*l.*, and 50*l.* are offered for the three selected designs. Mr. Vivian Chard, town clerk, Municipal Offices, 20 Tanner's Hill, Deptford, S.E.

**HARTSHILL.**—June 16.—The committee of the North Staffordshire infirmary and eye hospital, Hartshill, Stoke-upon-Avon, invite designs for a home for nurses at Hartshill, Stoke-upon-Avon. Particulars may be obtained on application to Mr. Albert E. Boyce, secretary and house governor.

**INDIA.**—Nov. 1.—Competitive designs are invited for the erection of a memorial to Her Majesty the late Queen Victoria at Allahabad. A premium of 2,000 rupees will be awarded to the design selected by the committee. Mr. H. Nelson Wright, Indian Civil Service, honorary secretary, Queen Victoria Memorial Fund Committee, Allahabad, India.

**IRELAND.**—June 2.—The Belfast Harbour Commissioners invite tenders and designs for the decoration and illumination by electricity or otherwise of the harbour office and the south end of the Glasgow shed, Donegall Quay, in connection with the celebration of the coronation of King Edward VII. Mr. G. F. L. Giles, harbour engineer, Harbour Office, Belfast.

**KNARESBOROUGH.**—June 1.—The Harrogate and Knaresborough Joint Isolation Hospital Committee invite competitive designs for an infectious disease (other than smallpox) hospital at Thistle Hill, Knaresborough. Premiums of 100*l.* and 50*l.* are offered for the two selected designs. Mr. J. Turner Taylor, clerk, Municipal Offices, Harrogate.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Sept. 15.—Designs are invited for new labourers' dwellings to accommodate about 2,500 persons, to be erected on the Hornby Street area. Premiums of 250*l.*, 150*l.* and 100*l.* respectively are offered for the first three selected designs. Particulars will be supplied by the Town Clerk.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**TOTTENHAM.**—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

**CONTRACTS OPEN.**

**AXBRIDGE.**—May 26.—For erection of a new infirmary (about sixty beds) on a site adjoining the existing workhouse, Axbridge, Somerset. Mr. A. Powell, engineer, 3 Unity Street, College Green, Bristol.

**BECKENHAM.**—May 26.—For construction of (a) boiler seatings and extension flues; (b) putting-in foundations to alternator; and (c) the erection of disinfectant chamber (35 feet by 12 feet) at the electric light station, Arthur Road. Mr. John A. Angell, surveyor, Beckenham.

**BELMONT.**—May 30.—For erection of a C.E. infants school at Belmont, Durham. Mr. H. T. Gradon, architect, 22 Market Street, Durham.

**BELPER.**—May 29.—For reconstruction of 241 feet lineal of surface water brick culvert 2 feet 6 inch diameter at Kirk Langley. Mr. Robt. C. Cordon surveyor, Hazelwood, Derby.

**BIRKENHEAD.**—June 10.—For erection of a warehouse at Morpeth Dock, Birkenhead, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, W.

**BIRMINGHAM.**—June 2.—For putting-in the foundations and lower storey of the buildings and the installation of a power station at the Birmingham University. Messrs Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, S.W.

**BIRKDALE.**—June 16.—For erection of a chapel and lodge in the new cemetery, Liverpool Road South, Birkdale. Mr. Albert Schofield, 45 Weld Road, Birkdale.

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**BOOTLE.**—May 27.—For erection of six houses in a new street between Gray Street and Moore Street. Mr. J. Henry Farmer, town clerk, Bootle, Lancs.

**BOSTON.**—June 2.—For additions and alterations to the isolated ward at the fever hospital in Skirbeck, Boston, Lincs. Mr. Jas. Rowell, architect, Borough Offices, Boston.

**BOUGHTON.**—June 9.—For erection of engine and boiler-houses, &c., at Boughton, Notts. Mr. W. B. Starr, architect, 12 St. Peter's Gate, Nottingham.

**BROMLEY.**—For erection of a detached and a pair of semi-detached houses at Kinnaird Park, Bromley, Kent. Mr. W. Prebble, architect, Kinnaird Park, Bromley, Kent.

**BRENTWOOD.**—May 31.—For underpinning a portion of the chapel at the Essex County lunatic asylum. Mr. Frank Whitmore, architect, 17 Duke Street, Chelmsford.

**BURNLEY.**—May 28.—For erection of a Dutch barn. Mr. S. Keighley, architect, 27 Nicholas Street, Burnley.

**BURY.**—For erection of shops, dwelling-houses, &c., in Ainsworth Road, Bury, Lancs. Mr. David Hardman, architect, Agur Street, Bury.

**CANNOCK.**—May 26.—For alterations and enlargement to Rawnsley schools, Cannock, Staffs. Messrs. Bailey & McConnal, architects, Bridge Street, Walsall.

**CANNOCK.**—May 28.—For reconstruction of the bridge over Mitton Brook, on the Penkridge Road, Cannock, Staffs. Mr. Herbert M. Whitehead, surveyor, Penkridge, Staffs.

**CARLOW.**—May 26.—For erection of twenty-seven labourers' cottages. Mr. James Kelly, town clerk, Town Hall, Carlow.

**COVENTRY.**—May 28.—For erection of branch police station, free library and fire station, at Holmsdale Road, Foleshill. Mr. J. E. Swindlehurst, city surveyor, St. Mary's Hall, Coventry.

**CROYDON.**—June 2.—For erection of a screen wall at the rear of the electric-light works. Mr. E. Mawdsley, town clerk, Town Hall, Croydon.

**DARLEY DALE.**—May 27.—For alterations and additions to the Darley Dale Hydro, near Matlock. Mr. B. Stocks, architect, St. Peter's Street, Huddersfield.

**DEWSBURY.**—May 29.—For erection of a classroom at Whitley Lower National schools, near Dewsbury. Messrs. John Kirk & Sons, architects, Huddersfield.

**DEWSBURY.**—June 16.—For erection of a covered market in Corporation Street. Mr. G. Trevelyan Lee, town clerk, Town Hall, Dewsbury.

**DUKINFIELD.**—May 27.—For erection of a police-station and court-house. Mr. H. Beswick, county architect, Newgate Street, Chester.

**EDMONTON.**—June 17.—For erection of schools at Montague Road and Houndsfield Road. Each school has four departments, and will accommodate 1,360 children. Mr. H. W. Dobb, architect, 99 Church Street, Lower Edmonton.

**EPHING.**—June 4.—For erection of an infants' school to accommodate 250 children at St. John's Road, Epping, Essex. Messrs. Harrington & Ley, architects, 65 Bishopsgate Street Without, E.C.

**FARNWORTH.**—June 2.—For erection of a warehouse. Mr. J. H. Taylor, architect, 15 Grove Street, Farnworth.

**FARSLEY.**—June 2.—For reconstruction of boiler-house and dye-house, and the erection of a brick chimney at the Cape Mills, Farsley, Yorks. Mr. Walter D. Gill, architect, Summer-ville Terrace, Stanningley.

**GILDERSOME.**—May 26.—For erection of a residence in Finkle Lane, Gildersome, Yorks. Messrs. Buttery & Birds, architects, Queen Street, Morley.

**GOOLE.**—May 29.—For erection of a bakehouse in Carter Street, Goole. Mr. F. Chambers, architect, Clifton Gardens, Goole.

**HALIFAX.**—May 28.—For erection of three houses at Rushton Hall, Pellon, Halifax. Mr. Arthur George Dalzell, architect, 15 Commercial Street, Halifax.

**HALIFAX.**—May 29.—For erection of new implement works at Ruston Hill, Highroad Well, Halifax. Mr. Lister Coates, architect, Yorkshire Bank Chambers, Waterhouse Street, Halifax.

**HASTINGS.**—June 12.—For erection of a boundary wall around the new workhouse premises at Ore. Mr. A. W. Jeffery, architect, 5 Havelock Road, Hastings.

**HUNTINGDON.**—May 26.—For rebuilding Kangaroo bridge on the Great Staughton and Pertenhall Road. Mr. Herbert Leete, county surveyor, Shire Hall, Huntingdon.

**HYTHE.**—May 31.—For erection of a shelter, bandstand and sanitary conveniences on the Marine Parade, and sanitary conveniences in Red Lion Square. Mr. Arthur S. Butterworth, borough surveyor, Hythe.

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**ILKESTON.**—May 26.—For erection of car-shed, offices and transforming station, &c., on land adjoining the Board schools, Ark Road. Mr. Wright Lissett, town clerk, Town Hall, Ilkeston.

**IRELAND.**—May 30.—For rebuilding dwelling-house at ultra, Belfast. Messrs. Young & Mackenzie, architects, Scottish Provident Buildings, Belfast.

**IRELAND.**—June 5.—For erection of about 100 artisans' dwellings, and the construction of roads and sewers, &c., at Beennstown. Messrs. W. H. Hill & Son, architects, 28 South Wall, Cork.

**IRTHINGTON.**—May 31.—For altering cottages into mission hall at Newtown, Irthington, Cumberland. Mr. John Mark, architect, Brampton.

**IVYBRIDGE.**—May 27.—For erection of a pair of semi-detached cottages at Thornham, near Ivybridge. Mr. Barrons, Fair View, Totnes.

**KENDAL.**—May 28.—For erection of a caretaker's house at the Fisher Tarn reservoir. Mr. John Stalker, architect, Kendal.

**KENDAL.**—May 29.—For erection of the Aylwin College and out-offices, Arnside. Mr. John Stalker, architect, Kendal.

**LANCASTER.**—May 28.—For taking-down and rebuilding the walls and railways in connection with the Westbourne Road widening. Mr. T. Cann Hughes, town clerk, Town Hall, Lancaster.

**LEEDS.**—For erection of twelve stone houses in Low Road, Horsforth. Mr. Walter E. Richardson, architect, Otthwell, near Leeds.

**LOCKWOOD.**—May 29.—For erection of machine-cut gear-works, offices, men's dining and reading-rooms on the Park cottage Estate, Lockwood, Huddersfield. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

**LONDON.**—For erection of twelve shops and houses in the old Kent Road. Messrs. Holman & Gooderham, 6 King's Bench Walk, Temple, E.C.

**MANCHESTER.**—May 27.—For erection of public baths at old Trafford. Mr. E. Wodehouse, architect, 88 Mosley Street, Manchester.

**MANCHESTER.**—May 28.—For construction of a brick aduct from Stuart Street to Bank Street, Bradford. Particulars may be obtained on application at the City Surveyor's office, Town Hall, Manchester.

**MORECAMBE.**—May 29.—For erection of a detached residence, Victoria Esplanade, Morecambe. Messrs. Cressey & Keighley, architects, Bank Chambers, Morecambe.

**NEW BARNET.**—May 29.—For erection of a fire-engine station and a steam-roller house, &c., in Leicester Road, New Barnet. Mr. Henry York, surveyor, Council Offices, Station Road, New Barnet.

**NEWTON ABBOT.**—For erection of the Passmore Edwards library and County technical schools, Newton Abbot, Devon. Mr. Silvanus Trevel, architect, Truro.

**OLD TRAFFORD.**—May 27.—For erection of public baths, Stretford, Manchester. Mr. E. Woodhouse, architect, 88 Mosley Street, Manchester.

**PECKHAM.**—May 26.—For erection of a covered playshed and tar-paving, &c., at 16 Elm Grove. Mr. T. Duncombe Mann, clerk, Metropolitan Asylums Board, Embankment, E.C.

**PICKERING.**—May 30.—For erection of a farmhouse at Appleton-le-Moors, near Pickering, Yorks. Mr. John Shepherd, Rosedale Abbey, Pickering.

**PLYMOUTH.**—May 27.—For erection of school buildings in Hyde Park Road, Plymouth. Mr. H. J. Snell, architect, 11 The Crescent, Plymouth.

**REDRUTH.**—May 31.—For erection of a Wesleyan Sunday school, South Downs, Redruth. Mr. Horace W. Collins, architect, Walreddon, Redruth.

**RUGBY.**—June 17.—For erection of five shops, assembly hall, educational rooms, &c., in Chapel Street, Rugby. Mr. J. T. Franklin, architect, Regent Street, Rugby.

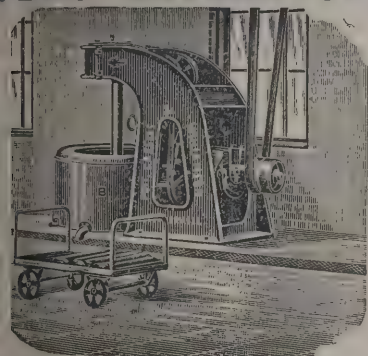
**RYTON-ON-TYNE.**—May 28.—For supply and erection of a galvanised iron isolation hospital near Ryton-on-Tyne. Mr. John P. Dalton, surveyor, Ryton-on-Tyne.

**SCOTLAND.**—May 27.—For erection of new poorhouse buildings, Oldmill. Messrs. Brown & Watt, architects, 17 Union Terrace, Aberdeen.

**SCOTLAND.**—May 31.—For work in connection with the proposed new cemetery, Auchtermuchty. Mr. H. P. Anderson, clerk, Auchtermuchty.

**SHOEBURYNESSE.**—June 3.—For erection at the gasworks of a pair of semi-detached cottages, coal-store, office and store, and a roof over purifiers. Mr. Harold Harris, surveyor, Clarence Chambers, Southend-on-Sea.

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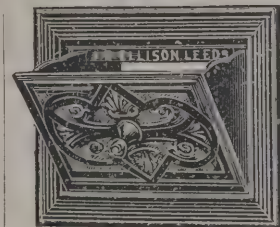
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**STRATFORD-ON-AVON**—May 27.—For erection of a laundry, boiler-house, &c., at the workhouse. Messrs. Charles Smith & Son, architects, 164 Friar Street, Reading.

**TANFIELD**—May 28.—For re-erection of Houghal Burn Bridge, near Tanfield Lea, Durham. Mr. Robert Heslop, surveyor, Burnopfield.

**THORPE**—May 28.—For additions to the infectious diseases hospital, Thorpe, co. Durham. Messrs. Farthing & Dunn, architects, 21 Pilgrim Street, Newcastle-on-Tyne.

**THURLESTONE**—For restoration of Thurlestone parish church, near Kingsbridge, Devon. Mr. Geo. H. Fellowes Pryne, architect, 6 Queen Anne's Gate, Westminster, S.W.

**WALES**—For erection of farmhouse near Clydach station (Swansea Valley). Messrs. Jones, Richards & Budgen, architects, 95 St. Mary Street, Cardiff.

**WALES**—May 27.—For erection of Board school buildings at Cwmystwyth. Mr. J. A. Jones, architect, 7 Queen's Terrace, Aberystwyth.

**WALES**—May 27.—For erection of bakery at Ton Pentre, Rhondda Valley. Mr. W. D. Morgan, architect, Victoria Chambers, Pentre, Glam.

**WALES**—May 27.—For erection of an isolation hospital at Rhiwfelen Faw, near Llantrisant. Messrs. James & Morgan, architects, Cardiff.

**WALES**—May 29.—For erection of offices at the Llanelly steelworks. Mr. Thomas Arnold, Castle Buildings, Llanelly.

**WALES**—May 29.—For erection of fifty-three cottages at Merthyr. Mr. P. Vivian Jones, architect, Hengoed.

**WALES**—May 30.—For erection of fifteen villas (in terrace form) at Gellifaelog, Penydarren, near Merthyr. Mr. William Dowdeswell, architect, Treharris.

**WALES**—May 30.—For erection of free library and public hall, Trecynon, Aberdare. Mr. D. H. Elford, architect, 30 Weatheral Street, Aberdare.

**WALES**—May 31.—For erection of grouped cottage-homes at Ely, Cardiff. Mr. Edwin Seward, architect, Queen's Chambers, Cardiff.

**WALES**—May 31.—For erection of forty houses at Skewen. Mr. J. Cook Rees, architect, St. Thomas Chambers, Neath.

**WALES**—May 31.—For erection of a lodge, entrance piers, walling, gates, &c., at Govilon, Abergavenny. Mr. C. Telford Evans, architect, Queen Street, Cardiff.

**WALES**—May 31.—For additions and alterations to the Presbyterian church, Llanelly. Mr. W. Wilkins, architect, Athenæum Square, Llanelly.

**WALES**—June 2.—For erection of an infants' school to accommodate about 210 children, with the outbuildings and appurtenances, at the Causeway, Aberavon, Glam. Messrs. Thomas & James, architects, Port Talbot.

**WALES**—June 9.—For erection of a higher elementary school at Pentre, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

**WALTHAMSTOW**—May 26.—For alterations and erection of new classrooms and cloakrooms in the boys and girls' department of the Higham Hill schools. Mr. T. W. Liddiard, clerk, School Board Offices, High Street, Walthamstow.

**WARDHOUSE**—May 29.—For alterations to steading at Slack, Wardhouse, Aberdeen. Mr. John Craigen, solicitor, 193 Union Street, Aberdeen.

**WEST HAM**—June 10.—For cleansing, repair and painting of eighteen schools during the summer vacation, for the West Ham School Board. Mr. William Jacques, architect, 2 Fen Court, E.C.

**WEST HARTLEPOOL**—May 29.—For erection of hospital buildings in Serpentine Road, West Hartlepool. Messrs. Pye & Bacon, architects, 16 John Street, Bedford Row, W.C.

**WHITEHAVEN**—May 27.—For alterations to the auction mart, Preston Street. Mr. J. S. Moffat, architect, 53 Church Street, Whitehaven.

**WINCHESTER**—May 27.—For erection of conveniences in the Abbey grounds. Mr. Walter Bailey, town clerk, Guildhall, Winchester.

**WOODHOUSE**—For erection of seventeen cottages at Woodhouse, Sheffield. Messrs. F. G. Buxton & Co., Market Place Chambers, Sheffield.

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AND  
FITTINGS**



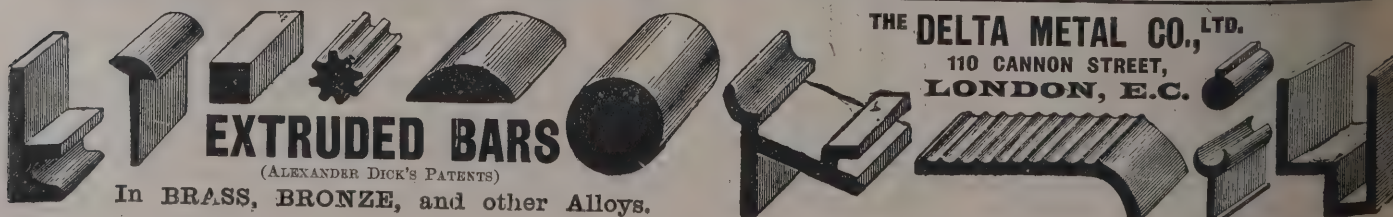
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For erection of an engine-house for well pumps at the destructor works, Queen's Head Road.  
Nicholls & Co. . . . . £167 0 0  
W. C. Channing . . . . . 127 10 0  
Geo. Webb . . . . . 115 18 9  
T. Elvins . . . . . 100 0 0  
HULBERT & LADBURY, Handsworth (accepted) . . . . . 89 0 0

HUDDERSFIELD.

For erection of six dwelling-houses, North Street, Lockwood.  
Mr. J. BERRY, architect, 3 Market Place, Huddersfield.

Accepted tenders.

Sykes & Ainley, Crosland Moor, mason.  
J. Sunderland & Sons, joiner.  
D. Taylor & Son, plumber.  
T. Longbottom & Son, slater.  
Robinson & Shaw, Lindley, Huddersfield, plasterer.  
J. Crow, painter.  
J. Cook, Huddersfield, concreter.

ILKLEY.

For erection of Baptist Sunday school premises, Ilkley.  
Messrs. GARSIDE & PENNINGTON, architects, Pontefract.  
GEO. SMITH, Ilkley, Yorks (accepted) . . . . . £2,650 0 0

IRELAND.

For alterations at Tinahask school, Arklow.  
T. Evans . . . . . £460 0 0  
L. Toole . . . . . 425 0 0  
G. Kearns . . . . . 360 0 0  
McGOWAN, The Mount (accepted) . . . . . 245 0 0  
For additions and alterations to Oatlands, Letterkenny. Mr. JOHN M'INTYRE, architect, Letterkenny.  
R. Kennedy . . . . . £74 10 0  
W. WILSON, Letterkenny (accepted) . . . . . 70 0 0

LEEDS.

For foundations and side walls of five greenhouses at Roundhay Park.  
SCHOFIELD, SONS & CO, Kirkstall Road (accepted) . . . . . £132 8 9

LONDON SCHOOL BOARD.

For heating work, St. John's Road school, Hoxton.  
W. G. Cannon & Sons . . . . . £243 0 0  
G. Davis . . . . . 210 0 0  
Brightside Foundry and Engineering Co., Ltd. . . . . 177 0 0  
R. Clarke . . . . . 162 0 0  
J. Esson . . . . . 148 10 0  
J. Grundy . . . . . 147 0 0  
Skinner, Board & Co. . . . . 137 0 0  
J. & F. May . . . . . 129 0 0  
M. Duffield & Sons . . . . . 125 0 0  
G. & E. BRADLEY (accepted) . . . . . 119 0 0

For new school, Ensham site, Mitcham Road, Tooting.

G. E. Wallis & Sons . . . . . £28,692 0 0  
E. Lawrance & Sons . . . . . 27,830 0 0  
J. Simpson & Son . . . . . 27,498 0 0  
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J. Carmichael . . . . . 25,962 0 0  
W. Johnson & Co, Ltd. . . . . 25,600 0 0  
J. & M. Patrick . . . . . 25,549 0 0  
W. H. Lorden & Son \* . . . . . 25,522 0 0

For drainage and sanitary works, Vittoria Place school, Barnsbury.

Johnson & Co. . . . . £3,262 16 0  
T. Cruwys . . . . . 3,248 0 0  
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Marchant & Hirst . . . . . 3,156 0 0  
G. Neal . . . . . 3,107 0 0  
R. P. Beattie . . . . . 3,002 5 1  
Stevens Bros. . . . . 2,996 0 0  
McCormick & Sons . . . . . 2,989 0 0  
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## LONDON SCHOOL BOARD—continued.

For laundry centre, Ancona Road school, Plumstead.		
W. Downs	£1,857	0 0
F. & H. F. Higgs	1,847	0 0
W. Johnson & Co., Ltd.	1,721	0 0
G. E. Wallis & Sons	1,684	0 0
E. P. Bulled & Co.	1,674	0 0
J. Garrett & Sons	1,657	0 0
J. Smith & Sons, Ltd.	1,597	0 0
W. J. Mitchell & Son	1,595	0 0
J. Marsland & Sons	1,563	0 0
Kirk & Randall	1,529	0 0
E. Triggs	1,526	0 0
J. & C. Bowyer	1,514	0 0
Johnson & Co.	1,508	0 0
T. D. Leng *	1,487	0 0
For adaptation of building for residential school for blind boys, Linden Lodge, Wandsworth Common.		
T. Hooper & Son	£5,634	10 0
General Builders, Ltd.	4,354	0 0
J. Marsland & Sons	4,020	0 0
J. & C. Bowyer	3,694	0 0
J. & M. Patrick	3,657	0 0
W. Hammond	3,640	0 0
J. Carmichael	3,590	0 0
Lathey Bros.	3,563	0 0
J. Garrett & Son	3,415	0 0
E. Triggs *	3,412	0 0
For additional cloakrooms, Caledonian Road school, Islington.		
T. L. Green	£237	0 0
G. S. S. Williams & Sons	233	0 0
Stevens Bros.	209	0 0
Marchant & Hirst *	197	0 0
For partition, &c., Hague Street school, Bethnal Green.		
J. Willmott & Sons	£557	0 0
T. H. Jackson	477	0 0
C. Dearing & Son	475	0 0
Bruce, Croom & Co.	458	0 0
Barrett & Power	429	0 0
F. Bull	411	0 0
G. Barker	408	0 0
W. Martin	395	0 0
A. J. Sheffield *	331	0 0

\* Recommended for acceptance.

## LONDON SCHOOL BOARD—continued.

For dividing Room B in each department by glazed partition, Deal Street school, Mile End New Town.		
T. H. Jackson	£675	0 0
London School Furniture Co.	592	5 0
J. Willmott & Sons	480	0 0
J. T. Robey	465	0 0
Bruce, Croom & Co.	440	0 0
Marchant & Hirst	395	0 0
Johnson & Co.	388	10 0
General Builders, Ltd.	347	0 0
A. J. Sheffield	336	0 0
Vigor & Co.*	329	0 0
For partitions in boys and girls' departments, Stanley Street school, Deptford.		
G. Kemp	£1,250	0 0
J. & C. Bowyer	1,188	0 0
Lathey Bros.	1,179	0 0
J. Marsland & Sons	1,085	0 0
J. Garrett & Son	1,028	0 0
General Builders, Ltd.	997	0 0
Rice & Son	937	0 0
E. Triggs *	919	0 0
For alterations to classrooms in girls' department, Monteith Road school, Old Ford Road.		
T. H. Jackson	£285	0 0
Stevens Bros.	278	0 0
J. T. Robey	262	5 0
F. Bull	252	0 0
Barrett & Power	241	0 0
Bruce, Croom & Co.	237	6 10
W. Martin	232	0 0
F. & F. J. Wood	226	0 0
W. Shurmur & Sons, Ltd.	225	0 0
G. Barker	221	10 0
London School Furniture Co.*	216	10 0
For external staircase and bridge to the manual centre, and other works, Culloden Street school, Brunswick Road.		
J. Grover & Son	£519	0 0
T. H. Jackson	496	0 0
E. Lawrance & Sons	480	0 0
F. Bull	424	0 0
F. & F. J. Wood *	355	0 0

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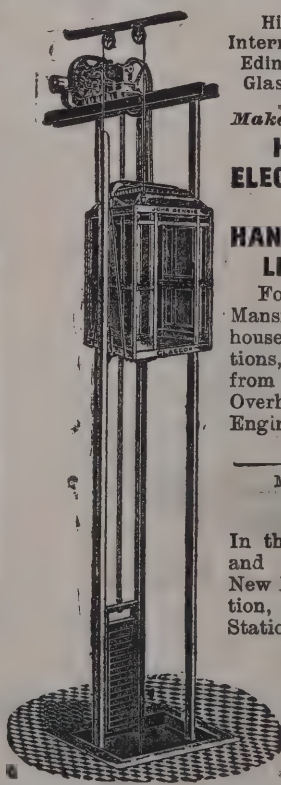
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Electric lighting, Northwold Road new school.			
han & Brown, Ltd.	£489	0	0
on Ching & Co., Ltd.	412	10	0
e & Gorham, Ltd.	392	0	0
an Watson & Co.	372	15	0
Bros & Co.	368	0	0
leigh, Phipps & Co.	368	0	0
hall & Woods	322	0	0
es & Co.	314	0	0
Christie *	310	0	0

Supply of bentwood chairs for public meetings.

lison & Co.	£645	4	2
oolbred & Co.	628	4	7
ssler & Sons.	611	5	0
(Original) Austrian Bent Wood Furniture			
h, Ltd.	611	5	0
et Bros.	611	5	0
Levy	594	5	5
ohen & Sons, Ltd.	577	5	10
Benjamin	568	0	0
J. Kohn (for the First Austrian Bent Wood			
urniture Manufacturing Co., Ltd.)*	560	6	3

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The exteriors of the following schools will be painted  
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*Swan Street.*

reenwood	£188	0	0
uthwaite & Son	177	0	0
Wilson	160	0	0
Holliday	115	0	0
don & Sons	104	10	0
NSON & Co. (accepted)	95	0	0

*Flora Gardens.*

G. I. Sealy.	£190	0	0
WHornett.	179	0	0
W. R. & A. Hide	158	5	0
S. Olden	139	10	0
F. Chinchin & Co.	109	15	0
BSTOW & EATWELL (accepted)	97	15	0

**LONDON SCHOOL BOARD—continued.**  
*Everington Street.*

Hudson Bros.	£250	10	0
W. Hornett.	161	0	0
C. Curd	160	10	0
C. Gurling	147	0	0
Lathey Bros.	147	0	0
Bristow & Eatwell	125	0	0
S. Polden	125	0	0
W. Hammond	120	0	0
F. T. CHINCHEN & Co. (accepted)	114	10	0

*Cottenham Road (old portion and enlargement).*

G. Kirby	£195	0	0
McCormick & Sons	194	0	0
Marchant & Hirst	191	0	0
Stevens Bros.	178	0	0
C. & W. Hunnings	152	0	0
BATE BROS (accepted)	143	0	0

*Pakeman Street.*

McCormick & Sons	£161	0	0
J. Grover & Son	144	0	0
G. Kirby	129	0	0
Marchant & Hirst	122	0	0
Bate Bros.	121	17	0
F. W. Harris	119	0	0
Stevens Bros.	118	0	0
C. & W. HUNNINGS (accepted)	115	0	0

*Ancona Road.*

W. Hayter & Son	£235	0	0
J. Harries	234	0	0
H. Groves	175	0	0
W. Jolly	163	10	0
D. Gibb & Co.	145	0	0
E. PROCTOR (accepted)	144	0	0

*Chatham Gardens.*

Collis Willmott & Son	£179	0	0
W. Martin	150	0	0
Staines & Son	138	0	0
G. Barker	135	0	0
Chessum & Sons	128	0	0
BARRETT & POWER (accepted)	126	0	0


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For decorative and sanitary works at 1 Bedford Square, W.C.  
Mr. WALTER J. EBBETTS, architect, Savoy House,  
115 Strand.  
Stevens Bros. . . . . £307 10 0  
C. BROWN & SONS (accepted) . . . . . 303 10 0

**MANSFIELD.**

For erection of tuberculosis wards at the workhouse. Messrs.  
VALLANCE & WESTWICK, architects, White Hart  
Chambers, Mansfield.  
J. Greenwood . . . . . £1,600 0 0  
S. B. Frisby . . . . . 1,600 0 0  
Vallance & Blythe . . . . . 1,545 0 0  
J. Fisher . . . . . 1,497 0 0  
J. & F. L. Parsons . . . . . 1,418 10 0  
G. R. Randall . . . . . 1,400 0 0  
W. A. VALLANCE, Mansfield (accepted) . . . . . 1,396 0 0

**MILTON.**

For construction of a trial borehole at Milton, Derbyshire.  
Mr. SIDNEY P. LOWCOCK, engineer, Temple Courts,  
Birmingham.  
J. Smalley . . . . . £942 2 0  
Cheeld & Co. . . . . 763 11 0  
J. Villiers . . . . . 697 18 0  
J. Henderson & Son, Ltd. . . . . 685 13 0  
J. Thom . . . . . 621 19 6  
C. CHAPMAN & SONS, Liverpool Street, Salford,  
Manchester (accepted) . . . . . 524 1 9

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For macadamising portion of Trinity Crescent, Leith.  
G. & R. Cousin . . . . . £83 3 3  
R. C. Brebner & Co. . . . . 72 10 3  
H. Leedham . . . . . 65 2 11  
A. Waddell & Son . . . . . 62 15 3  
W. Dobson . . . . . 61 18 5  
D. & J. Stratton . . . . . 57 4 4  
T. Davidson, jun. . . . . 56 19 10  
W. WATT, 6 Balfour Place, Leith (accepted) . . . . . 53 8 7

For painting the iron railings and seats at Annan cemetery.  
E. Irvings . . . . . £18 16 4  
W. Irving . . . . . 14 1 6  
N. Farish . . . . . 6 14 1

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For electric wiring at the new general hospital, Stobhill  
Glasgow. Mr. W. ARNOT, engineer, 79 West Regent  
Street, Glasgow.  
Osborne & Hunter . . . . . £6,850 0 0  
Malcolm & Allan . . . . . 6,750 0 0  
McAlpine's Electrical Co. . . . . 6,691 0 0  
McAuley, Clark & McLellan . . . . . 6,273 0 0  
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J. Findley & Co. . . . . 5,356 0 0  
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J. M'Kenzie & Co. . . . . 4,685 0 0  
Middleton & Townsend . . . . . 4,511 0 0  
C. HAMILTON, LTD., Glasgow (accepted) . . . . . 4,197 0 0

**SEASCALE.**

For erection of three houses at Seascale, Cumberland. Mr.  
J. S. STOUT, architect, 36 Lowther Street, Whitehaven.  
*Accepted tenders.*  
H. Finnon, Allonby House, Flimby, mason  
and bricklayer . . . . . £1,155 16 0  
R. Bragg, William Street, Workington, car-  
penter and joiner . . . . . 434 15 0  
J. Tyson, Croft House, Gosforth, slater and  
plasterer . . . . . 315 0 0  
W. Stratherne, King Street, Whitehaven, plumber . . . . . 180 5 0  
E. McConn, Duke Street, Whitehaven, painter . . . . . 51 3 0

**SLAITHWAITE.**

For erection of a villa residence at Slaithwaite, Yorks. Mr. J.  
BERRY, architect, Huddersfield.  
*Accepted tenders.*  
W. Holroyd, Slaithwaite, mason.  
J. Varley & Son, Slaithwaite, joiner.  
F. Goodall, Slaithwaite, plumber.  
J. Sutcliffe, Slaithwaite, plasterer and painter.  
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A. Millington . . . . . £330 0 0  
N. Adams . . . . . 330 0 0  
SISMAN, Factory Road, Tipton (accepted) . . . 320 0 0

WALES.

Restoration of the parish church, Trelech-ar-Bettws, for the Vicar and Churchwardens. Mr. DAVID JENKINS, architect, Llandilo.  
H. EVANS, Mydrim (accepted) . . . . . £590 0 0  
(Haulage done by the building committee.)  
Restoration of the Llanfynydd parish church, for the Vicar and Churchwardens. Mr. DAVID JENKINS, architect, Llandilo.  
EVAN EVANS, Llanybyther, R.S.O. (accepted) . £780 0 0  
Erection of Mynydd-Cerrig Board school, Llandeibie, for the Llandeibie Urban District School Board. Mr. DAVID JENKINS, architect, Llandilo.  
J. & H. VAUGHAN, Tycroes, Pantyffynnon, R.S.O. (accepted) . . . . . £1,581 13 0  
Addition and alteration to Miss Price's house and shop, Rhosmaen Street, Llandilo. Mr. DAVID JENKINS, architect, Llandilo.  
THOMAS BROS., Llandilo (accepted) . . . . . £180 0 0  
Erection of a chemical laboratory to the Intermediate school, Llandilo, for the Governors. Mr. DAVID JENKINS, architect, Llandilo.  
THOMAS BROTHERS, Llandilo (accepted) . . . £300 0 0  
Rebuilding Canton Cottage, Llandilo, for Councillor Jones, Canton Stores. Mr. DAVID JENKINS, architect, Llandilo.  
The owner and local tradesmen . . . . . £225 0 0  
Building additional classroom, for the Llangadock Board school. Mr. DAVID JENKINS, architect, Llandilo.  
MORGAN & DAVIES, Llangadock (accepted) . £290 5 0  
Erection of stores in Severn Road, Canton, Cardiff. Mr. E. G. C. DOWN, architect, Cardiff.  
W. T. Morgan . . . . . £600 0 0  
G. Couzens & Co. . . . . 588 10 0  
C. C. DUNN, Cardiff (accepted) . . . . . 580 0 0

WALES—continued.

For painting at the Central, Grangetown, Cathays and Bute Street police-stations, Cardiff. Mr. W. HARPUR, borough engineer.  
W. E. James . . . . . £123 16 0  
F. G. Robbins . . . . . 107 0 0  
D. R. Bradbury . . . . . 99 11 0  
J. Casey . . . . . 79 8 11  
D. Mullens . . . . . 63 2 6  
GOUGH BROS., 1A Wellfield Road, Cardiff (accepted) . . . . . 54 2 0

WEST HAM.

For erection of steam road-roller shed and offices at the Abbey Road depot, Stratford. Mr. J. G. MORLEY, borough engineer.  
Viney & Stone . . . . . £1,200 0 0  
Clare Bros. . . . . 1,184 2 7  
Goodman & Son . . . . . 1,154 4 6  
C. North . . . . . 1,092 0 0  
G. WISE, works manager, West Ham (accepted) 918 0 0

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For street work in Bolton Road.  
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A BEAUTIFUL three-light stained-glass design by Mr. John P. Seddon, for Compton Martin Church, near Bristol, is now on view in the studio of Mr. Henry G. Murray, 11A Catherine Street, Eaton Square. The subject is the Transfiguration. The colouring, while rich and brilliant, is soft and harmonious, and so judiciously arranged as to transmit a pure white light, a matter of considerable importance in many situations. The glass employed is known as varied antique; it is a specialty of Mr. Murray's, who by its means obtains some admirable light and shade effects.

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## TRADE NOTES.

THE Wombwell Urban District Council, Barnsley, Yorks, have ordered a new illuminated turret quarter clock and three bells from Messrs. Wm. Potts & Sons, clock manufacturers, Guildford Street, Leeds, to celebrate the Coronation of His Majesty King Edward VII., which has to be set going on Coronation Day; and the Vicar and Churchwardens of Marton-cum-Grafton, near York, have ordered a hour striking clock and bell for the parish church, also to be set going on Coronation Day.

MRS. BROUGHTON has kindly presented a new clock to the parish church, Bentley, Doncaster, to the memory of her late husband, whose family have resided in the same house opposite to the church for over 200 years. The clock strikes the hours, and shows the time upon two external dials, and was made and fixed by Messrs. Wm. Potts & Sons, clock makers by appointment to H.M. the late Queen Victoria. Messrs. Wm. Potts & Sons have also recently erected a new clock and bell at Ashton Wold, near Oundle, Northamptonshire, for the Right Hon. C. L. Rothschild.

## ELECTRIC NOTES.

AT a meeting of the lighting committee of the Leeds Corporation, the accounts for the year were submitted by the city accountant, and these, after providing for interest and sinking fund charges, showed a surplus of 3,170*l.* 0*s.* 2*d.*

THE E. L. B. system of electric lighting has been adopted by the French naval authorities for the illumination of the special squadron which is on its way to Russia with the President of the Republic. The *Montcalm* in particular has been most elaborately equipped with devices and fittings on the E. L. B. system, the representatives of the Electric Lighting Boards Company also being entrusted with the lighting of the special banqueting saloon and the great dining-tables fitted up on this ship for the entertainment of the Czar. The Czar is personally much interested in the E. L. B. system, and after making some private experiments recently specially ordered it to be applied for decorative purposes at several State functions.

AT the monthly meeting of the Hamilton Town Council the electric-lighting committee reported that the price offered by Messrs. Edmundson, London, the contractors for the lighting of the town, for the generating station at Almada Hill, inclusive of buildings, was 32,302*l.* Mr. Hogarth, their con-

sulting engineer, had reported that, while the price in the circumstances could not be thought unreasonable, it was at least 10 per cent. more than would be required if the Corporation carried out the work themselves. He did not think that better terms could be obtained from any other company. In respect that Messrs. Edmundson had agreed to have the work completed and the light turned on by the end of the year, the committee recommended that the agreement be now completed. After considerable discussion, on the question principally of the site, the report was adopted.

## BUILDING AND BUILDERS.

AT St. James's Restaurant, London, extensive alterations are about to be made according to the designs and under the superintendence of the architect, Mr. Walter Emden.

WE understand that Major Bruton is relinquishing the secretaryship of the Builders' Benevolent Institution owing to failing health.

TENDERS have been invited for the immediate construction of a deep wharf in Quebec Harbour in anticipation of the establishment of a fast Transatlantic line of steamers.

THE corner-stones of an extension of Union Croft Sunday school, Ambler Thorn, were laid on Saturday. The extension is estimated to cost 600*l.*

THE foundation-stones of new parish buildings to be erected in connection with Holy Trinity Church, at the Moir, near Longton, Staffs, were laid on Monday last. These buildings will consist of a Sunday school, a men's institute, a library and a parish-room, and the cost will be about 1,450*l.*

MR. GEORGE GEMMELL, a retired master painter, was knocked down by an electric car at Glasgow last Saturday and removed to hospital, and when Mrs. Gemmell heard the news at her home at Eden Villa, Govan, she was so overcome that she expired. Mr. Gemmell himself has died from his injuries.

THE Troon (N.B.) Town Council has resolved to proceed with the erection of a permanent smallpox hospital, the expenditure to be covered by a loan over a period of thirty years. The site selected is off the old road between Muirhead and Wallacefield, a short distance outside the burgh boundary. The price of the land is at the rate of 12*l.* per acre, and the cost of the building is estimated at 1,400*l.*

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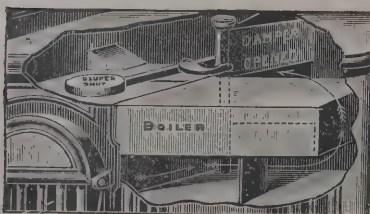
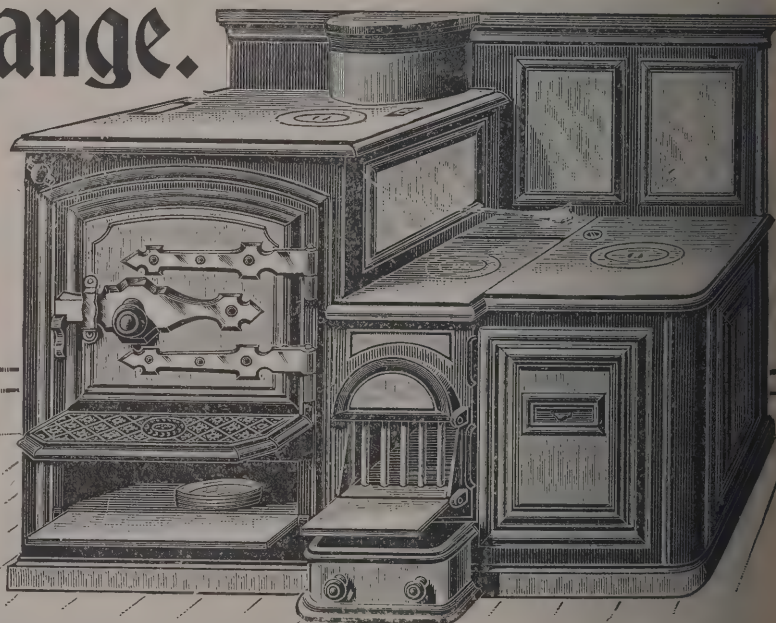
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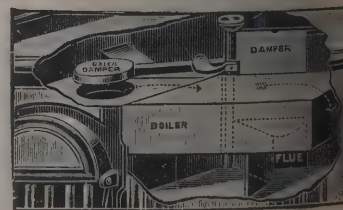
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The above shows the heat of the fire concentrated on the hot plate and the waste heat passing under the boiler.

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## ILLUSTRATIONS.

PENRHYN CASTLE, NORTH WALES.

THE WHITE HOUSE, MORETON-IN-MARSH: GARDEN FRONT.  
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ENTRANCE, ROYAL COURTS OF JUSTICE, STRAND, W.C.

DESIGN FOR QUEEN VICTORIA MEMORIAL.

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## VARIETIES.

NEW town hall has been erected at Pwllheli, North Wales, at a cost of 12,500*l.*, and was formally opened last week.

ON Tuesday evening next, the 27th inst., Miss May Morris will read a paper on "Pageantry and the Masque" before the literary art section of the Society of Arts, illustrating her remarks with a series of lantern pictures. The chair will be taken at 8 o'clock by Sir George Birdwood, K.C.I.E., C.S.I., &c.

THE Metropolitan Fire Brigade held a conference last week at the Southwark Bridge Road head-quarters, with a view to considering the steps to be taken in regard to fire protection in connection with the Coronation. It was decided that an action is to be at once undertaken of all Government stands with a view to the removal of every possible risk of fire, and the provision of means of escape in the event of an outbreak. On the day of the procession firemen will be on duty at every alarm post on the line of route, as well as at other points, and other special precautions are being arranged.

HIS Grace the Duke of Northumberland, K.G., vice-president, will preside at the Sanitary Institute Coronation Dinner, to be held on Monday, June 2, at the Midland Grand Hotel. Among those who will be present are:—Sir Joseph Fryer, Bart., K.C.S.I., F.R.S.; Sir Francis Sharp Powell, Bart., M.P.; Sir Samuel E. Scott, Bart., M.P.; Sir William H. Preece, K.C.B.; Sir Henry Norbury, K.C.B., Director-General, Royal Navy; Surgeon-General W. Taylor, C.B., Director-General, Army Medical Service; Mr. E. Barnes, mayor of St. Pancras; and R. M. Hensley, chairman Metropolitan Asylums Board.

THE British Fire Prevention Committee's testing arrangements this month include on Wednesday, May 28, a comparative test between a roof covered with slates and a roof covered with vulcanite. In connection with the ever-increasing loss of life by fire, the Chairman (Mr. Edwin O. Sachs) notified to the National Fire Brigade Union in the course of their successful gathering held last week under the presidency of the Duke of Marlborough, that he was presenting a national silver challenge bowl for the smartest fire-escape crew, to be competed for on similar lines as the Union's existing challenge bowls for steam fire-engines and manuals. Mr. Sachs, who was present with Mr. Farrow, remarked that, although the British Fire Prevention Committee was primarily associated with questions of construction and materials, its members highly appreciated the necessity of advancing in every way the interests of life-saving so gallantly practised by firemen of the country.

## LUXULYAN.

MR. SILVANUS TREVAIL, president of the Society of Architects, has just presented to Luxulyan parish church a peal of bells. The *Western Morning News* contains the following particulars:—

Unexpectedly, Mr. Silvanus Trevail arrived at Luxulyan on Monday from Bodmin in a little pony-trap, and made at once for the fine old parish church. The vicar, the Rev. S. Kendall, had been making a careful survey of the tower and its bells, so that on Mr. Trevail's arrival he was soon put in possession of the facts. There were originally four bells, but of these only two now remain intact, and these, with their framework, mountings and hangings, are in such a state of dilapidation as to be quite unusable. Mr. Trevail was only a few minutes in solving the question. "There must be a peal of six bells, attuned in note or key to the old tenor bell, of which I have the recollections of boyhood. They must be hung and completed with all framework and fittings in the most perfect up-to-date manner, and I will bear all expenses," remarked this very welcome Whit-Monday visitor. Needless to say this announcement almost took the vicar's breath away. For more than half a century Luxulyan had been bemoaning its want of bells. The grand old historic tower that was the repository of the Stannary records before the Civil Wars of the Stuart period, had been for upwards of a century silent, excepting for its powerful tenor bell, although various

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incumbents of the parish during that period had done their best to get the peal supplied. These included such earnest and highly respected vicars as the late Rev. Richard Gerveys Grylls, Rev. Cuthbert Edgcumbe Hosken, Rev. Henry Walter Taylor, and later still the present rector of St. Ewe, the Rev. J. Kendall Rashleigh. The district was comparatively poor, and the requisite funds were not forthcoming. But to-day, by the single stroke of a pen, the present incumbent, the Rev. R. Sinclair Kendall, has the great satisfaction of knowing that the bells are assured. Both Mr. Trevail and Mr. Johnston had come down by the night express from London, and the business occupied exactly two hours from the moment of Mr. Trevail's arrival in Luxulyan until he left again by the 1.39 P.M. train, when everything had been settled, even to the signature of the contract, stipulating that the work shall be completed during the month of August next. It is rumoured that this handsome gift is the spontaneous outcome of Mr. Trevail's appreciation of the kind manner in which he and his family were received and treated by the vicar and his old parishioners on the occasion of his late mother's funeral.

### A BRICKLAYERS' MANIFESTO.

THE following statement has appeared in the *Times* :—

Sir,—To allow charges of misconduct, &c., always to pass unchallenged is to risk the chance of allowing the outside public to regard you as guilty, because you refuse to deny or refute them, hence our reason for issuing this manifesto.

Our object in doing so is to place before the public an official reply to the charges made against our members and bricklayers in general. Had the complaints been confined to one or two letters on what is termed the "ca' canny" policy, we should not have considered it necessary to reply; but the systematic way in which false and misleading statements are now being circulated through the Press and otherwise, leading the public into error, has rendered it imperative that we should say something in reply. This then is our excuse for issuing this pronouncement.

As it is impossible in the space at our disposal to reply to all that our detractors urge against us, we must only be considered as dealing with the main arguments put forth and the salient points of their letters; but, before proceeding to do so, allow us to state officially and emphatically that our Society does not recognise nor inculcate, either by rules and laws,

written or unwritten, that it is a sound policy to restrict laying of bricks to any given number per day, but recognises and maintains the right of any employer to discharge any man whom he considers does not do a fair day's work for the wages he is receiving.

That is the principle upon which our Society works, and challenge contradiction. Mr. Stewart, building-manager of British Westinghouse Company, proves that what we say is correct, for he says, "I will say with regard to the unions that if our work has been rapidly executed it has been good due to the interest that has been taken by the representatives of the unions in securing for us the best men that could be obtained."

The controversy regarding "ca' canny" may be said to have broken out in the *Times* during last November in one of their articles in which we find the following very misleading statement:—"Twenty years ago a bricklayer would lay 1,000 bricks a day when on ordinary work. Thirty years ago the bricklayers employed on railway-tunnel work in London laid even 1,200 a day, but the unwritten law now in force declares that a bricklayer engaged even upon ordinary work must 'go easy' and not lay more than 400 in the day." This has evidently been written by someone who is ignorant of the history and practice of the trade. Dealing with the practical part of the question, we have every reason for believing that the "tunnel tigers" are as voracious as ever; and it may be information for those who are interested in this question to know that the men who were in the habit of laying 1,000 bricks per day twenty years ago were men who were paid a penny an hour above the trade-union rate, and where the same policy is adopted to-day similar results would follow. Again Mr. Stewart proves that the statement of the correspondent is false and that our assertions are true. The men who are said to have laid 1,000 bricks per day would be men engaged upon cottages, or work of a rough description, and the same results can be found to-day if the men are paid accordingly.

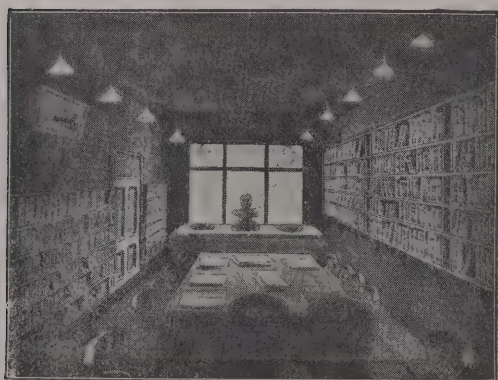
But, turning for a moment to the historical part of the subject, we find similar complaints being made against bricklayers not doing enough work as far back as 1878 and 1867. Thus it will be seen that this is no new cry, but appears to be one that crops up afresh with each succeeding generation.

Again, to say that the maximum of 400 (or any other number) bricks per day is the "recognised" limit for dwelling

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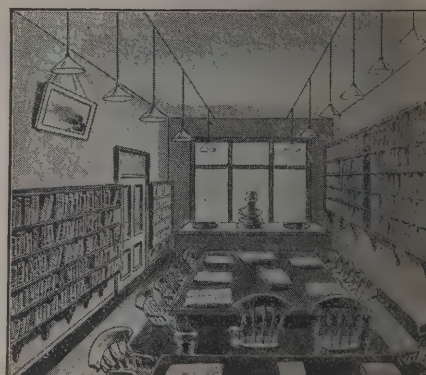
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shops, shops and business premises built by a private contractor is a wilful perversion of facts, as no such maximum exists anywhere but in the heads of confused and irresponsible agitators.

leaving the *Times'* correspondent now, and passing on to consideration of the views of another, we might say, by the way, that we would gladly welcome criticism and discussion from any architect who can state his case with courtesy, but when he stoops to be insolent and impertinent we can afford to ignore him, no matter how many initials he may be able to add to his name.

Americans are always conspicuous for doing things smarter and more ingeniously than anyone else; and the building at Ford Park, Manchester, is no exception to the rule.

It appears that Mr. Stewart, the building manager for the British Westinghouse Company, has submitted to the *Times* some figures relative to bricklayers' work which have called forth a whirlwind of criticism from a number of persons who evidently do not understand the trade. The mere fact that high averages may be reached on a certain class of work is no proof that they can be reached on other classes of work, and this is apparently what some of our critics fail to realise. That a great number of bricks would be laid each day we are prepared to admit; the quality of the work, the state in which it has been left for finishing, the absence of arches, pilasters, &c., which necessitate devoting of much time to plumbing, levelling, &c., all favour high speed and good records, but we hope we will be pardoned when we decline to accept Mr. Stewart's figures as absolutely correct. Notwithstanding Mr. Stewart's assurance, we decline to believe that the bricklayers working on the chimney at Birkenhead laid upon an average 1,976 bricks per diem. To have reached any such average would mean that the chimney would have to be scamped to such an extent as would endanger its stability.

But before leaving this question of high averages, and before taking leave of the subject, we would like to draw the attention of those interested in the question to one or two points in the matter that must always be considered by those who wish to have correct ideas concerning quality and its bearing on speed. First of all, when people make comparisons between the amount of work done for the Westinghouse Company and that of the contractors, it ought to be remembered that the Westinghouse Company were building for themselves, had only themselves to please concerning the quality and finish of their work. Not so with the contractors, who

in most cases have to satisfy their client, the architect, and the clerk of the works; and no architect or clerk of works would allow a contractor to finish his work in the fashion that is necessary for attaining high rates of speed. As an evidence of our desire to be just in this controversy, we challenge any architect of position or any clerk of works who has had a few years' experience in the erection of brick buildings to say that the class of work which can be secured by high rates of speed, no matter how well paid for they may be, is the class of work they are prepared to accept. Any impartial observer will see clearly what class of work the Westinghouse Company were turning out when he finds the *Times'* correspondent saying, "It must be remembered, however, in regard to this question, that there is a great difference in the quality of bricklaying. What is good enough for rough work out of sight will not do for the front of high-class dwellings, not to speak of such refinements as rubbed bricks." This leaves the practical man with no room for doubt regarding the quality of the work, but he is also aware that the architect and clerk of works would not allow speed to be procured by any such methods; therefore it is grossly unfair to make a comparison of men who are employed under conditions so dissimilar. Again we would say that we recognise the right of employers to demand a fair day's work for a fair day's wage, but to cite such cases as Mr. Stewart and the *Times* correspondent have favoured us with is to disappoint employers, dishearten the men, and destroy the very object they seek to secure.

G. W. HOPE, President.

JOHN HARRISON, Secretary.

Operative Bricklayers' Society, Newcastle-on-Tyne.

#### LIABILITY OF SUB-CONTRACTORS.

JUDGMENT was given on Friday, the 16th inst., in the House of Lords, in the appeal case *Cooper & Crane v. Wright*.

The appellants, Messrs. Cooper & Crane, builders, Nottingham, contracted to erect a building at Nottingham, and afterwards contracted with the respondent, Alfred Wright, a slater, to provide the slates for the roof of the building, and "to fix the same." On June 29, 1899, while the building was in course of construction, James Arthur Brady, a slater's labourer, employed among others by the respondent, received in the course of his employment injuries which resulted in his death, a lift or hoist by which he was conveying slates to the roof

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having collapsed. Steps being taken by the widow to obtain compensation under the Workmen's Compensation Act, 1897, the appellants denied liability, on the ground that Brady was not immediately employed by them, but by the respondent in the execution of work which was no part of the business carried on by them, and alternatively contended that they were entitled to be indemnified by the respondent should any compensation be awarded against them. The respondent contended that he was not the "undertaker" of any work to which the Act applied. An arbitration was heard by the Nottingham County Court judge, who ordered the appellants to pay 217*l.* to the dependents of Brady, but by a later award determined that the respondent was liable to indemnify the appellants. The respondent appealed, and the Court of Appeal set aside the decision of the County Court judge as to his being liable; and against the order pronounced by the Court of Appeal Messrs. Cooper & Crane appealed to their Lordships' House.

Lord Brampton, in the course of an elaborate judgment, said that the widow was entitled to compensation from Cooper & Crane as the undertakers admitted of no possible doubt. The judge was right, therefore, in his award of compensation against them. Even had this been open to question, no appeal had been made against it, and that award was not questioned during the argument and need not now be questioned. The real question before their lordships arose out of the question of Cooper & Crane for indemnity from their sub-contractor Wright. The case in support of that claim was put thus, that by his sub-contract with Cooper & Crane Wright became an undertaker equally with themselves within the meaning of the 7th section, and was in every respect under the same primary obligation to pay compensation to the widow, and that such liability was a liability imposed by sections 1 and 7 independently of the 4th section, so as to bring him within the proviso of that section and to give them a right to claim indemnity from him. He did not think those propositions could be maintained. First, Wright was not an undertaker within the meaning of section 7 of the Act. It might be that in the ordinary common acceptance of the expression a man might be said to undertake anything he had taken upon himself to do with or without a contract, but that was not the interpretation contemplated by the framer of the definition clause. The

legislature in using the expression "the undertakers," had given it a limited statutory meaning beyond which it could not be extended. To bring any person within the definition clause he must have undertaken some definite specific work of construction which was to form the subject of his undertaking. In this case it was for the construction of an entire building. For such a work it seemed to him that two persons, or several persons only, could fill the position of undertakers defined by the Act—the building owner who took upon himself the construction of the building, or the persons who, through the medium of a contract with him, took upon themselves the obligation to execute the work for him. By their contract Cooper & Crane undertook the construction of the building from the foundation to the roof, and therefore they constituted themselves the undertakers of the whole building within the definition of section 7. If undertakers could add to the number by sub-contracts for different parts of the building, there would be no limit to their number, and this would greatly tend to defeat the object of the legislature in its endeavour to assist the workman by pointing out specifically the persons to whom he might look for compensation. He could conceive none on whom the obligation to pay compensation could more reasonably rest than those who, as a matter of business, had undertaken the whole control and every responsibility attaching to the erection of the building they had undertaken to construct. The language of section 4 indicated a thorough appreciation by the legislature of the difference between undertakers to whom the Act applied and a sub-contractor for a part of the work. The Act never spoke of sub-contractors as undertakers, and if it had been intended they should be so considered with all their obligations, it was impossible to suppose it would not have imposed these obligations and expressed such intention in clear, intelligible language. He was satisfied that the Act by no reasonable interpretation could be held to make a sub-contractor an undertaker, and if he was right in that view this appeal must fail. But even if Wright could be considered such an undertaker with an obligation equal to that of Cooper & Crane to pay compensation, he failed to see upon what ground the claim of Cooper & Crane for indemnity could be supported in this case. The common law certainly would not enable one or two

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A—Is the front view of Junction and loose flange; the inlet being elongated, allows the lead pipe to be cut to any required angle.

B—Shows the Joint fixed and ready for tightening up, and also a few of the angles which can be got.

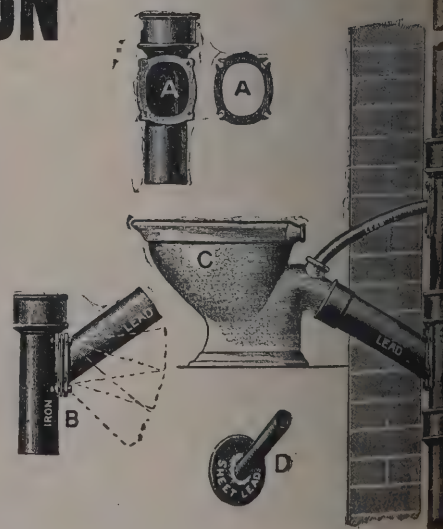
C—Shows the one size which can be adapted for 4 in. Soil Pipe, and a 4 in.  $\times$  1 $\frac{1}{2}$  in. Invert Junction for Anti-siphon Pipes, &c.

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is, each equally liable to pay statutory compensation to a man, who had paid such compensation in full, to obtain indemnity against the other for the whole amount so paid. To such a claim some enactment by statute or some contract between the parties would be necessary. No such enactment had been shown in this case. There was not bound in the Act anything, expressive or implied, creating, a possible event of there being two or more undertakers, being equally liable to compensation and neither guilty of negligence, an obligation of indemnity in the event of one only of them being called upon to pay. But he would put out another objection to the claims of indemnity. The Act in section 4 was that "the undertakers should be liable to be indemnified by any other person who would have been liable independently of this section." Now, if it could be said that Wright was one of the undefined undertakers mentioned in that section, and that there was a common obligation as undertaker upon Cooper & Crane and Wright, would it be said that Wright was some person other than an undertaker? Treating him as a mere sub-contractor, this obligation would not arise. In his opinion, Cooper & Crane were the only undertakers within the definition of section 7 of the Act. They admitted the award was right, and the burden must rest where it had fallen. If undertakers desired to shift the responsibility of an indemnity upon their sub-contractors they must provide for it in their sub-contracts. It was held that, in his opinion, the appeal ought to be dismissed with costs.

Lord Robertson said he agreed with Lord Brampton. The Lord Chancellor said:—In this case a building was constructed for Messrs. Barker & Co. by Messrs. Cooper & Crane, as builders. Messrs. Cooper & Crane contracted with the respondent Wright to supply slates for the roof and to perform the work of completing the roof. Wright, in his turn, employed a labourer named Brady to carry the slates, and in the course of that employment a lift broke and caused Brady's injuries. It is not denied that under the express language of the statute Brady's representatives were entitled to compensation from Messrs. Cooper & Crane. They were the persons constructing the entire building, but they had obtained a sub-contractor to construct the roof. No question, therefore, is raised but that this is an employment to which the Act applies. To get out for the moment of the technical language of the statute, the substance of the matter would appear to be that Barker was the person for whom the building was being

erected, Messrs. Cooper & Crane were the persons who contracted to build it, Wright was the sub-contractor for the roof, and Brady was employed by Wright, who was Brady's actual employer. Now, it appears to me that the general design of the statute was to enable an injured workman, or, in the event of his death, his representative, to make a claim for damages against the employer in the sense of a person who was constructing the building—even if he was not the immediate employer of the person injured. The theory of the Act is, apart from any negligence or misconduct, that a man employed in certain dangerous employments shall be in a certain sense insured against any accident that takes place. It was probably obvious to the legislature that if the workman was driven to sue a sub-contractor and could not rely upon the responsibility of the person engaged to perform the whole work, a series of sub-contracts might render it practically impossible for him to ascertain the person whom he ought to sue, or, if he did, to obtain satisfaction. But then the legislature seems to have provided that, though the contractor for the whole work might be sued even by a person not immediately under his control or in his employment, yet the theory of the statute being that the employer was to be made liable, the contractor for the whole work might procure his indemnity for the liability against the actual employer of the injured workman. Now here, of course, it cannot be denied that Wright is the actual employer, and if the design of the statute is what I have suggested, it is clear that Messrs. Cooper & Crane, who did not employ Brady at all, and are only made liable by the statute in the first instance—and the statute saves their right of indemnity against the real employer—the case is one actually contemplated by the statute, and so the County Court judge decided. The objections appear to be that Wright was not an undertaker at all. That, in a popular sense, he undertook the construction of the roof is admitted, that he employed Brady is admitted, that the accident happened in the course of Brady's employment under Wright in the construction of the building is also admitted, and the question is whether there is anything in the statute to show that Wright cannot be within the meaning of the statute itself an undertaker. The whole point seems to turn upon the question whether the persons who are described as undertakers must be undertakers of the whole construction, and I suppose that argument turns upon the word "the," because the interpretation section enacts that in the case of a building the undertaker means the person undertaking the construction,

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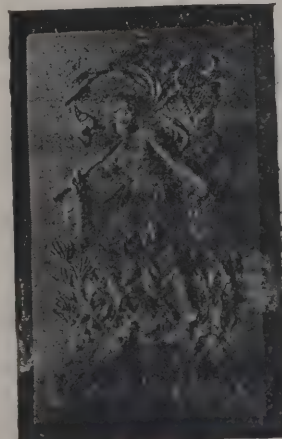
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repair or demolition. If by that is meant that, in order to be an undertaker, the person must have undertaken the construction of the entire building, it would be an intelligible construction, though it is not the one that I would place upon the section, but if, as the Court of Appeal seems to have held, an undertaker does include a person who sub-contracts for a substantial part of a building, then I do not understand why in this case Wright was not an undertaker. By any of the ordinary particulars by which an undertaker can be described, Wright was certainly an undertaker. He undertook a substantial part of the work, namely, the roof. He had the control and management of that part of the work. He employed Brady as a labourer in that form of employment, and I do not understand why it is suggested that he was not an undertaker, unless it is suggested that, in order to be an undertaker, he must take upon himself the entire contract that has been made by another person. It seems to me that would be an unreasonable construction of the statute, which in its language is sufficiently clear. To apply therefore the language of the statute itself to the facts of this case, the employment here of Cooper & Crane was an undertaking by them, and they are in their turn undertakers, but they contracted with Wright for the execution of certain work, namely, the roof. But by the language of the statute they are made liable if such work were executed by workmen not immediately employed by them, but on the work for which they contracted; they must pay compensation under the Act to those workmen in respect of any accident arising out of and in the course of such employment. That is the liability imposed upon Cooper & Crane, nor have they denied their liability or appealed against the judgment. But, while providing that the building contractor shall be liable, the section goes on to provide that they are entitled to be indemnified by any other person who would have been liable independently of that section. Observe, it is not independent of the statute, but this section. Whether the enactment is felicitously worded or not, when one looks at the section and the proviso together, I think it can hardly be doubted that the meaning of it was that where part of the work is let out, although the builder of the entire structure shall, in the first instance, be liable for injury to the workmen employed by the sub-contractor, nevertheless he is not the actual employer. The builders who are thus made liable for injuries to a workman not employed by them shall have a right of indemnity against the actual employer, between whom and themselves there was no relation ex-

cept that of contractors. I doubt whether the attempted definition of the word "undertaker" has added anything to the interpretation of the statute. Cooper & Crane undertook the whole building; Wright undertakes the construction of the roof. It is in the course of the construction of the roof that Wright's labourer is injured, and if it is contended that the latter words of section 4 do not apply, this consequence would follow—that Wright, apart from that section, would not be liable to Brady, although Brady was employed by him and was engaged in a building operation, and, if that argument is right inasmuch as apart from that section Cooper & Crane would not be liable at all, the workman would have no remedy whatever, so that, though Wright should be employing a man in a trade considered dangerous by the Act, and though in the course of that employment Wright's labourer was injured, the labourer would have no remedy. It seems to me that this would reduce the legislation to an absurdity, and I cannot think that the legislature could have intended such a result. Put this case. Suppose there was one who undertook the construction of the whole building. The owner is not in any case the undertaker. If the different contractors undertook to construct each a different part of the building there would be no person who undertook the whole building. Then suppose this very accident occurs—who is liable? No one if the objection is a good one, and yet one of the contractors would be an employer of a man who by this hypothesis is engaged in a work the statute has regarded as dangerous, yet he would have no remedy. I think this cannot have been intended. I am not quite certain what is meant by my noble friend Lord Brampton when he used the phrase "the building owner." I do not understand whether he means a person who means to have a building built for him or a person who himself undertakes the actual construction. I agree the Act does not apply to a man who takes no such part at all, but by four or five different contracts places out the building to four or five different builders. If he did this, there would be no undertaker and no compensation. This seems to me to show that looking at the whole purview of the section in question, it cannot have been intended. In these circumstances, I think the judgment of the Court of Appeal is wrong and I move that it be reversed.

Lord Shand and Lord Davey concurred.

The appeal was allowed, the judgment of the Court of Appeal was reversed, and the order of the County Court judge restored.

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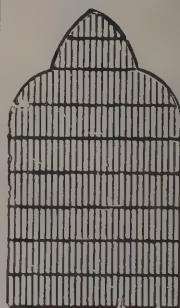
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## INSTITUTE OF CLAYWORKERS.

Annual dinner of the Institute of Clayworkers was held on Tuesday evening, the 14th inst., at the Holborn Restaurant, where some seventy clayworkers, representing the brick, tile and pottery industry in all parts of the country were present. Mr. B. Broad occupied the chair. After the loyal address had been given "The Architectural Profession" was discussed by Mr. W. B. Hughes, and replied to by Mr. J. H. Trevel, president of the Society of Architects. "The Institute of Clayworkers" was proposed by Mr. Broad, and seconded by Mr. E. P. Collier, J.P. (who is the president for the year), and Mr. H. Greville Montgomery, hon. secretary. A toast of "The Visitors" was proposed by Mr. Webster and replied to by Mr. Ellis Marsland, Master of the Worshipful Masters and Tilers' Company.

A party of clayworkers numbering some fifty members went on an annual excursion, Paris being fixed upon for this year. On the 16th inst. the members paid a visit to the National Porcelain Manufactory of Sèvres, and during the day they were officially received by the Union Céramique of France, and a banquet given in their honour.

## MALLEABLE GLASS.

According to the *Kansas Mail*, a report comes from Muncie, Ind., that Mr. Louis Kauffeld now seems to have discovered the long-lost art of making what is known as malleable glass. For five years Mr. Kauffeld has been attempting to ferret out the mysterious elements. He is a lamp-chimney worker, and his effort is to get a lamp-chimney that will stand excessive heat and then not break when coming in contact with water when heated. Kauffeld dipped almost red-hot chimneys in water that was ice-cold, and they were not affected, while the ordinary glass would have been shattered. Heavy glass bottles were filled with ice-cold water, placed in the fire and the water boiled out, while the bottle was not harmed. This process makes cooking vessels possible out of glass, and to a great extent the glass can be used in the manufacture of machinery. Mr. Kauffeld claims, further, that he can weld the glass together like a blacksmith with iron. Many glass men were startled at the success. This will open up possibilities in architectural and mechanical construction that at present can hardly be appreciated.

## CITY AND GUILDS OF LONDON INSTITUTE.

THE annual report of the Council of the City and Guilds of London Institute states that the Institute has recently received from the University of London an offer to devote 1,425 $\frac{1}{2}$  a year to the department of engineering in the Central Technical College, which has become a school of the University, subject to certain conditions. This amount is the larger part of a grant made to the University by the London County Council for improving and extending the teaching of engineering in London. It involves the appointment of the professor of engineering of the college as a "transferred teacher" of the University, and "it is a recognition by the University that the college occupies the foremost position among engineering colleges in the Metropolis." One of the conditions on which the grant is offered to the Institute is that it shall be used for extending the work of the college. The Institute has expressed its readiness to accept the proposal subject to some limitations imposed upon it by its constitution. The report refers to the extension of the Central Technical College for the electrical and engineering departments, the total cost of which, including equipment and all structural additions and alterations both for the college and the department of technology, is estimated at 10,000 $\frac{1}{2}$ , and the additional annual cost at about 1,000 $\frac{1}{2}$ . The latter amount has already been almost realised by increased receipts from students' fees during last year. The executive committee have approved a regulation under which a student who has obtained the diploma of Associate of the Institute may devote a fourth year at the college to more advanced study and research in his department. In order to give advanced students as much knowledge of workshop, book-keeping and accounts as will enable them to understand and to devise a system adapted to the requirements of the works in which they may be engaged, the subject has been included as a part of the diploma courses in civil and mechanical and electrical engineering, and a lecturer in the subject has been appointed. The number of students under instruction in each department during the last two complete sessions was as follows:—Mathematics and mechanics, 233, as against 228 in the previous year; civil and mechanical engineering, 233, the same as in the previous year; electrical engineering, 239, as against 237; and chemistry, 244, as against 234. With reference to the Technical College, Finsbury, the work of which is carried on in three places, the report states that the whole subject of the future of the college is

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receiving consideration, and in the meantime steps are being taken to obtain an estimate of the probable cost of adding to the present building, with the view of bringing all the work under one roof. The number of day students in the college in 1900-01 was 187, against 200 in the previous year; and the evening department was attended by 592 students, as against 639 in the preceding session. The Council state that the work of the South London Technical Art School has been continued with the same success as in previous years. With reference to the age limit which the Royal Academy has placed on the admission of students to their school, and which has had the effect of excluding all the Institute's best students from the Academy studentships, the report states that before the imposition of the limit, the gold medal and travelling studentship of 200*l.* of the Academy was won on four successive occasions by students of the South London school, three of whom have since been elected associates of the Academy, and one, Mr. G. Frampton, has just been elected an academician. In order to counteract the discouraging effect of this limitation of age the Institute has offered annually for competition among the students of the school a studentship to enable the holders to devote two years to further study.

In the department of technology there has been a further development during the past session. In the different branches of technology 2,222 classes were registered last year, and the number of students in attendance was 34,246. This year the number of students exceeds 36,000, and in addition there are nearly 2,000 students in the manual training classes, making a total of over 38,000 students in the classes affiliated to the Institute. The development of technological instruction in the several technical schools throughout the country has brought into prominence the question whether in the assessment of grants some recognition might be given not only to the teaching of science and art, but also to the teaching of the application of science and art to particular trade subjects. The value of the Institute's certificate lies in the evidence it affords that the holder of it has received sound and efficient teaching in the principles as well as in the practice of his craft. The Council say it is gratifying to the Institute to know that the heads of public departments and manufacturers now offer in different ways inducements to persons in their employ to present themselves for the Institute's examinations, and that in many subjects the technological certificate has a distinct value of its own. The income of the Institute for the past year amounted to 35,586*l.*, made up of subscriptions and donations

22,196*l.* and school fees and sundry amounts received from students for materials, &c., 13,390*l.* The total expenditure was 33,041*l.*

### EDINBURGH MERCHANT COMPANY'S NEW PREMISES.

THE extended premises of the Edinburgh Merchant Company were opened by Lord Balfour of Burleigh yesterday. The company, says the *Scotsman*, has long been hampered in its present premises in Hanover Street, and when opportunity arose for acquiring the adjoining buildings belonging to Messrs. Menzies & Co., it was taken advantage of. It was recognised that if extensions were to be made the opportunity likely to occur had arrived, as the existing offices were enclosed on three sides by public thoroughfares, and expansion could only take place on the southern boundary. Accordingly after some negotiations, the property was purchased at a price of 26,500*l.*, which, as the old buildings on the ground were worn out and useless, became practically the price for the site. After serious consideration it was decided, as the north half of the structure already represented the uncompleted portion of a design, to duplicate this wing on the south, thus completing a harmonious architectural façade of 90 feet in length. As the frontage to Rose Street measures 100 feet, the total area occupied by the buildings is about 1,000 square yards in extent. The company selected Mr. Thomas P. Marwick, York Place, as their adviser and architect for the new buildings, and from his plans and under his general supervision during the last twelve months the new additions have been satisfactorily completed, with the aid of the various officials of the company and of the building committee, which consisted of the master, Mr. John Cowan; the treasurer, Mr. John Harrison; the old master, Mr. Robert Weir; the past-master, Mr. W. W. Robertson, of His Majesty's Board of Works; Mr. G. Washington Brown, R.S.A.; Mr. John Lowrie, Mr. James Anderson and Mr. James Kennedy. The premises being too extensive for the present uses of the company, arrangements were made with the North of Scotland Bank, Ltd., the Carnegie Trust and the Edinburgh Chamber of Commerce to lease a portion of the new accommodation. The part occupied by the bank, which has been already opened for business in view of the Whitsunday term, although the apartments are not finished, is the ground and basement floors

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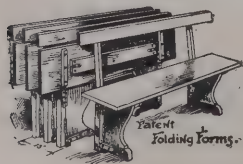
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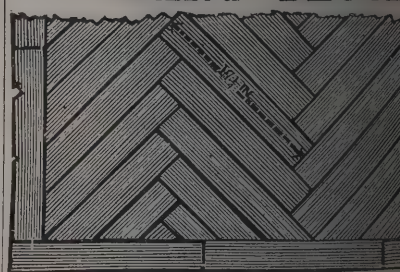
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with wing. Access is obtained to these by a short flight of stairs, over which is a portico supported on four fluted columns and surmounted by a sculptured pediment of appropriate character. The accommodation available for the Merchant Company consists, firstly, of the addition of wings to the large centre meeting-hall of the members. These wings measure each about 31 feet by 12 feet. This addition to the company's hall gave rise to considerable diversity. The hall is a very elegantly designed apartment, of a central square about 31 feet by 31 feet inside the walls and surmounted by a coffered dome of 37 feet high above the floor level. The difference amongst the members as to whether or not the coupled columns which separated the east wing from the central area should be duplicated at the north and south wings, or whether these new wings should be unobstructed, so as to increase the available floorage. It was ultimately arranged that the pillars should be put in to preserve the architectural beauty of the interior, but they should be of wood, and that massive steel girders should be placed over the north and south recesses to harmonise the recess on the west side, and so that the pillars could be removed if at any subsequent time it was thought advisable to do so. The lower portion of the dome over this hall is 6 inches in diameter. Immediately over the columns is a complete entablature, surmounted by ornamental scrolls, subdivided and enriched by figures. The remainder of the accommodation on the ground floor of the old building is occupied by the chamberlain and his staff and the medical officer's room. On the first floor of the new wing there has been added a board-room measuring 30 feet by 20 feet, with a large oriel window to the front street. This room has a decorative ceiling, and is finished with floor and panelling of dark polished mahogany. The table and furnishings have been specially made, and an electric fan and fresh-air supply have been provided for the frequent renewal of the atmosphere. The remainder of the first floor of both wings is occupied by the secretary and law agent of the company and his staff, the superintendent of works and the officer in charge of cloak-rooms, lavatories and other accommodation of like character. The premises to be occupied by the Mortgage Trust are a series of four apartments on the second floor containing an area of about 1,630 square feet, and arranged in a plain and simple manner to harmonise with the other rooms on this flat. There is also a board-room for the Chamber of Commerce. In the attic flat has been placed the

caretaker's residence. A number of minor improvements on the old building have been carried out. The stair giving access to the upper floors was a very steep and inconvenient one. That has been removed, and a much better one with a massive oak balustrade has been substituted. An electric elevator has also been inserted to afford easy communication between the flats. The car is of oak with various coloured metal and wood inlays, and surrounded by a hammered copper frieze containing the monogram and coat-of-arms of the company. The whole premises have been constructed in a very substantial manner with steelwork and fire-resisting concrete floors. The ventilation is by fans driven electrically. There is an electric-light installation with specially designed fittings, and a hot-water heating system. The total outlay, inclusive of the site and furnishings, will be about 46,500*l.* The dominant idea has been to carry out the work in a simple and substantial manner, having both the exterior and interior designed in harmony with the portion of the building which had previously been in existence. The additions having been completed within a very restricted time are not yet decorated, and this will probably not now be undertaken for another year.

### GARDEN CITIES.

UNDER the auspices of the newly-formed Liverpool branch of the Garden City Association a conference was held at Common Hall, Hackins Hey. Mr. W. H. Lever, J.P. (Port Sunlight), presided. There was a good attendance. The Chairman explained that it was their object to improve the lives of the people on the lines of the Garden City Association, to spread the houses over the land so as to allow for gardens in front of the houses and vegetable gardens behind. One of the most pleasing sights at Port Sunlight was to see the dwellers getting their recreation in gardening. He agreed, however, that garden cities could not be built at the present day, as the building by-laws existed, as a commercial undertaking. The by-law, he held, could be modified. He knew that corporations, including Liverpool, were spending large sums of money with regard to the housing of the people. He suggested that something might be done towards a solution of the problem if the Corporation of Liverpool, instead of building large tenement houses, were to acquire land on the outskirts of the city and have the courage to say to the builders, "We have got the land here. If you will build upon it you can

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have it for nothing for the purpose only of erecting houses at rentals specified by us." The Corporation would retain their power over the land and could make special conditions for manufacturers to build there. In future large tenements in the city would be condemned, he thought, because a system would be developed of building houses outside the city, so as to take the people back to the land. The idea that all this would entail great expense on the rates was merely imaginary. He contended that the Corporation could purchase land beyond the tramway service at prices from 100*l.* to 200*l.* per acre. He would limit houses built on such land at ten per acre. These, at the rateable value of 15*l.* each, would yield 150*l.* per year. Fixing the rates at 5*s.* in the pound, this would realise 37*l.* 10*s.* per year. In the ten houses fifty people could be accommodated, and he ventured to say that the Liverpool Corporation, to accommodate that number of people under present circumstances, would have to lay out a capital expenditure of 3,000*l.*, whereas an expenditure of 200*l.* would secure an ample return and a relief to the rates.

Mr. Thomas Adams (general secretary of the Association) said that the Garden City Association felt that some immediate action should be taken to secure some economic means of solving the housing problem. He described the objects of the Association and the way the members intended to set to work, and said they had formed a liability company with the intention of securing a site to carry out their proposed scheme.

A resolution was passed to the effect that the meeting support the Garden City Association in the endeavour to solve the housing problem on lines so as to provide for the individual and social needs of the people on new areas, with the co-operation of manufacturers and others.

### BIRMINGHAM ROWTON HOUSES.

A MEETING of the shareholders in the Birmingham Rowton Houses, Ltd., was held on the 14th inst. Mr. Moore Bayley said the Board had received applications for at least 39,500*l.* in shares. The first point upon which the company might congratulate themselves was the acquisition of a site in Alcester Street and Moseley Street, and fronting on Highgate Park. It would be impossible to improve upon this site, which the Board had been able to obtain, thanks to the generosity of the owners, at a very fair and reasonable price. The site was

central, and particularly suited by its measurements for a house of the character proposed, while it had an extensive front on Highgate Park, thus securing the light and air worth thousands of pounds could not have obtained elsewhere. In the prospectus they had stated that they wished to build a house to accommodate 600 men per night, but after going carefully into the matter they had decided to go further and build a house for at least 800. The erection of the smaller house would cost 46,000*l.*, and the larger one 8,000*l.* more. Lord Rowton had implored them not to be content with smaller, but to go in for the larger, which would mean as financial success. It would be just as easy to fill the house with 800 as 600, and he (the Chairman) felt sure they would soon regret that they had not made the accommodation 1,000. On a house of 600 men they would make a net profit of 1,800*l.* per annum, but on the 800 house the profit would be 3,100*l.* The staff would need to be increased by only one man, and an increase in expenditure would be only 500*l.* a year. Such figures deserved the most careful consideration. On the house for 600 men they would be just able to pay 2½ per cent. their capital, whereas on the larger house they could pay 4 per cent., and carry forward 500*l.* a year to the good. He believed in the bold policy. The Board were going in for the big house, and he did not think they would be disappointed.

The architect (Mr. H. B. Measures), being invited to address the shareholders, said that the Highgate Park site struck him at once as being ideal for the purpose of a Rowton House. A house for 600 men would cost more in proportion than one for 800, and when it came to administration practically the same staff would be required. He had visited the district in which the house would be situated, and he believed that such an institution as it was proposed to erect would attract not only the frequenters of the common lodging-houses but the young-men-lodger type, who were at present occupying rooms where the children of the family should be, and who would not go into common lodging-houses. It would be a wicked waste of a good site not to build a house for 800 men at Highgate Park.

The architect's plans were exhibited. The building would cover an area of 4,320 yards, and have an elevation overlooking Highgate Park in red facing bricks, relieved with pinky-buff bricks and dressings of pinky-buff terra-cotta. The frontage to Alcester Street will be similarly decorated, and in the centre of this frontage will be situated the main entrance to the establishment. Advantage has been taken of the large area

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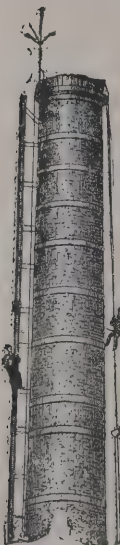
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to place all the day-rooms used by lodgers (except the smoking and writing-rooms) on the ground floor, as the superintendent's and catering department. For administrative purposes the building will be divided into five sections, namely, superintendent's apartment, bed makers, erg section (which includes sleeping accommodation for employed in shop, kitchen and scullery), lodgers' day and lodgers' cubicles. The portion of the ground floor Highgate Park will be occupied by the catering department, with sitting-room and bedrooms for the female adjoining the kitchen. Complete arrangements will be made for the preparation and sale of cooked or uncooked foods, or for the sale of foods to those lodgers who may prefer to cook their own, and the catering probably be carried out by the company's staff. Entrances to the lodgers' day-rooms and corridors are to be glazed brickwork from floor to ceiling, the dado being in green and chocolate, and the upper portion in ivory glazed.

In the central courtyard will be situated the dining-room, providing seating accommodation for 448, whilst a large number of extra seats and wooden easy chairs will also be provided. A shop planned with teak front will open into the dining-rooms and will be stocked with goods to meet the varied requirements of the lodgers. A large space on the frontage to the street will be divided up into thirteen corridors fitted with lockers, arranged in tiers, and adapted for receiving sticks and umbrellas. A barber's shop, lavatories, bath and dressing-room, and washhouse will also be provided, together with makers' and tailors' workshops. A large smoking-room, with three fireplaces and wooden easy chairs, will overlook Highgate Park from the first floor, and next to it will be placed a dining-room with seats and tables for over 170 men. The building will be approached by three fireproof staircases, the position of which will make it impossible for the lodgers to be trapped by fire, seeing that the corridors are to run from the staircase. In addition, each floor will be divided into eleven erections, which would check, if not stop, the progress of a fire in a horizontal direction. The division of floors also permits of isolation and efficient fumigation in case of infectious disease occur in the building. Each floor will contain sleeping accommodation for officials, who will be enabled by a special system of lighting to have control over the cubicles. For the accommodation and advantages referred to lodgers will be asked to pay the small sum of 6s. per night.

## THE DANGER OF CASTING.

ON April 9 there was an outbreak of molten metal at a casting operation at the Don Foundry, Attercliffe, Sheffield. Several of the men were seriously injured, and five of them afterwards died. The cause of the accident was not apparent, and in order that a scientific investigation might take place, on the 14th inst. the inquest was resumed. Professor Arnold, of the Sheffield University College, was asked as professor of metallurgy to make a full inquiry at the instance of Mr. John Fowler, the principal owner of the foundry. The Professor attended and presented the following report:—

On April 12 I inspected the foundry, in which, after the accident, everything had been left in situ. I interviewed Mr. Fowler and his manager, Mr. Smith. I subsequently saw the roll as removed from the casting pit. I also interviewed Mr. Simmonite, one of the workmen who arranged the ballasting of the core tube, and, finally, in your presence at the infirmary I saw Mr. Barker, the foundry foreman.

Mr. Fowler supplied me with a sectional drawing of the arrangement of the mould, a drawing of the core tube after the accident, and also with a bag of composition similar to that with which the core tube was rammed.

The analysis of this composition, after thorough drying at the temperature of a foundry stove (namely, about 220° C. or 430° F.) is approximately as follows:—Red sand 79, charcoal 15, coal dust 5, yellow clay  $\frac{1}{2}$ , sawdust  $\frac{1}{2}$ , horse manure  $\frac{1}{4}$  per cent.

With the exception of the red sand, all the foregoing materials are capable of giving off considerable volumes of carbonaceous gas and superheated steam, and hence under certain conditions act as mild explosives.

It has been ascertained by direct measurements made in the laboratories of University College that the amount of composition in the tube used in casting the roll at the Don Foundry would at the temperature of the molten metal (namely, about 1,250° C. or 2,300° F.), give off approximately 368 cubic feet or 2,300 gallons of a mixture of gas and superheated steam, that is to say an amount between five and six times the volume of the metal itself.

The cause of the disaster, I am sure, was not due in any way to damp present either in the mould or the core. After carefully reviewing the evidence and data obtained, I may remark in the first place that terrible as were its results, the accident cannot correctly be described as an explosion. There

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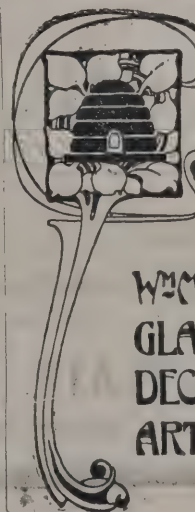
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was no report heard by anyone I questioned, and the foundry and its appliances were uninjured. Any sound heard would be of the nature of a deep rumbling, because what really took place may be more accurately described as a miniature volcanic eruption of molten metal propelled by gas and super-heated steam, and most of those in the foundry were burnt by the falling metal, which seems to have projected upwards to a height of about 20 feet.

The following sequence of events describes with substantial accuracy the causes of the accident:—

The metal had risen just above the face of the top tenon, or to a height of about 13 feet 6 inches. The core tube had expanded lineally 2 inches, lifting the chills forming the ballasting to about that extent. Diametrically the core tube had expanded so as to leave an annular space of about 1.40 of an inch between the iron and the composition forming the core proper. According to the drawing supplied to me, the chills used to ballast the core had an effective weight of about 5 cwt, but from the evidence of Messrs. Barker and Simmonite I am satisfied that the actual weight of ballast employed and its exact arrangement are details not definitely remembered. Taking the effective weight of the chills shown on the drawing to be approximately accurate, this, together with the weight of the core itself, would indicate that the total force to be overcome on lifting the core would be about 800 lbs.

I have calculated the upward thrust of flotation this weight would have to oppose would be about 400 lbs., hence, supposing the ballast to have remained in position, the margin of safety was ample; but I am convinced that the ballast did not remain in position, but that when it was lifted by the practically irresistible expansion of core, the chills forming the ballast slipped and the core tube shot up, leaving the composition in a fine state of division in the midst of the molten metal. The composition then instantly evolved large volumes of carbonaceous gas and steam, which violently escaping carried up with them about two tons of molten metal, which in descending fell upon most of those present in the foundry.

I have prepared a half-size model illustrating the upward thrust of the core due to expansion, and from this it will be seen that slight variations in the original arrangement of the ballast may readily cause it to assume a position of unstable equilibrium.

I have also prepared another model illustrating the upward thrust of the core by flotation. As some scepticism appears to exist as to the possibility of foundry composition becoming

explosive under any conditions, I have prepared a simple experiment to demonstrate this point, which should be thoroughly realised by every foundryman in Sheffield.

The means of preventing another disaster of this description are very simple.

1. The core ballast should be boxed in so that it cannot in any means slip.

2. To make doubly sure, a finely perforated wrought-iron plate should be screwed on to the bottom of the core tube, as to prevent in any circumstances any of the composition falling into the molten metal at the bottom of the mould.

Mr. Fowler, in an interview at the college, asked me to state in my report if I considered that blame could be attributed to anyone for the catastrophe. As I have already pointed out, the arrangement of the core from physical and chemical points of view involved elements of grave potential danger, but such danger could only be realised by metallurgists versed in chemistry and physics, and further taking into consideration the fact that several other rolls had been successfully lifted under apparently exactly the same conditions, I am of opinion that it would be unjust to attribute anything approaching carelessness or negligence to anyone concerned with the matter.

Professor Arnold stated that he did not believe in the generally realised that an accident of the kind could occur in such a place. The accident was unique. People were not aware that foundry composition would give off dangerous gases, and the subject should be carefully considered by all foundry owners. If an opening had been left in the core to let out the gas, the accident might not have happened.

The foreman said that he had been twelve years in the position, and that it was the first accident. The mould had been built up in the usual way; the bottom was perfectly level. Although chills have lifted a little on other occasions, this was the first time on which they had slipped off. There was no noise or explosion; the molten metal rushed out as from a fountain. The pit was perfectly dry, and neither snow nor rain could have blown into it.

Mr. Henry Cooper, of Vickers, Sons & Maxim, said he had agreed with Professor Arnold; there was no other way of account for the accident.

The coroner said that the information Professor Arnold had given had been purchased at a fearful cost. But it was a warning were taken and measures adopted to prevent such mishaps some good would arise. The jury returned a verdict that the men had met their deaths through pure accident.

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# The Architect.

## THE WEEK.

the late M. BENJAMIN CONSTANT, who died on Monday, allowed his imagination to revel unrestrained, he might well see himself as the leading portraitist of England and of the United States. He had painted portraits of Queen VICTORIA and Queen ALEXANDRA, and it was allowable to suppose that many important commissions must follow. Several portraits in France came from his hand, but if a vote could be taken it would be found that a majority of his countrymen regretted the attraction that art had for him. The works which they most admired were his great African scenes, which were mainly derived from Morocco. *La Vengeance du Chérif*, representing the impassable chief contemplating from the saddle his enemies who were dead or lying shackled under a burning sun awaiting his decision, was praised by us when it first appeared as the most characteristic of the master's works. He was one of the French painters for whom the glowing colours and the intense light by which the tropics are separated from the North became a passion. He was among the painters of scenes in the Alhambra, but he preferred a more southern region. Morocco prepared him for *Justinian*, in which the mosaics and gilding, the jewels and the costly robes of Byzantium appear to overcome the firework. He sought after magnificence, and thus it is that the portrait of the late QUEEN could hardly be said to be supreme amidst the carvings and metalwork of the Westminster building. It was not to be expected that a painter of his class would care much for the sombre dress of our time, and consequently we do not believe that as a painter of men he was equal to M. BONNAT with his indefinable backgrounds. The earliest work which denoted BENJAMIN CONSTANT's talent was the *Samson et Delilah* of 1872. Portraiture was the Delilah which allured him from his true course, although it enabled him to suggest that in portraits of women he was CABANEL's pupil.

SIR JOHN GORST did not exaggerate when, in his speech on Monday night, he said that the South Kensington Museum was more appreciated by foreigners than by Englishmen. The circumlocutionism which for so many years impeded the progress of instruction in art in this country was not able to be equally injurious in the selection and gathering of objects for the collections. Of late years the distribution of loans has been more generously organised than formerly. According to SIR JOHN GORST, in 1895 there were 52 provincial museums, receiving 19,929 articles, and in 1901 there were 88 museums receiving 26,149 objects. But in the schools of art in provincial centres in 1895 there were 241 schools of art receiving 6,057 objects, and in 1901 there were 289 provincial schools of art receiving 14,880 objects. The directors of provincial museums and the masters of provincial schools of art are constantly visiting the Victoria and Albert Museum, where they are in the habit of conferring with the circulation department, and where they are treated with every courtesy. Great activity is now displayed in making copies of all the great works of art for educational purposes selected from the Continent of Europe. Copies are made in electrotype, plaster, photography and coloured drawings, lantern-slides and books, and any suggestions offered by local museums and local schools of art receive the most careful attention. The Vice-President was also able to be laudatory about the arrangements in the Royal College of Art. He said it was not an amateurs' institution; a very high qualification was required for entrance. There were only 350 students who occupied places, and the claims of technical scholars received the first consideration. Craft schools were established for the more advanced students, and they are now taught etching and engraving, pottery, ministration, carving upon wood and stone and marble, and furniture decoration. They were assisted by technical masters, who served as a council of advice on technical matters to the President of the Board of Education, and each of them acted as visitor to that particular branch of the

school to which he belonged. The schools of art were now improving every year, and SIR JOHN GORST said he had no doubt they would be a credit to the community, the Board of Education and the Government.

THE annual report of the Amalgamated Society of Carpenters and Joiners concludes with a reference to the decision of the members to establish and carry on the business of builders and contractors in selected localities. It points out that whilst outsiders state that by so doing they will be carrying on a perilous venture, yet they as a society were not alarmed, but would at the proper time try such experiments in suitable neighbourhoods. The statement looks remarkably like the playing of a game of bluff by the Amalgamated Society. A builder's business even in a suitable neighbourhood cannot be established without the aid of capital. It is well known that for the first time in fourteen years the Amalgamated Society have been compelled to diminish their capital by the large sum of 22,424*l.*; for without that desperate resolve the year's expenditure could not have been met. The expenses amounted to 186,362*l.*, while the receipts were only 163,968*l.* Co-operation is occasionally found to have its uses, but up to the present industrial co-operation has rarely brought many advantages to those who participated in it. At another time the experiment might be tried, but it does not suggest wise councils to make a new departure when there is so wide a difference between income and expenditure.

EMERY is thought to resemble corundum, but while the latter is found to a large extent in India, where it is employed for cutting and polishing building stones, the emery most valued in Europe is derived from Naxos, in the Greek Archipelago. In 1901 the value of the emery exported from the island amounted to 24,243*l.* The production is a Government monopoly. The peasants of Naxos, who are about a thousand in number, have the sole privilege of working the mineral and of conveying it to the coast. Each peasant can deliver about 2½ tons at one time. It is a comparatively profitable occupation, for it means not more than from five to seven days' work per month per peasant. The extraction of the mineral is carried out on Medieval principles. There is an utter absence of methodical operation, which not only leads to constant waste, but at times to a partial destruction of the quarries. The primitive method of transport from the quarries to the coast and the absence of a safe harbour, which necessitates the further conveyance of the emery to Syra, are factors which tend to unnecessarily increase the cost of production. Thus, at the outset it is evident that the mineral is clumsily extracted and dearly transported. It is assumed that about 25,000 tons of emery are used every year, of which four-fifths come from Asia Minor and one-fifth from Naxos, the latter being preferred for its greater density, fineness and hardness of grain.

CYNICS have not hesitated to say that the pictures in the Parisian mansion belonging to M. and Madame HUMBERT were in keeping with the owners and their schemes, for they were not what they were declared to be. The experts appointed by the French law courts are, however, of a different opinion. No less than 379 paintings were removed from the house in the Avenue de la Grande-Armée. It is stated that the most important among them is a painting by the late PAUL BAUDRY which used to hang on the landing of the principal floor. There are also valuable works by other French masters, including JULES DUPRÉ, GUSTAVE MOREAU, MEISSONIER, COROT, DAUBIGNY, ROUSSEAU, SCHRAYER, ROYBET, VOLLON, ISABEY, BRETON, RIBOT, FORTUNY, &c. The paintings and other works of art have been officially valued at 1,200,000 francs. It is said that sixteen of the large furniture waggons used in Paris were required to convey the contents to the auction-rooms. It would have been impossible to have held a position in the French capital as a millionaire without appearing to patronise the arts, and dupes were therefore deceived by the fine pictures, furniture, bronzes and embroidery which were thought to be signs of the HUMBERT's affection for Renaissance work as well as for modern art.



## THE POSITION OF BOROUGH SURVEYORS.

THE Local Government Board have to consider a matter which, if compared with much else that is brought before them, may appear to be trifling. It is, however, of great importance, for on the decision of the Board will depend the manner in which municipal works, and especially those connected with sanitation, must henceforth be conducted. The circumstances are not peculiar. They resemble those which arise in a great many towns throughout England, although not always divulged.

A short time ago Mr. SAUNDERS, the surveyor of Chichester, resigned his appointment. The city has still an aspect of antiquity, which is exhibited not only in old buildings and walls, but in its administration. It was, for example, very conservative about drainage, or, in other words, dilatory in the construction of drains. The houses were in the condition which was to be expected with cess-pools forming part of the premises, but the citizens were content, although it was notorious that bread was baked over those receptacles, and in many kitchens and cottages a thin boarding was the only separation between them and the inhabitants. What made the case more extraordinary was that the late Bishop of the diocese was a leader in the anti-drainage movement as if opposing a heresy, and used all his influence for retaining abuses which elsewhere were known to be prejudicial to the health of the inhabitants.

A change, however, could not be prevented. A drainage system was forced upon Chichester. As was to be expected in a place where the people were so inimical to improvement, it has not been as yet a complete success. The place selected for the discharge of sewage gave offence to a neighbouring proprietor, and the Courts acceded to his demands for an injunction. In consequence there has been heard of late, when drainage is mentioned, the familiar cry of "I told you so," which is the formula for all opponents of improvements whenever perfection is not attained at the first trial. When such circumstances arise an endeavour is made to have a man rather than a system to serve as a chopping-block. The late Surveyor of Chichester was not the designer of the drainage works, and it was unfair to attribute any of their shortcomings to him. That Mr. SAUNDERS'S conduct in carrying out his duties was irreproachable is shown by the fact that although the Council was in an irritable mood, and therefore not unwilling to get hold of a scapegoat, the majority steadfastly supported the Surveyor. Indeed, they claim that they always treated him handsomely and respectfully. There were, however, two of the members who, on the admission of one of the aldermen, subjected the Surveyor to gross insults for several months. Owing to his treatment Mr. SAUNDERS resigned, and afterwards lodged a complaint with the Local Government Board.

According to custom the Board asked for explanations from the City Council of Chichester. On such occasions differences are disregarded and a corporate feeling for once gains the upper hand. As a rule local authorities contrive to lead a tolerably contented existence among themselves while in committee-rooms and council chambers, and there is an uneasy feeling at interference by a Government department. It was therefore said that the late Surveyor should have considered it beneath his dignity to make complaints, and that the quarrel was in reality a private one in which the Council as a whole could take no part. It is easy to forget how important his reputation is to every borough engineer. Moreover, he cannot expect that the proceedings at meetings in one town will be rightly judged years afterwards in another town. On that account it is well to have on record the opinion of the highest authority in the country on the causes of resignation.

There ought to have been no difficulty in furnishing a frank reply to the inquiries of the Local Government Board, but efforts were made to evade the duty for the sake of "peace," and in order to avoid any disagreeable results which might arise. It was also held to be dangerous if a precedent were set by which a court of appeal would be established in the Local Government Board for the benefit of municipal officials. It was only after a long discussion in which a varied strategy was displayed by the opponents that the following reply was agreed to:—"In answer to your inquiry the Corporation regret to say that they cannot deny the truth of Mr. SAUNDERS'S complaint. He has long

been subjected to personal vituperation and unwarrantable attacks in his official and professional capacity by the councillors he mentions. The great majority of Council, while utterly without sympathy with these attacks, have been powerless to stop them under the existing Standing Orders, and it appears that it would be difficult to deal with them under any amended Standing Orders framed to meet such cases, and yet not so drastic as to be liable to abuse in stopping fair criticism; neither has it appeared to the majority of the Council that it would be right to exclude those councillors from serving on sanitary or other important committees. The Corporation may be mistaken in their views upon these points, but would welcome an expression of opinion thereon from the Local Government Board."

It will be seen from the reply that justice to the Surveyor has overcome the corporate feeling which, as we have said, is a characteristic of the petty authorities of the country. That unwarrantable attacks were made upon him could not be denied. Then comes the startling acknowledgment of the inability of the majority of the Council to deal with such cases. We have been proud of ourselves over all other countries on the excellence of our system of local government, and yet when any of our members assumes the right to vituperate one of the principal officials, the individual who suffers can only say "sufferance is the badge of all our tribe," and in a chastened spirit accept abuse as an agent for his edification. For this reason the Local Government Board should deem it to be a duty to act with decision in the Chichester case, and treat it in such a way that it can always remain as an encouragement to surveyors and a warning to those who indulge in personal vituperation and unwarrantable attacks for their own gratification.

In other words, the time has come for the borough surveyor's position to be defined. He is assumed to be a servant of the body or authority by whom he was appointed, and it is not difficult to imagine his servitude to the members as individuals. There is no doubt that in a legal sense he is to a large extent like any ordinary servant or employé. If a surveyor passed from the service of a railway or other engineering company to become a town surveyor he would not find any diminution of his responsibility. But in his new capacity he would soon discover that he had accepted a post under an authority that was higher than that of a town council or an urban district board. When COLERIDGE obtained the post of secretary to Captain BALL, what struck him most on the man-of-war in the Mediterranean was the potentiality of an invisible, impalpable power which was law. BALL himself recognised its supremacy, and the roughest seaman had a notion of its presence and of its might. A like spirit is imagined to prevail in every town or urban district which is in connection with the Local Government Board. It commonly takes the form of a hygeia. The humblest surveyor is supposed to be mindful of its demands in designing and superintending whatever work has to be carried out at the general expense. Future as well as present needs have to be regarded, and it is assumed that a surveyor will resign rather than lend himself to any policy which he considers is likely to result in works which will be unsatisfactory. He must, in fact, realise something that is more elevated than any council board, and obey its behests, oblivious of the inconvenience to himself.

The condition of affairs being such as we have described without any exaggeration, it is manifest that a surveyor will seek to follow a compromising policy in order to insure his own peace is not likely to produce the most efficient drains and enduring roads, or to subdue the local deterioration. It is inevitable that differences of opinion should arise with regard to the character of contemplated works. Criticism is desirable, but it should be unlike the expressions of thoughtless liking or objection heard in a gallery of pictures. It is not to be expected that an amateur can instinctively grasp all the reasons which guide a surveyor in preparing plans and sections, and for that reason a little modesty when suggesting defects would not be unbecoming. But when criticism is expressed by vituperation, then it is time that a few new rules or standing orders should be available which are not yet found in any chairman's handbook.



The Local Government Board can discover without much trouble how easily a representative of ratepayers can become a surveyor's enemy. A councillor who would scorn to use a plank belonging to the municipality would have no hesitation in asking advice about the enlargement of his premises, the planning of a new house or the excesses in a landlord's account. It is not recollected that the surveyor's fee is no less the property of the municipality than a piece of timber. If the surveyor should insist on his assistance being treated as a marketable quality to be disposed of after office hours, friction follows which produces strange effects in the course of debates. A churchwarden has as much right to expect a vicar to teach his children gratuitously as a representative has to utilise for his own benefit the experience and knowledge of a surveyor. There are also times when a surveyor is compelled to put sanitary measures into operation against the relations or friends of members of local boards, or to insist on a rigorous interpretation of by-laws in their new buildings and alterations. When a man gives up a large part of his time for what he thinks is for the benefit of the public he usually considers he is entitled to something in return. It will be unfortunate for the public if that return is to be obtained only through the agency of a borough surveyor. The surveyor's duties, as we have said, are not limited in so definite a way as those of the employés of individuals. On that account, unless the Local Government Board will intervene, there is a possibility that much inconvenience will be caused to public servants, and sooner or later the public will suffer.

### THE ENCYCLOPÆDIA BRITANNICA.\*

At the beginning of the month we noticed the first instalment of the new edition of the "Encyclopædia Britannica," and we have now to deal with the second volume. There is no precedent in the history of publishing such expedition. To produce a quarto volume containing nearly eight hundred pages, with a large number of illustrations, including portraits, maps, reproductions of paintings, views and diagrams, is a feat which is creditable to our time and country. It is a further confirmation of HERSON'S remark about *The Times* being a living index of the colossal British power. Hitherto it was supposed that the regularity with which the monthly magazines appeared denoted the highest triumph of organisation, but a volume of the Encyclopædia is, at least, equal in quantity to a dozen ordinary magazines.

In variety, without considering other qualities, there are no periodicals which can compare with one of the volumes. Between "Austria-Hungary" and "Chicacole," which are the terminals of the second, a remarkable collection of eligible subjects existed for treatment. The preface essay, entitled "A General Survey of Recent Political Progress," by Mr. EDWARD DICEY, is a *résumé* of the history of Europe since 1870. Some of the statesmen who took part in the transactions are recalled in the biographies of BALFOUR, BEACONSFIELD, BEUST, BISMARCK, BRIGHT, CAIRNS, CASTELAR, CHAMBERLAIN, &c. Science, art and literature have also their representatives. This week many people must have heard for the first time about the Netherlands and its monarch. In the new volume there is an account of the African territory, as well as of King SWANIKI, who is described as "a very enlightened monarch as African princes go." The article on the subject by itself is sufficient to indicate the universality of the new series, wherein all matters which can be regarded as possessing any relation to the present time will be recorded.

For readers who are engaged in construction, the article "Building" is likely to have most interest. It has been contributed by Mr. G. P. POST, who is responsible for the planning of some of the lofty buildings in New York. He confines himself to steel-framed structures in the States,

which he considers as the most important development in building since the article in the ninth edition appeared. They are, he says, the natural and logical result of the introduction of new materials and devices, and of the application of modern science to the solution of the problem of economical science. Economy is of so much importance, it is declared that "each cubic foot constructed is commercially unprofitable which does not do its part in paying interest on the capital invested." In the words is a criterion of architecture which hitherto was inapplicable in Europe unless in the case of the railway sheds designed by civil engineers. Up to 1881 the limit of height was thought to be ten storeys, being ruled by the strength of the lower storey to support the dead load of the upper floors. A suggestion from a shot tower in New York was next turned to account, and the braced cage was introduced. By the arrangement the walls or exterior panels had only to carry their own weight, the floor loads being sustained by metal beams and columns. In 1883 the first building of the kind was erected in Chicago; it was successful, and as steel was cheap there was a rapid extension of the system. Mr. POST admits that "defects of proportion, material or workmanship, which would be of less moment in an old-fashioned construction, may become an element of danger in building with the steel cage, while the possibility of securing a permanent protection of all parts of the cage from corrosion is a most serious consideration." Care must therefore be exercised in painting, and it is said that the pigment which allows the spread of the largest percentage of oil is the most valuable as a preventive of corrosion. If precautions are taken for fire extinction, Mr. POST believes that a very tall steel-cage structure will become as substantial, durable and fireproof as a structure of ordinary height with interior columns and girders of iron.

At the time the article on bridges appeared in the ninth edition, the Tay Bridge was supposed to represent the most advanced construction. Towards the end of 1879 the bridge collapsed under a passing train, and 3,000 feet of girders fell into the estuary. Since then the loading forces acting on bridges have received more attention from designers. Wrought-iron has been superseded by steel, and the theoretical limit of spans has been nearly reached. The important question of safe load has yet to be answered in a way that expresses unanimity in conclusions. According to Sir BENJAMIN BAKER, "a bridge which would be passed by the English Board of Trade would require to be strengthened 5 per cent. in some parts and 60 per cent. in others before it would be accepted by the German Government, or by any of the leading railway companies in America." The consequence is that in England and the provinces the limits of working stress are variously interpreted. The English practice is for engineers of railway companies to get out designs in their own offices by their assistants, with the occasional aid of an expert. Advice may be sought from manufacturers, but the debt to them is rarely acknowledged. In the United States bridge building has become a business and, as was recently found in the case of the African bridges, there is a sufficient stock on hand generally to satisfy urgent orders. Professor UNWIN says:—

In the United States few railway companies design or build their own bridges. General specifications as to span, loading, &c., are furnished to bridge-building companies, which make the design under the direction of engineers who are experts in this kind of work. The design, with strain sheets and detail drawings, is submitted to the railway engineer, with estimates. The result is that American bridges are generally of well-settled types and their members of uniform design, carefully considered with reference to convenient and accurate manufacture. Standard patterns of details are largely adopted, and more system is introduced in the workshop than is possible where designs are more varied. Rivetted plate girders are used up to 50-foot span, rivetted braced girders for spans of 50 feet to 75 feet, and pin-connected girders for longer spans. Since the erection of the Forth Bridge cantilever bridges have been extensively used, and some remarkable steel arch and suspension bridges have also been constructed. Overhead railways are virtually continuous bridge constructions, and much attention has been given to a study of the special conditions appertaining to that case.

\* The new volumes of the *Encyclopædia Britannica*, constituting, in combination with the existing volumes of the ninth edition, the 11th edition of that work, and also supplying a new, distinctive and independent library of reference dealing with recent events and developments. The second of the new volumes, being volume xxvi. of the complete work. Published by *The Times*, London.



A class of engineering which has secured renewed attention since 1876 is that of inland navigation. The latest works in Europe are described by Sir E. LEADER WILLIAMS, and those in the United States by General ERNST. There is no doubt the development has been aided, as in the case of bridges and of tall structures, by the ease with which novel structures can be formed of steel. There is, for example, an aqueduct on the Manchester Ship Canal, designed by Sir LEADER WILLIAMS for the Bridgewater Canal, the swing portion of which consists of a steel trough carried by side girders 234 feet long by 33 feet high, the waterway being 19 feet by 6 feet, and as he remarks, "It is somewhat singular that the first fixed canal aqueduct in England should, after the lapse of 136 years, be replaced by the first swing aqueduct ever constructed." In order to carry the numerous railways across the canal on the skew, girders have been used in some cases of 300 feet span. The main roads which cross the canal required swing-bridges ranging from 500 to 1,000 tons each, and are worked by hydraulic power supplied by steam, gas or oil-engines. The Trafford Road bridge weighs 1,800 tons. There are some other canals in Europe which are also noticeable. In 1893 the Corinth Canal, which the Emperor NERO had commenced, was completed at a cost of about three millions. The Cronstadt Canal, finished in 1885, was designed by PETER THE GREAT; there are also the North Sea and Baltic Canal, the Brussels Canal, the Ghent Canal, the Bruges Canal, in all of which steel has been employed. The lifts which are now used are remarkable examples of power. One at Anderton, on the Weaver Navigation, has been in use from 1875. The French lift at Fontinettes is equal to lifting vessels of 300 tons; by one at La Louvière, in Belgium, vessels of 400 tons are raised; two still larger lifts, with a vertical traverse of 65 feet, are employed on the Trent Canal, in Canada.

In all the works we have mentioned cement is also an important element. The varieties have been described in an article by Mr. BERTRAM BLOUNT. Rotatory kilns have of late been introduced from the United States into England. The system is said to have many advantages, and is likely to replace the old methods of cement-making. In testing cement time is gained by using hot water to surround the pats; an unsound composition may be detected in twenty-four hours. The failure of cement is ascribed in all cases to want of skill and care in manufacture.

There are not many engineers among the biographical subjects. BESSEMER, who aided in the diminution of distance and the substitution of vertical for horizontal space, was a metallurgist rather than an engineer. One representative of the old school of railway men was GEORGE PARKER BIDDER, who died in 1878, and he is therefore, we fear, only a name to modern students of engineering, or is remembered simply for his skill in calculation. He was invaluable as an assistant to ROBERT STEPHENSON in committee-rooms, and in course of time he gained a reputation as a Parliamentary engineer. He was always a student, and open to new ideas. He was one of the earliest to perceive the utility of the electric telegraph, and it was through his influence that the first company was founded. As a consulting engineer his advice was sought by promoters of great works in most parts of the world. BIDDER was gifted by nature with a remarkable talent for arithmetic. No doubt he was able to make elaborate calculations in a manner that seemed instinctive, but he endeavoured to explain his short cuts to elaborate computations, and what he said should be made more generally known in technical colleges. The men who write books on arithmetic, as on mathematics in general, are secluded students. Their method may be philosophic, but it has not the promptitude of BIDDER's, which seems to be in danger of being forgotten.

The article on "Barracks" is further evidence of social progress. Colonel LOCOCK suggests the differences between past and present in an able manner. In 1857 the annual rate of mortality of soldiers in this country was 17.5 per thousand, in 1897 it was reduced to 3.42 per thousand. There is no doubt the improvement in the character of the barracks was one of the chief factors in increasing the duration of a soldier's life. The English official rule is an allowance of 57 feet of floor space and 600 cubic feet of air space per man in a permanent barrack-room. In hospitals the floor space is added to by one-half, and the

air space doubled. Hollow external walls were favoured for several years, but the tendency now is to have the solid. The fresh air inlets are arranged at the rate of 10 square inches per man in barrack-rooms and 20 square inches per patient in hospital wards. The allowance of light in open positions is 1 square foot of glass to 100 cubic feet of air space. No rooms are to be less than 9 feet high, the majority being from 9 feet 6 inches to 11 feet 6 inches. In stables each horse is given at least 1,500 cubic feet of air space and 85 to 110 feet of floor space. The stalls are 11 feet long by 5 feet 6 inches to 6 feet wide; in inferior stables the minimum is 1,800 feet of air space per horse, it rises to 2,000 cubic feet. In India the allowance is larger.

The Channel Tunnel scheme is described by Professor BOYD DAWKINS, who was consulting geologist to the company. He is confident that if the works had not been stopped by the Government in 1884 they would have been easily carried to completion. After standing for five years the driftway on the English side, which has a length of about 3,200 yards, was "as dry as any similar driftway could be, and the marks of the boring machine on the polished surface of the chalk were as distinct as on the day when they were made."

We have confined our notice to subjects which are usually considered to be severely technical. From our references to them it will be apparent that the writers have viewed the necessities of practice, and they are addressed to architects, engineers, contractors and manufacturers, whom the information given will be serviceable. It is sometimes believed that an encyclopædia appeals mainly to the general reader, but in the "Encyclopædia Britannica" the requirements of special callings are not neglected. The new volumes can be compared to a great structure which countless materials are utilised. Some are ornamental and delightful, but there are others which are adapted to sterner purposes, and furnish that scientific positiveness, that firm foundation which should belong to important works in literature as well as in building.

## THE SOCIETY OF ARCHITECTS AT WINCHESTER.

A MOST delightful day was spent on Saturday by the party that Mr. Silvanus Trevail, as president of the Society of Architects, brought to Winchester. They numbered over six ladies and gentlemen, for whom special saloon carriages were in readiness at Waterloo Station. These were attached to the nine o'clock express train, and in a little over two hours, after passing through some of the most charming scenery in England, the historic city of Winton was reached. There everything had been carefully prearranged, so that not a minute was lost. First the old West Gate House was visited, recently converted into a branch of the Municipal Museum, and where greatly interested the party was the complete collection of Winchester's ancient weights and measures dating from the Plantagenet period, and comprising the famous bronze standard bushel. Next the party were taken to the Assize Courts and the grand old Winchester Hall, where they were met by Mr. Wyndham Portal, the chairman of the Hampshire Quarter Sessions, who gave a highly interesting address upon the Hall and its historic associations. Its erection was completed in 1235. Here Simon de Montfort's first Parliament met, and its successors for 400 years afterwards. Henry V. chose the Hall in which to expound his policy for the invasion of France, which culminated in the victory of Agincourt. For 600 years the king's commission had been executed here, and to-day the building is just as sound as it was in the thirteenth century. Mr. Portal informed the party that the rolls of the knights of the shire, the lord lieutenants and the sheriffs were carefully kept here, and everything that was possible done to preserve the ancient character and associations of the Hall. On the western end hangs what purports to be King Arthur's Round Table. At least, the table is known to have occupied its present position for five centuries, and just below is still the "speaking tube" through the wall by which Henry V. summoned his guards. After the Hall the new infirmary barracks were visited by permission of Sir Baker Russell, who commands the district, the party having been met by Captain Harvey, R.E., who in the most courteous manner explained the details of their arrangement and construction. What makes them additionally interesting is the fact that they occupy the site of a former palace of Charles II.

This was a good morning's work, and the party adjourned for luncheon, which was served at the George Hotel. Here



they were joined by the Mayor of Winchester, Captain Harvey, E., Mr. James Nisbett, F.R.I.B.A., Mr. Galbraith, and several other local gentlemen who were to take part in the afternoon's proceedings. After grace, the President proposed no toasts only, "The King" and "The Mayor and City of Winchester," the latter from the municipal standpoint in very eulogistic terms, wherein full justice was done to Winchester's antiquity and historical records. The mayor, Mr. F. Cancellor, responded, and remarked how delighted the old city was to entertain such a party of ladies and gentlemen who were so keenly appreciative of what gave to Winchester its unique position among the municipalities of the kingdom. Captain Harvey also responded, and mentioned the pleasure it had been to him to take the party over the headquarters of the Hampshire regiment.

The hour had now arrived for the visit to the cathedral, the glory of the city, and there the party were met by the Very Rev. the Dean of Winchester, who conducted them through the ancient fabric, taking first the nave, then the transepts, then the crypt and afterwards the choir, retro-choir, lady-chapel, and various tombs and memorial chapels, describing all in the most minute manner. The Dean carefully showed where there had been variations and transitions in styles of architecture corresponding with the periods of erection. Here, too, were the caskets containing the bones of many of the Saxon kings, as well as that "Mecca" to the British architect, the mortuary chapel and altar-tomb of William of Wykeham, prince of architects and Bishop of Winchester, who had founded colleges, built churches, abbeys and cathedrals, and generally left his mark and influence upon the monumental architecture of this country that time itself will scarcely be able to obliterate.

On the President's taking leave of the Dean, the party were met by the Bursar of the Winchester College, who, by permission of the Warden, the Rev. G. Bolles Lee, M.A., took them over that interesting old educational institution, which still keeps up its traditional wooden platters and various other forms and ceremonies that carry our thoughts back to the mediæval period.

From the college the party were taken by Mr. James Nisbett, F.R.I.B.A., past the former episcopal palace—that old bishop Trelawny assisted to partially demolish, on the ground that it was too extensive for its purposes—to the remains of Wolvesey Castle. Here the party were treated to an address from Mr. Nisbett, not only on the castle itself, but on mediæval military architecture generally, showing by the various discoveries he had made through excavations and otherwise the main objects sought in the planning of such strongholds. To this was added a *résumé* of the history of the country from the time of Stephen and Matilda downwards, even to the Stuart period. From Wolvesey Mr. Nisbett conducted the party past the recently erected colossal statue of Alfred the Great in bronze, standing on two enormous blocks of Cornish granite, to the Abbey House, Winchester's official residence for its mayors. Here the Right Worshipful the Mayor (Mr. B. D. Cancellor) was "at home," and entertained the party to an acceptable tea, and afterwards accompanied them to the guildhall, museum, council-chamber, city courts, &c. In the Mayor's parlour His Worship had had specially set out the Corporation plate, maces, &c., and a most interesting collection it was, comprising no less than four silver plates of exquisite design and most massive proportions. There were beautiful loving-cups, sauce-cups, salts, platters, seals, oblets, bowls, and last, but by no means least, the Mayor's official chain and badge, which is very massive and of rich design. In the Mayor's parlour were also a very interesting collection of portraits of past Mayors and Bishops of Winchester, among them being many men of great eminence in national as well as local history.

With this memorable and courteous reception on the part of the civic authorities the day's official programme terminated, and just in time for the party to comfortably reach the station for the eight o'clock express, by which they travelled to Waterloo. Not, however, before a hearty wave-taking from Winchester's genial chief magistrate, and an earnest expression of heartfelt thanks by Mr. Trevelyan on behalf of the party for the generous and handsome manner in which they had been received, which he said would make a deep impression in their minds for the years yet to come, and how those still responsible for maintaining Winchester's ancient traditions so worthily followed in the footsteps of their predecessors.

On the way back a special vote of thanks was proposed to the President for one of the most delightful "Field-days" that the Society of Architects had ever experienced. In responding he stated that the gentlemen they were mainly indebted to were, first, the secretary, Mr. McArthur Butler, next Mr. Galbraith, who was mainly responsible for the local arrangements, and after that, so far as the Society were concerned, to their worthy colleagues the vice-president, Mr. G. Gard Pye, and hon. secretary, Mr. E. Marsland. Above and beyond all

they owed much to those representing the authorities of Winchester, civic, ecclesiastic and military, in the persons of the Mayor, the Dean, Captain Harvey, Mr. Wyndham Portal, the Bursar of the College, and Mr. Nisbett, each and all of whom had so generously and so handsomely placed themselves at the service of the party and thus maintained the honour and the traditions of Winchester.

### AN ARISTOTELIAN INSCRIPTION.

IN the *Manchester Guardian* Canon Hicks has given an account of an inscription relating to the son of the Stagirate philosopher. He says:—Aristotle, the greatest name in the history of thought, was born at Stageira, in Thrace, of substantial and even wealthy parentage. Left early an orphan, he was brought up by his guardian, Proxenus of Atarneus. It would seem as if fraudulent trusteeship was no rare crime in ancient Greece; Demosthenes, Aristotle's contemporary, was robbed of his whole patrimony in this way. But Proxenus was scrupulous in discharging his duty to his ward, and Aristotle, in return, felt towards him a life-long obligation. It turned out that within a few years Proxenus and his wife died, leaving a son Nicanor. This youth Aristotle formally adopted as his own son, and (as if to draw the tie yet closer) pledged him to be the husband of his daughter Pytheas. Everyone is aware that the great philosopher was selected by Philip of Macedon as the tutor of young Alexander, and that at Pella, in Macedonia, the future conqueror of the world, along with other young princes and nobles, pursued his literary and historical studies under Aristotle's daily guidance. These and many other details of his biography are sufficiently certified to us, although we have to depend upon comparatively late and second-hand authorities. Contemporary documents, with the exception of Aristotle's will, are almost wanting.

It will be understood, therefore, how much interest attaches to a discovery, lately made, of an inscription of the contemporary period which mentions both Aristotle and his son by name. As a matter of fact, it is but rarely that we have the delight of finding the name of some great historical character inscribed upon a monument. Only here and there among the thousands of Attic inscribed marbles do we come across names of the first historical rank like Nicias and Alcibiades. Delphi, indeed, gives us statue-bases inscribed with the name of Gelo, and ex-votos from Olympia contain the name of Hiero. Among the marble records of Athenian festivals we come upon the names of Æschylus and Sophocles as playwrights, and not long since the Roman archæologists were startled to read the name of Q. Horatius Flaccus duly inscribed as the author of the "Carmen Seculare." Such surprises, however, are rare, and this fact lends a new interest to the document now to be mentioned.

On the site of the ancient Ephesian theatre, so familiar to the readers of the Acts, the Austrian scholars have been continuing the explorations so bravely commenced over thirty years ago by Mr. J. T. Wood. This theatre had been considerably repaired and decorated, probably in the reigns of Trajan and Hadrian. Among other changes, a number of marble slabs covered with decrees granting honours to distinguished public men were removed from the Temple of Diana and used (without regard to their precious contents) for the decoration of the theatre. Many of these inscribed slabs, belonging to the fourth or early third century, B.C., were secured by Mr. Wood for the British Museum, and have been long ago published. But some others, which escaped the search of Mr. Wood, have rewarded the Austrian explorers. One slab, fairly free from other breakage, had the misfortune to be used by a mason of that time for building in horizontally. In order, therefore, to make a "bed," he has chiselled out relentlessly the whole central surface (originally inscribed with a decree), leaving only a surrounding margin of a few inches. On this remaining margin, however, we can read, in the plain yet handsome letters of the fourth century B.C., as clearly as when first cut, "It seemed good to the Senate and people: on behalf of Nicanor of Stageira, son of Aristotle." Much of the rest is mutilated, but quite enough survives to reveal that the decree granted to Nicanor the freedom of the Ephesian city, with other complimentary privileges.

Now "Nicanor the Stagirate" is a personage well known in Greek history. Nor has conjecture failed to identify him with the "son of Aristotle." For of course by adoption he would become a citizen of the same city as his father. But conjecture is made practically certain by the discovery of this interesting document, which has just been made the subject of a scholarly pamphlet by Professor R. Heberdey, of Vienna. It was Nicanor the Stagirate who was sent by Alexander from Babylon, in the very year before his death, to proclaim at Olympia the restoration of all political exiles. It was a grand and significant stroke of policy. It marked the final suppression of the old civic struggles of Greece. It had been traditional in every city for the party in power—whether the oligarchic or the democratic—to banish ruthlessly the leading men of the opposite side. Inasmuch as Alexander's friends



were dominant in nearly every city, the "exiles" would largely have belonged to the anti-Macedonian interest. But many of them had become soldiers of fortune, and had followed Alexander in his Eastern conquests. Now that the war was over they were straggling back to Greece without home or purpose in life, and were likely to be a danger to social order. The master of the world accordingly, with wise forethought and not without magnanimity, dictated to the Greek cities the readmission of all exiles. In so doing the conqueror assumes that the local liberties and traditional politics of the Greek cities are no more. It is significant that the bearer of this decree is the son of Aristotle, who had learned from his great teacher and adoptive father what all Aristotle's political writings tended to show, namely, that while the type of social and intellectual life exhibited by the Greek cities was probably the finest in the world and worthy to survive, yet little store was to be set by particular factions or political parties. Their changes and chances were many and perpetual, and a stable constitution could hardly be hoped for from them. Demosthenes might dream of Athenian patriotism and endeavour with a noble eloquence to revive the ideals of the past; but to Aristotle the vicissitudes of Greek political history were facts to be studied and classified and reported upon—things rather of the past than of the present. Greece under Alexander's influence was losing herself in Hellenism. It was appropriate that "Aristotle's son Nicanor" should be entrusted with this characteristic proclamation.

Upon Alexander's death in 323 B.C. there began that series of struggles between his generals and their sons which makes the end of the fourth and beginning of the third century one of the most military and chaotic and tiresome periods of history. There is nothing but war and bloodshed in every quarter, and the situations change as rapidly as a game on a chessboard or the patterns in a kaleidoscope. In 318 Cassander, the claimant to the Macedonian throne, sent his trusted friend Nicanor to attack his enemy's fleet under Cleitus at the Dardanelles. We need not hesitate to identify this Nicanor again with the son of Aristotle. Aristotle had been a friend of Cassander's father Antipater; it was natural that the sons should be loyal friends likewise. Nicanor on his way to the Dardanelles (so we read) "took over also the fleet of Antigonus." We are not informed by any author in what harbour Antigonus's fleet lay and where Nicanor joined it. But this decree is enough to point irresistibly to Ephesus as the port. Ephesus was, we know, the headquarters of Antigonus, and one of the chief cities of his dominion. We can readily enough supply in imagination the circumstances in which the decree was passed and inscribed. Nicanor arrives from Athens (B.C. 318) at Ephesus in command of Cassander's fleet. He asks and receives at once the assistance of the fleet of Antigonus. He lands while the fleets are preparing to sail from Ephesus to engage Cleitus off Besika Bay. He is welcomed in the public assembly of the Ephesians as the friend of Alexander the Great, and now the admiral of the rising Cassander. He receives the grant of the freedom of the city, together with much complimentary eloquence, now happily lost. Nothing, indeed, remains but the dry, formal statement of the grant, recorded as usual on a marble slab, and now, after so many centuries, recovered and read by the curious eyes of the modern historical student.

If it be asked why the old writers never spoke of "Nicanor" or "Nicanor the Stagirite" as being the son of Aristotle, we must remember that the surpassing splendour which now attaches to the name of Aristotle and invests with romantic interest the slightest new fact we can learn about him, could not have struck his contemporaries in the same degree. To the historians of his day (from whom our existing authorities have copied) Nicanor was simply Nicanor the Stagirite; he was himself and not merely the son of his father. And the name of Aristotle here added on the marble, however great the interest it has for us moderns, found its place in the Ephesian decree simply because a public decree was a formal affair and was bound therefore to give the person mentioned his full and formal style and designation, and this was neither more nor less than "Nicanor, son of Aristotle, the Stagirite."

## TESSERÆ.

### Italian Wreaths and Festoons.

IN the course of his autobiography, Benvenuto Cellini refers to the manner in which contemporary sculptors in different districts carved the wreaths and festoons which are commonly known as "swags" in modern times. In Italy, he says, there is a variety of tastes, and foliage are cut in many different forms. The Lombards make the most beautiful wreaths representing ivy and vine leaves, and others of the same sort, with agreeable twinings highly pleasing to the eye. The Romans and Tuscans have a much better notion in this respect, for they represent acanthus leaves with all their festoons and flowers winding in a variety of forms, and amongst these leaves they

insert birds and animals of several sorts, with great ingenuity and elegance in the arrangement. They likewise have recourse occasionally to wild flowers, such as those called "lion-mouths" from their peculiar shape, accompanied by other fine inventions of the imagination, which are termed grotesque by the ignorant. These foliage have received that name from the moderns because they are found in certain caverns in Rome, which in ancient days were chambers, baths, studies, halls and other places of the like nature. The curiosity happened to discover them in these subterranean caverns whose low situation is owing to the raising of the surface of the ground in a series of ages; and as these caverns in Rome are commonly called grottoes they from thence acquired the name of grotesque.

### Ideal Beauty.

Scarcely any object in nature, however generally pleasing is found so perfect in all its parts that some one or other of those parts may not be discovered in greater perfection in some other objects. Every object that nature presents to us has what are termed accidents. These accidents are varieties of form, or, more correctly speaking, departures from the perfect canon or standard of form of that object. Ideal beauty consists in the selection and combination of all the most perfect parts in one complete whole. No portion of this can be invented or originated by the artist, for nature being his only model any independent conception of his own respecting form could only result in absurdity and deformity. The supposition therefore that ideal beauty is ever intended to mean imagined beauty and not beauty that does exist and may be found, is based on a mistaken apprehension of the term. It is the province of the artist to reject the accident and to restore the absent perfection. By doing this skilfully throughout his work he produces perfect beauty, or what in technical language has been called "ideal beauty." It is obvious that ideal beauty cannot be comprehended at once and intuitively. It must be the result of great observation, study and considerable knowledge of form, and applied to the human figure requires an intimate acquaintance with its capability of action, and the character forms assume under particular circumstances. The ideal beauty of one class is not the beauty of all classes. Thus beauty exists in the Apollo; in the Theseus and the Ilyssus; in the Venus of Melos and the Venus de Medicis; but in all these and other well-known examples, it is only ideal beauty as it illustrates in perfection the class of subject to which it is applied. The best school in which true beauty of form can be learnt and its principles studied is fine Greek sculpture—not because art is superior to nature, but because the Greek sculptors selected and copied and applied all the best forms in nature, and therefore their works illustrate, and so far facilitate our becoming acquainted with the laws of beauty. They have, as it were, provided the best books for our learning a difficult language.

### Ancient Japanese Dwellings.

Japanese antiquaries tell us that in early times, before carpenters' tools had been invented, the dwellings of the people who inhabited the islands were constructed of young trees with the bark on, fastened together with ropes made of the rush, or perhaps with the tough shoots of the wistaria, and thatched with the grass called kaya. In modern buildings the uprights of a house stand on large stones laid on the surface of the earth; but this precaution against decay had not occurred to the ancients, who planted the uprights in holes dug in the ground. The ground plan of the tent was oblong, with four corner uprights, and one in the middle of each of the four sides, those in the sides which formed the ends being long enough to support the ridge pole. Other trees were fastened horizontally from corner to corner, one set near the ground, one near the top, and one on the top, the latter of which formed what we call the wall plates. Two large rafters, whose upper ends crossed each other, were laid from the wall plates to the heads of the taller uprights. The ridge pole rested in the fork formed by the upper ends of the rafters crossing each other. Horizontal poles were then laid along each slope of the roof, one pair being fastened close up to the exterior angle of the fork. The rafters were slender poles, or bamboos, passed over the ridge poles and fastened down on each end to the wall plates. Next followed the process of putting on the thatch. In order to keep this in its place, two trees were laid along the top resting in the forks, and across these two trees were placed short logs at equal distances, which, being fastened to the poles in the exterior angle of the forks by ropes passed through the thatch, bound the ridge of the roof firmly together. The walls and doors were constructed of rough matting. It is evident that some tool must have been used to cut the trees to the required length, and for this purpose a sharpened stone was probably employed. Such stone implements have been found embedded in the earth in various parts of Japan in company with stone arrow-heads and clubs. Specimens of the ancient style of building may even yet be seen in remote parts of the country, not so much, perhaps, in the habitations of the peasantry as in sheds erected to serve a temporary purpose.



### Ancient Buildings of Central America.

The Mexican Indians, besides a perfect knowledge of stone cutting and laying, were well acquainted with various kinds of mortar, stuccoes and cements, and large masses of excellent concrete are found in many of their buildings. They were, in fact, so far as the mechanical part went, accomplished masons. In another department of art which requires more knowledge and science than the building of pyramids and temples they were in no wise inferior to the Egyptians—to the preparation, mixing and use of pigments. Their painting is indeed superior both to their architecture and sculpture, and they went even beyond the Egyptians in the blending of colours, approaching more nearly to the paintings found at Pompeii and Herculaneum. In one of the rooms of a large building at Chichen Itza are paintings covering the entire walls from the floor to the ceiling. The apartment may be 30 feet long, 12 feet wide and 15 feet high. The figures are not more than 6 inches to 12 inches in height, but most interesting subjects are represented, abounding with life, animation and nature. In one place are seen warriors preparing for battle, in another the fight is at its height, castles are attacked, defended and taken, and various military executions follow. This forms one section of the wall. In another are seen labours of husbandry, planting, sowing and reaping, and the cultivation of fruit and flowers. Then follow domestic scenes, and others apparently of a mythological nature—indeed, almost everything requisite to give us an intimate acquaintance with Indian life is depicted. The subjects are too numerous to mention, and such was the multitude of figures and objects that a month would not have sufficed for delineating them. Unfortunately these beautiful paintings are fast hastening to decay, and every day adds to their approaching obliteration from the visits of Indians. The prevailing type of the architecture in the central parts of America and Yucatan consists in first constructing immense pyramidal mounds or terraces of greater or less height, and on these placing their sacred edifices and palaces. Whether these are called mounds or, as some call them, pyramids (and by the Indians they are called *teocalli*) are in general solid or contain in all cases passages and apartments remains yet to be ascertained. In the few that have been opened, by accident or design, small richly decorated rooms have been found. The buildings are generally long, low, arched and of a single storey, a plan frequently adopted by the Spaniards on account of the shocks of earthquake to which many parts of the country are exposed. In a few instances buildings of two and three storeys were met with. The *teocalli* before mentioned are found in great numbers throughout the country. They are frequently of large dimensions, of a pyramidal form, but do not terminate in a point like the Egyptian structures. They have on their summits platforms of sufficient extent for their temples, which contained statues of their deities, and in front was seen conspicuous the sacrificial stone or altar, convex on its upper surface so as to raise the chest of the human victim.

### Technique in Painting.

There is a want of sound judgment generally shown in the appreciation of the minor excellences in every art. The twirl of a brush is not painting, the flourish of a cadence is not music, nor the turn of a couplet poetry. These qualities rather convey an idea of trickery than of real excellence in the respective arts. That execution is alone true and good which makes us acquainted with the mind of the painter, and it is well or ill done according as it approaches or recedes from the standard of stern and uncompromising truth. All other execution, however charming, is false, and to use a technical term smells too much of the palette. Thus, the execution of Rubens may astonish the eye, but that of Titian makes us forget the art; Moore may win the fancy, but Shakespeare entralls the mind; Donizetti may tickle the ear, but Mozart enchants the soul. In the work of those three great masters (not that in their respective arts we compare them with each other) we forget the means they employ, and only receive the spirit of their creations. The work is so well done that it assists, but does not interfere with the soul's contemplation. For when the eye or ear rests with complete satisfaction on the outward manner the great purpose of the artist is lost. Therefore that execution is alone perfect which does not invite or fix the attention on its own peculiar qualities, though the public may be better pleased by a more ostentatious display.

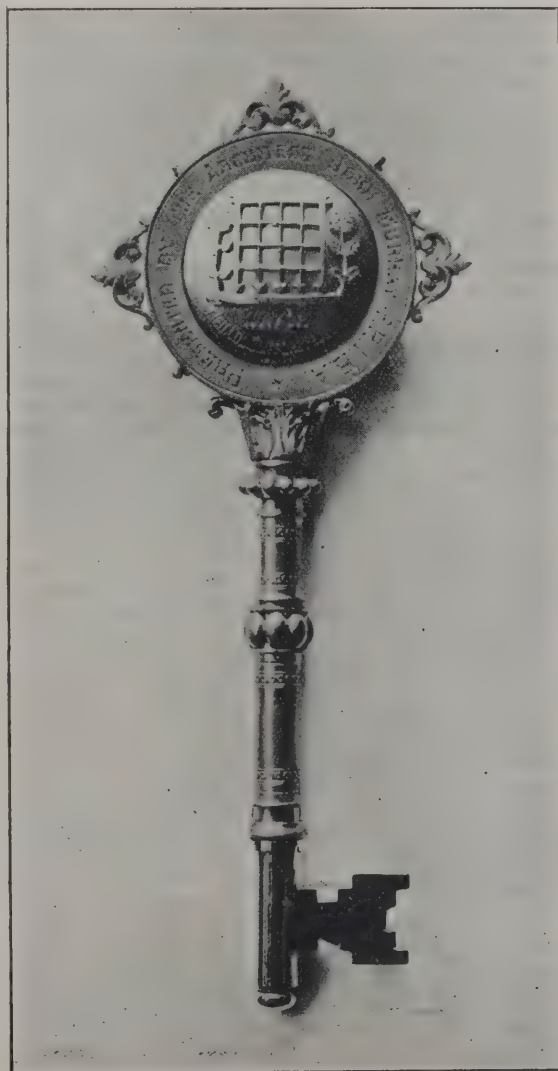
### Rembrandt.

If ever there was a man of genius in the proper sense of the term, he was Rembrandt. He lived in and revealed to others a world of his own, and might be said to have invented a new view of nature. He did not discover things out of nature, in fiction or fairyland, or make a voyage to the moon "to descry new lands, rivers, or mountains in her spotty globe," but saw things in nature that everyone had missed before him, and gave others eyes to see them with. This is the test and triumph of originality, not to show us what has never been, and what we may therefore very easily never have dreamt of, but to point out to us what is before our eyes

and under our feet, though we have had no suspicion of its existence for want of sufficient strength of intuition, of determined grasp of mind, to seize and retain it. Rembrandt's conquests were not over the ideal, but the real. He did not contrive a new story or character, but we nearly owe to him a fifth part of painting, the knowledge of *chiaroscuro*—a distinct power and element in art and nature. He had a steadiness, a firm keeping of mind and eye, that first stood the shock of "fierce extremes" in light and shade, or reconciled the greatest obscurity and the greatest brilliancy into perfect harmony; and he therefore was the first to hazard this appearance upon canvas, and give full effect to what he saw and delighted in. He was led to adopt this style of broad and startling contrast from its congeniality to his own feelings; his mind grappled with that which afforded the best exercise to its master powers; he was bold in act, because he was urged on by a strong native impulse. Originality is then nothing but nature and feeling working in the mind. A man does not affect to be original; he is so because he cannot help it, and often without knowing it. This extraordinary artist indeed might be said to have had a particular organ for colour; his eye seemed to come in contact with it as a feeling, to lay hold of it as a substance, rather than to contemplate it as a visual object. The texture of his landscapes is "of the earth, earthy;" his clouds are humid, heavy, slow; his shadows are "darkness that may be felt," a "palpable obscure;" his lights are lumps of liquid splendour. There is something more in this than can be accounted for from design or accident. Rembrandt was not a man made up of two or three rules and directions for acquiring genius.

### THE WESTMINSTER CITY HALL.

THE increased importance which Westminster has attained by the new division of the Metropolis has necessitated a transformation of the St. Martin's town hall, involving much troublesome work. The architect who designed and directed all the operations is Mr. John Murray, F.R.I.B.A., and the



general contractors Messrs. are Patman & Fotheringham, Ltd. The building was opened yesterday (Thursday), by H.R.H. the Duke of Cambridge, K.G. The gold key used, of which we give a sketch, was designed by the architect. Next week we shall publish a view of the building.



## NOTES AND COMMENTS.

DRINKING-HORNS have been popularly assumed as handed round only in the festivals of northern races. The ryton, which was a similar vessel, was long used in Greece, and mention is made of it by DEMOSTHENES. It is found represented on ancient vases, and several were discovered at Pompeii. The Greek forms were likely to have been derived from the horns of oxen, which were at first utilised as cups in Greece as well as in northern regions. But in Greece they gradually assumed other forms, and especially the heads of animals. The idea is not pleasing of putting the snout of a hound or a hog into a human mouth and drinking from an orifice, but the ancients were not always refined in their conduct at meals. Among the remains which were lately met with in the excavations at Tarentum is a silver ryton which resembles the head of a young deer. The style of ornament is so beautiful, the vessel is supposed to have been brought from Athens in the fourth century before the Christian era. On the neck has been introduced a scene in Olympus, probably between ZEUS and HERA. The horn has been placed in the museum at Sofia, where there is a similar example adorned with figures of satyrs.

SECTION 63 of the London Building Act of 1894 provides that every new building exceeding 60 feet in height shall be provided in all the storeys above that height with such a means of escape in case of fire for persons dwelling or employed therein as can be reasonably required under the circumstances of the case. This was new legislation, for when the previous Acts were under consideration it was not anticipated that high buildings would become general. The County Council have powers to make by-laws on the subject which to some extent become retrospective. On Tuesday last Mr. W. R. RICKARDS, the building owner of the lofty mansions in Westminster and Buckingham Gate, was summoned for failing to provide proper means of escape in case of fire. In last November the County Council approved of plans for the precautions demanded, but the work was not carried out, and Mr. RICKARDS was fined 20s., and in February the summons was adjourned for three months. For the defence it was stated that no blame was attached to the defendant. Orders had been given, but the engineers were unable to carry them out in the time specified. A penalty of 20s. was again imposed, with three guineas costs.

THE position of AUGUSTE COMTE as a philosopher has been disputed, but no less can be said of all his predecessors. What is most remarkable is that, while the law of evolution is generally accepted as the solution of many, if not all, difficulties of a metaphysical kind, COMTE's connection with it is ignored. As a consequence the only memorial of COMTE which was found in Paris was his modest apartment in the Rue M. le Prince in the Quartier Latin, which many Englishmen visit from time to time. At length a memorial of him has been set up in the Place de la Sorbonne; it is the work of M. INGALBERT. Like so many of the recent examples of its class, a bust is substituted for the full length statue, and it is accompanied by emblematic figures. On one side of the pedestal is a young man seated on an anvil reading a treatise on Positivism, on the other side is a figure of Humanity, who carries an infant and presents a branch of laurel. The unveiling was presided over by General ANDRÉ, the Minister of War, as the representative of the Government. He spoke of the political influence of COMTE, and declared the law of progress, or *loi des trois états*, as being as inevitable as the law of gravitation.

THE application of electricity is only in its infancy, and as improvements arise it must be expected that various arrangements will have to be superseded. In Birmingham the electric supply committee of the Corporation have been able to report a large increase in the units sold during the year. The gross profit has amounted to 18,514s., but as the conversion of a portion of the system from 110 to 220 volts has been charged against revenue, instead of a profit there is a deficit of 4,812s. The reason is, as the report points out, that the change from the older voltage is

necessarily costly, as it not only involves changing the lamps of consumers but necessitates the rewinding and renewing of motors and modifying certain fittings on consumers' premises so as to adapt them to the new conditions. At the works also considerable modifications in the switchboards and alterations in certain of the generating machinery have been rendered necessary. The committee remind the Council that it is only within the last few years that the use of the higher pressure has been made possible by the invention of the high-voltage incandescent lamp. All new extensions made on the higher voltage system, which entails a much smaller capital outlay in main laying, and for the economic working of the department it is necessary that the generating and distributing system should be at one standard pressure. This is effected by the change, and though the cost is heavy the advantages of the uniform higher pressure are so great as to fully justify the outlay. Application has been made to the Local Government Board for power to raise a loan of 251,974s. for the equipment and erection of the proposed station in Summer Lane. It is also intended to include in the General Powers Bill clauses which will enable the Corporation to supply electrical energy in bulk to the adjoining local authorities, and that the committee may supply electrical energy to light railways or tramways, and they impose regulations as to the right of consumers to demand supplies.

THE removal of the Royal Arms from the Limerick town hall suggests the mixture of malice and absurdity which is characteristic of modern Irish humour. But it was wise to avoid making a State trial of the affair. The carving is an excellent example, and there are grounds for supposing it is the work of GRINLING GIBBONS. At one time it was set up in the cathedral. Limerick is singularly deficient in memorials of the past, although the so-called "treaty stone" is considered to be all-sufficient. According to Judge ADAMS, the charters found their way to the tobaccoists. This is different from the Dublin practice, where records are preserved, although not often needed. The Irish capital, it appears, was given to the men of Bristol by HENRY II. to inhabit, and accordingly when any of the ancient customs or privileges of Dublin were attacked it was sufficient evidence that such or such a custom existed in Bristol to have it justified. The Royal Arms of Limerick should be preserved within a building, otherwise the roughs may show their bravery by making another foolish attack on the carving.

## ILLUSTRATIONS.

ST. PAUL'S CHURCH, GREENOCK.

THIS church has been erected for a new parish lately created in Greenock. It accommodates about 800 of a congregation, and consists of a nave with two aisles and a longer choir than is usual in Presbyterian churches. It is built of red Dumfriesshire stone, the walls inside being lined with fine brick and stone bands. The building has been erected from the designs of Mr. R. ROWAND ANDERSON, LL.D., Edinburgh.

CHURCH OF ST. JOHN THE EVANGELIST, BROWNSWOOD PARK, N.

"WEST SUSSEX GAZETTE" OFFICES, ARUNDEL.

THE *West Sussex Gazette* offices, High Street, Arundel, were erected last year. The idea has been to design a building which should be suitable to this ancient Sussex borough, and at the same time provide for the various requirements of a newspaper office. The ground floor is of Ancaster stone, the whole of the upper portion is of oak, with red-brick panels to first floor and rough-cast above. The roof is covered with old Sussex stone healing. The front part of the ground floor is occupied by the commercial staff, and is fitted up entirely in oak. Behind are the editorial offices and at the extreme end the printing works. The work was carried out by Mr. W. WALLIS, of Balham, from the designs of Messrs. FREDERICK WHEELER & LODGE, Bank Chambers, Carfax, Horsham, and 6 Staple Inn, London, W.C. The ornamental metalwork was executed by Mr. J. F. GARROD, of 10 Archer Street, W.



# THE HORSLEYS, SURREY.\*

ST and West Horsley, so far as any record exists, have ever been distinct villages. A tradition remains that the church at West Horsley stood on the green, and that it was nearer East Horsley with the intention of converting two parishes into one. But, if such an arrangement was in contemplation, it was never carried out.

The historians of the county have carefully catalogued the mansions of the various manors, but I have no intention to bore you with a tedious paper, for the beauties of nature in this month of May have far more interesting stories to tell, and pleasanter pictures to present, than can be culled from a library of musty tomes.

West Horsley the Norman Survey informs us that Richard, son of Other, holds Orselei, and that Brix held it of Edward. This Other was governor of Windsor Castle, and his descendants who continued to hold the property assumed the name of De Windsor.

Passing on for a couple of centuries, we find that in 1279 Ralph Berners was the possessor of the manor, and from him to son the property passed, until Margery, the last of the direct line, married John Ferriby, and afterwards became the wife of Sir John Bouchier, knight. Sir John's eldest son, Sir Humphrey, was slain at the battle of Barnet.

Later owner was Henry Courtney, Marquis of Exeter, by whose heirs the estate was forfeited, and on Sir Anthony's death it was shortly afterwards conferred. Sir Anthony, who was Master of the Horse to Henry VIII., married Elizabeth Fitzgerald. The Earl of Surrey sung of her in one of his sonnets, "Bright is her hair, and Geraldine she hight." His death took place in 1548, and his son and heir Anthony, who died at the manor house in 1592, was created first Viscount Montacute. The viscount had mortgaged the estate to John Evelyn, and to clear off the debt he parted with the property, and later we find it in the possession of Sir Nicholas Wotton, who, dying in 1643, bequeathed it to his nephew, Sir Walter Raleigh.

John Evelyn's diary under date August 10, 1658, we find "I din'd at Mr. Carew Raleigh's at Horsley, son of the late Sir Walter."

After Raleigh the estate was sold to Sir Edward Nicholas for £750, and from him it passed to the Westons.

on the staircases, and elsewhere. Many of the adherents to Charles I. obtained conspicuous places, and the Court beauties of Charles II., including Nell Gwynne, were not overlooked.



WEST HORSLEY PLACE.

As we pass through the rooms we may note the Marquis of Montrose, the Earl of Northampton in armour, the Earl of Stafford, Archbishop Laud at the age of sixty-four, Charles I., Charles II., the Earl of Clarendon, the Duke of Ormond, Sir Edward Nicholas, Lady Penelope Nicholas, Jerome Weston, the Earl of Portland with his Treasurer's staff, Queen Catherine, consort of Charles II.; Sir Walter Raleigh, Captain Perkins, John Weston with his wife and children, Henry Weston, Lady Aylesford, William Perkins, and others.

For many of the notes on St. Mary's Church, West Horsley, I am indebted to a manuscript compiled by Lady Rendel and the Rev. E. C. Unmack. When the first church was erected is not known, but a church is mentioned in Domesday Book, and a portion of the structure may be accepted as of that date. The chancel is Early English, the south aisle and chapel Perpendicular; the three arches are four-centred, a rarity in the churches of Surrey. The east window of three lancets with shafts between them and at the sides is regarded by Mr. Joseph E. Morris, M.A., as one of the most beautiful in the county, the single exception being the east window at Ockham. In this window two specimens of stained glass are preserved, which are believed to date from the time of Henry III. The one in the centre represents Our Saviour at supper, with Mary Magdalene wiping His feet with her hair, and in the north compartment St. Catherine is depicted released from the wheel of torture. In the north window of the chancel Sir James Berners is seen in a kneeling posture. He lost his head on Tower Hill. The wooden porch projecting from the tower is an unusual feature, and is believed to be at least 600 years old. On the outer wall to the west of the north doorway some small crosses can be traced, which may have been made by pilgrims. In 1810, when the then rector, the Rev. Weston Fullerton, spent 3,000*l.* on restoring the church, a small alabaster piece of sculpture was found under the brick floor. It measures 18 inches high by 12 inches wide, and represents the Nativity. In 1849, and again in 1887, various repairs were made in the church. A brass chandelier hanging in the nave bears the following inscription:—

Pour parvenir au royaume sans fin esper en Dieu.  
Martin Raizine et Anne Chacou son espouse, 1652.  
Fai a Namur par Pierre Rock, Maitre Fondeur de Cuivre  
et Potin.

Which Mr. Unmack translates:—

To gain the Kingdom without end, hope in God.  
Martin Raizine and Annie Chacou, his spouse, 1652.  
Made at Namur by Peter Rock, Master Founder in Brass  
and Pottery. (?)

This chandelier, Mr. Unmack conjectures, was brought over by a Huguenot refugee.

In the return of church goods made in the reign of Edward VI., which has been edited by Mr. J. R. Daniel Tyssen, we read:—

Item. Four great Bells in the steple, the best by estymacion xiiij*s.*, the rest under after that rate.  
Item. A sacring bell and a corse bell.

In Mr. J. C. L. Stahlschmidt's work on "Surrey Bells," the inscriptions on three are given:—

Bryan Eldridge made Mee. 1645.  
Guilemus Eldridge me Fecit. 1687.  
Bryan Eldridge made me. 1621.



WEST HORSLEY CHURCH.

anning tells us that Mr. Weston's house was commonly called the Sheep-leze, from the piece of land in front of the house on the other side of the turnpike road. The manor had been rebuilt by Sir Anthony Browne, and alterations and additions were made in the reign of James I.

Sir Edward Nicholas, on coming into possession, made an extensive collection of portraits, with which he decorated his house, and these still remain in the gallery, the billiard-room,

\* paper read by Mr. C. Wheeler at the first summer excursion to Upper Norwood Athenæum.



On this bell, which is broken, there is a heart between each word, and the first bell is decorated in a similar way. All these bells Mr. Stahlschmidt believes to have been cast at Chertsey.

The tablets and gravestones of a village church often tell the story of the manor, and it is certainly so at West Horsley. A few only I will mention.

On the north side of the chancel, in an enriched ogee arched canopy, is the recumbent figure of a priest. The arms denote that he was a De Berners, either Roger de Berners, rector in the reign of Edward II., or Randulphus de Berners, "clericus" in the reign of Edward III. A monument by Bacon to the Rev. Weston Fullerton, who was presented to the living by his cousin, Henry Perkins Weston, of West Horsley Place in 1770, is also here. In the south aisle there is a tablet of 1750 to James John Rendall and Jane his wife, who was daughter of John Weston, of Ockham. On the floor of the nave are two brass inscriptions, the one to Henry Darckham, 1504, the other to Martyn Whyen, 1516. In the Nicholas Chapel, which Aubrey stated was "appropriated as a dormitory of the family of the Nicholas's," there are monuments to Sir Edward Nicholas, knight, who purchased West Horsley Place of Carew Raleigh. Sir Edward was secretary to Villiers, Duke of Buckingham, when Lord High Admiral, and followed Charles II. into exile. His son Sir John held office under Charles II. and the three succeeding sovereigns. Sir John's wife, the Lady Penelope Compton, daughter of the Earl of Northampton, was killed at West Horsley Place by the falling of a chimney in the great storm of November 26, 1703. By the same storm Bishop Kidder, of Bath and Wells, and his wife, were killed in the palace at Wells. Another stone tells



EAST HORSLEY CHURCH.

of Susan Briscoe, daughter of Sir Randall Cranfield, knight, who died in 1636. The inscription runs:—

She left no issue for the childing bed,  
That gave her Death, brought forth an infant dead.

A marble slab let into the wall of the churchyard commemorates William Nicholas, son of Sir John, who bequeathed West Horsley Place to the Westons.

I have mentioned Sir Walter Raleigh, and have alluded to the Huguenots, and in this connection it may be interesting to note that in 1569 Raleigh went to France, and enlisting as a volunteer in the Huguenot army, took part in the battles at Jarnac and Moncontour. Of greater interest is the fact that, when Archbishop Parker founded the Society of Antiquaries Raleigh became one of its members. His wife was Elizabeth Throgmorton, a maid of honour to Queen Elizabeth. Their son Carew was born in the Tower of London, and on February 15, 1604-5, he was baptized in the church of St. Peter ad Vincula.

The historians of Surrey tell us that he died at West Horsley Place, and was buried in the Nicholas Chapel, but the latest biographers, Professor J. K. Laughton and Mr. Sidney Lee, to whom I am indebted for various facts, give evidence to show that he died at his London house in St. Martin's Lane in 1666, and on January 1, 1666-7, was buried in his father's grave in the chancel of St. Margaret's, Westminster. The register there describes him as having been "kil'd."

When Sir Walter was executed in Old Palace Yard on October 29, 1618, Lady Raleigh had his head embalmed and kept it in a red leather bag as long as she lived.

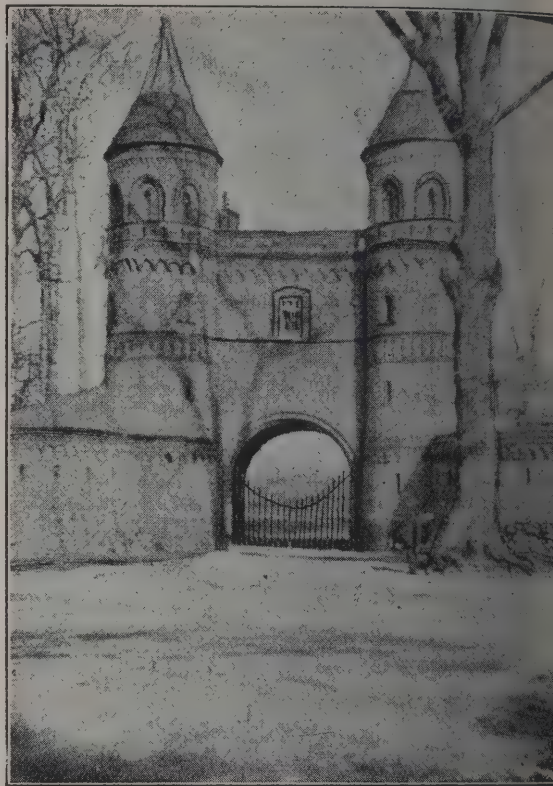
William Oldys, in his "Life of Raleigh," quotes a letter he had seen, written by William Nicholas, the last who owned Horsley, wherein he says he verily believes that the head he

saw dug up there in 1703 from the side of a grave where Carew Raleigh had been buried was that of Sir Walter Raleigh, there being no bones of a body to it, nor room for the rest of that side of the grave being firm chalk.

Frederic Schoberl, writing probably from the same accounts states that on digging a grave next Carew Raleigh's coffin skull was found in a niche in the rock of chalk, only just enough to contain it.

Now, as Carew Raleigh had sold the property, one would scarcely expect his burial to take place in the manorial church. His mother died in 1647, and at that time the grave was in his, and as I can gain no information as to her place of the thought arises that she may have found a resting-place at West Horsley, and if so, would it not be natural to suppose that Carew would place his father's head beside her?

A few notes about Carew may be of interest. In 1610 he entered Wadham College, Oxford, as a fellow commoner, matriculated on March 23, 1620-1, and his name continues



ENTRANCE TO (EAST) HORSLEY TOWERS.

the books until 1623. In 1635 he became a gentleman of the Privy Council. A Bill restoring him to blood passed through the House of Lords in 1621, but though it passed through Houses in 1624 the Royal assent was withheld until William Herbert, the third Earl of Pembroke, took him to court of James I., but the king complained that he looked like his father's ghost. In 1639 he was imprisoned in the Fleet, drawing his sword on a fellow courtier, and in May 1640 was committed to the Tower for passionate words spoken in committee. In Parliament he represented Haslemere from 1648 to 1653, and Carlyle states he was member for Callington at the close of the Long Parliament. He refused knighthood at the hands of Charles II., but the honour was conferred on his son Walter on June 10, 1629, and in the same year the manor of East Horsley was conveyed to Carew by the Earl of Southampton. His wife was Philippa (Weston), the widow of Sir Anthony Ashley.

The story of East Horsley extends as far back as the time of Canute, when the king permitted a Danish jarl named Thorkel to give Horsley to the use and support of the table of monks of Christ Church, Canterbury.

In the catalogue of religious houses attributed to Geoffrey of Canterbury, a priory of black nuns is mentioned as having been established there in the days of Richard I., or King John.

In Domesday Book, Horsley is described as belonging to the Archbishop of Canterbury for provision of the monks. The Rev. Arthur Hussey, M.A., states that the Metropolitan had a palace there, and until very recently the church was peculiar of the Archbishop of Canterbury.

A smaller manor, probably part of the other, belonged to the Bishops of Exeter, whose connection with Horsley is attested on two of the brasses. This manor was alienated by Bishop Harman in the time of Henry VIII, and since



ave been united, and Captain the Hon. Lionel Fortescue Noel, D.L., son of the Earl of Lovelace, is sole lord. Martin's Church was built in the twelfth century, and is Early English. The church is of flint; the old tower is repaired with brick and covered with stucco. The half-length brass of 1370 is believed to be of Bishop Thorne.

The beautifully-executed profile brass is to Bishop John de, of Exeter, who died in 1478. The inscription, as it appeared in the original, is given by Mr. Joseph E. Morris, as—

Quisquis eris qui transieris  
Sta, perlege, plora;  
Sum quod eris fueramque quod es,  
Pro me, precor, ora.

The translation, kindly made by the Rev. Septimus Pennington, M.A., runs:—

Whosoever thou shalt be who shall pass by  
Stand, read thoroughly, bewail;  
I am what thou shalt be, and I have been what thou art,  
Pray for me I implore you.

Portions of two other brasses are in the centre aisle. The one at the east end commemorates John Snelynge and Alys, wife, 1489; the other, at the west end, Thomas Snellinge and his wife, 1504.

The altar tomb in the north aisle is to Thomas Cornwallis and his wife. He was groom porter to Queen Elizabeth.

In the western window of the north aisle there are some fragments of glass bearing date 1573.

The bells are inscribed:—

Bryan Eldridge made mee. 1648.  
H.B. R.D. William Eldridge made me. 1703.

The third bell is marked:—

Sit Nomen Domini Benedictum.

The fourth is similar to the second.

The Eldridges, according to Mr. Stahlschmidt, were first established at Wokingham, in Berkshire. Afterwards they had a branch at Horsham, in Sussex; but the Surrey bells are believed to have been cast at their foundry at Chertsey, Surrey. The illustrations are from photographs specially taken by Charles Wheeler.

## CAMBRIDGE.\*

At the present time the area of the borough of Cambridge is 3,278 acres. The borough boundaries of Cambridge have not been extended for many years, in fact, I can find no record of their extension. In the reign of King John the boundary of the town was defined by the King's Ditch, which ran out of the river by Mill Lane and Pembroke Street, and ran round through the site of Sidney College into the river opposite Magdalene College, and the boundary of the town will be seen by studying the old map, No. 1, published in 1592.

An excellent idea of the appearance of the town at that period may be obtained by studying "Hammond's Bird's-eye View of Cambridge," published in sheets in 1592. Only a complete copy of this map exists, and that is in Oxford University. Individual sheets are sometimes to be met with, and by the kindness of the bursar of King's College, I am enabled to show one here. The time has now arrived when it is absolutely necessary to extend the boundaries of the borough, and it is proposed to extend them by enclosing portions of the villages of Chesterton, Cherryhinton and Grantchester with the town of Newnham. But for the shortsighted objection of those who derive all the advantages of close proximity to Cambridge this extension would have taken place before. The alteration of boundary, which must take place within the next few years, should about double the area of the borough and increase the rateable value by at least 50,000*l.* The population in full term is 41,655. The assessment for district purposes is 257,138*l.*, out of which the assessment of the town and university buildings is 25,593*l.*, or, roughly, 10 per cent. The rates amount to 5*s.* 2*d.* in the pound.

In the sixteenth century the accumulation of filth in the streets (into which refuse of all sorts was thrown), the housing of the town of cows, horses, cattle and swine, and the habit of driving them out into the streets in the morning (when the town herdsman, blowing his horn, came to drive them to the pastures and commons), resulted in plague and sickness. At the present time Cambridge, as befits a university town, holds a high reputation as one of the most healthy towns in England. A new sewerage system on the precipitation and filtration principle has just been completed at a cost of 168,000*l.* Street paving was always a source of trouble; at one time each householder was responsible for the repair of the street opposite his house, and iron-shod wheels and other

"evil engines" were forbidden. Tolls were levied on goods coming into the town to pay for the maintenance of the streets. The successive stages of macadam, granite setts and Val de Travers are now giving way to wood-block paving, which has recently been laid down from the station to the Post Office, a distance of 1,830 yards, at a cost of 15,517*l.* In early days householders were compelled to hang out lanterns outside their own houses to light the town, and in 1615 we find that the town crier was sent round on dark nights to see that this was done. There is now a Town and University Gas Company, and considering the cost of carriage of coal to Cambridge, the price of gas, 3*s.* 2*d.* per 1,000, is low. The Electric Light Company is one of the few electric light companies in England paying a dividend of 7 per cent. The system adopted is high tension alternating, the dynamos being driven by Parson's steam turbines. After the plague in 1564, Dr. Perne, master of Peterhouse, proposed that a fresh supply of drinking water should be brought into the town from the streams running from the springs at Nine Wells in the parish of Great Shelford, a distance of about 4 miles. The work was carried out at the joint expense of the town and university in 1610, under a scheme by Edward Wright, of Caius College, who planned the New River. This stream, called Hobson's Stream, supplies a fountain in the market place and also the baths of Emmanuel and Christ's Colleges. Thomas Hobson, the carrier, who was a large subscriber, is well known, for as a livery-stable keeper his name was the origin of the saying "Hobson's choice," his rule being "each horse in its turn and no choice," and his customers had to "take that or none." The fountain in the Great Court of Trinity College is supplied by a lead pipe carried for about 2 miles from a spring on the Madingley Road. The present water-supply of Cambridge is excellent, pure and inexhaustible, being derived from the lower green sand, and is pumped up at Fulbourn, a distance of about 6 miles, to a reservoir above Cherryhinton, the height giving sufficient head of water to deliver a jet from a standpipe over the top of King's College Chapel.

I think that we are justly proud of our open spaces in Cambridge, a fact which will be brought home to you by a glance at the spaces coloured green upon the plans of the town. The green spaces on the large plan on the wall show the open spaces and common lands which cannot be built upon, and these cover an area of 286 acres, out of a total area of the borough of 3,278 acres, *i.e.* about one-ninth of the whole of the borough, and are exclusive of college grounds and of the Botanical Gardens (36 acres), which also cannot be built upon. Twice within the last sixty years have proposals been made to the Corporation to enclose these commons, propositions which, for the sake of posterity, I am glad to say were successfully opposed. The principal open space is Parker's Piece (20 acres), which was obtained in 1812 from Trinity College in exchange for two pieces of land at the backs of the colleges. The following is the acreage of the several commons:—

	A.	R.	P.
Coldham's Common . . . . .	98	1	36
Stourbridge Green . . . . .	42	1	4
Midsummer Common . . . . .	57	2	1
Butt Green . . . . .	7	8	13
Parker's Piece . . . . .	20	0	35
Land between Parker's Piece and East Road . . . . .	4	0	20
Land between Mill Road and Queen Anne Terrace . . . . .	3	0	0
Land between Mill Road and Zion Place . . . . .	2	2	12
Queens' Green . . . . .	4	1	10
Laundress Green . . . . .	0	3	2
Sheep's Green . . . . .	22	0	20
Coe Fen . . . . .	13	1	22
Coe Fen Straits . . . . .	1	1	28
New Bit . . . . .	4	2	10
Empty Common . . . . .	5	0	9

The endowed charities in Cambridge include 102 almshouses with various grants to the inmates, in addition to homes for boys and girls; also about 275*l.* in apprenticeships, and a certain number of old-age pensions of 25*l.* a year each. Other charities include about 340*l.* a year to the poor, in addition to various charities for the distribution of coal, meat, soup, &c. There is little commerce in Cambridge, except in agricultural produce and in the retail supply, to satisfy the requirements of the town and colleges and the surrounding villages. The principal manufactures are bricks and cement, the geological formation enabling cement to be manufactured at a low cost from marl, without the artificial mixture of chalk and clay, which entails carriage of raw material from a distance.

A paper on Cambridge would be quite incomplete without some reference to the university and colleges, although I have no intention of, or space for, entering into any detail of the history of the university, or of dwelling on the architectural beauties of the individual colleges. The origin of the colleges of Cambridge is interesting and much misunderstood, the general impression being that the university is responsible for the existence of the town, but this is not so. In Mediæval times Cambridge being an important town monasteries sprang

A paper read by Mr. H. M. Jonas in Cambridge on the 22nd of the meeting of the Surveyors' Institution.



up, and we learn that in 1110 the Abbot of Croyland, in Lincolnshire, sent four monks, who came daily into Cambridge from Cottenham and gave lectures in a hired barn, and in a short time collected a large number of scholars; they afterwards took up their abode in the town, and gradually both teachers and scholars formed themselves into an association, electing their own governors, and subsequently acquiring the recognition and patronage of the sovereigns of England, who from time to time granted them various charters. Thus the university in the Middle Ages was a corporation of learned men, established for the purpose of teaching. They did not concern themselves with the feeding and lodging of the students, and the only buildings originally required were places for holding meetings, schools and lecture-rooms. The individual colleges have come into existence principally by private endowment, as from time to time benefactors were found who recognised the necessity of feeding and housing and encouraging the studies of the scholars at the university. From a surveyor's point of view, the importance of the Cambridge colleges lies in the fact of their being large landed proprietors. The university and colleges own a large number of estates in Cambridgeshire and in other counties, and not only do the colleges between them own about 127,271 acres, scattered over various counties, but they also own a number of houses in London and provincial towns, impropriated tithe rent charges and copyhold manors scattered all over England. The total income of the university and colleges from real estate (exclusive of funds) was returned by the University Commission in 1873 at 264,288*l.*, but at the present time it is, I fear, in consequence of agricultural depression, somewhat short of this amount.

As far as the town of Cambridge is concerned, the stake of the university and colleges in the town is of great importance. A glance at the large map which I have prepared, on which the university and college properties are coloured pink, will show that a very considerable area of the town itself and the surroundings belong to the university and colleges. I have prepared as accurately as possible a statement showing the number of houses and shops owned by the university and the colleges in the borough of Cambridge, and I find that there are 1,909 houses and shops belonging to the university and colleges, which are divided as follows:—433 houses which are let at rack rents; 832 which are let on long leases from 80 to 99 years; 644 which are let on beneficial 40 years' leases. These represent together about 22 per cent. of the total number of houses in the borough of Cambridge. The university is therefore naturally deeply interested in the welfare of the town, which is in a great measure dependent upon it, because Cambridge is practically the residence of a large number of landed proprietors with estates all over England, who naturally expend every year in the town a considerable sum of money, which is derived from various sources in other counties. The management of college estates will be of interest to surveyors. The agent of the college is the bursar, who is one of the Fellows appointed by the governing body, and his duties are to collect the rents, manage the college property generally, and to supervise the expenditure, reporting to and obtaining the sanction of the college meetings from time to time as necessity arises, and, if required, calling in the assistance of expert surveyors. As may be imagined, the supervision of the college estate is no light task, especially during the times of agricultural depression, but, thanks to the careful selection of men of ability for the position of bursars, the management of the Cambridge college estates is carried on in the most economical and business-like manner. All questions of purchase and sales of property of colleges go through the hands of the Board of Agriculture for approval, and have to be certified by the report of a competent surveyor. In consequence of the large area of land owned by the colleges in Cambridge, and the legal difficulties connected with the sale of college property, there are a large number of leaseholds in Cambridge, and freeholds are at a premium. Up to within the last forty years, ninety-nine years' leaseholds in Cambridge were unknown, and I believe the first ninety-nine years' lease was granted by Trinity Hall College in 1865. Previous to that, the custom was to grant leases for forty years, but since that date, the additional security afforded to a leaseholder by a ninety-nine years' lease, together with the increased ground rent obtained by the lessors, has almost put an end to the granting of forty years' leases, except in the case of renewals. I have shown on the plan hatched by red lines the principal ninety-nine years' leases which have been granted by the various colleges in Cambridge, and by blue hatched lines the position of the principal blocks of forty years' leaseholds.

As an instance of the ownership by individual colleges of property in the town, I find that at the present moment two of the colleges hold house property (apart from land and college buildings) as follows:—

*College A.*—Seventy-two houses and shops let at rack rents, 2,472*l.*

	Ground Rents.	Present Rental Value.
6 houses and shops let on beneficial 40 years' leases	15	434
92 small houses let on 80 to 99 years' leases	339	4,040
29 larger residences let on 99 years' leases	709	3,285

Total present income in rack rents and ground rents, 3,535*l.* Estimated future reversionary income on basis of present annual value of rack rents and reversions, 10,231*l.*

*College B.*—Seventy-seven houses and shops let at rack rents, amounting to 1,501*l.*

	Ground Rents.	Present Rental Value.
426 houses and shops let on 40 years' beneficial leases	1,003	14,698
63 houses let on 99 years' leases	667	4,439

Present income in rack rents and ground rents, 3,535*l.* Estimated future reversionary income, on basis of present annual value of rack rents and reversions, 20,638*l.* As an example of the rapid increase of building on ninety-nine years' leaseholds, it may be of interest to give the following showing the number of houses erected on the building of a third college, "C," during ten years:—

1889	3 houses	1894	13 houses
1890	10 "	1895	37 "
1891	14 "	1896	27 "
1892	15 "	1897	27 "
1893	21 "	1898	55 "

The ground rents of ninety-nine years' leases of course according to the position. The properties shown on the side of the river let at average ground-rents of about 30*l.* per acre for private houses, these being, roughly speaking, one mile from the centre of the town. The ground rents south of the town on the Trumpington Road average about 25*l.* per acre. The ground rents on the Lensfield Road Lyndewode Road vary from about 10*l.* to 7*l.* per acre.

The system of beneficial leases dates from earliest colonial history, and its distinctive feature is the granting of a lease, usually forty years, in consideration of a merely nominal rent, plus a fine or premium at fixed periods, in anticipation of the term in respect of which the fine is paid. Thus it has been customary to renew these forty years' leases at the expiration of the first fourteen years on payment of a fine amounting in most cases to about two years' rack rental value. The renewals being voluntary, the system led to a very large class of house being erected, and to the crowding of as many houses as possible into the smallest space in order that the lessee might make as much profit as he could get out of the property. On the other hand, the result of the system was that the college yearly income was uncertain and precarious, and the non-renewal or running-out of lease entailed loss of income to the Fellows of the college. Successive generations of Fellows have been the sufferers by this system, the continuity of which prevented posterity from participating in the revenue to which it was justly entitled. I may add that in many instances the lessees, not knowing whether the lease would be renewed or not at the end of the first fourteen years, in order to make as large a profit as possible out of the lease (the reversion of which they know belongs to the college), spent as little money as they possibly can upon repairs, and I met with many instances in which the property at reversion was only been fit to pull down, and the last holder of the lease considered it a very great hardship to have to pay a reasonable sum for dilapidations. I am glad to say that of late years a large number of instances, the Fellows of the colleges by self-sacrifice and to their own personal loss, studied the case who come after them by refusing to renew these forty years' leases, and allowing them to run out, or by increasing the ground rent instead of taking fines.

As in many other towns, property in the centre of the town of Cambridge has largely increased in value in the last forty years, of which I will give four instances:—

A house and shop sold in 1883 for 2,100 <i>l.</i>
A house and shop sold in 1891 for 3,000 <i>l.</i>
A house and shop sold in 1897 for 5,000 <i>l.</i>
A house and shop sold in 1885 for 3,750 <i>l.</i>
A house and shop sold in 1898 for 6,300 <i>l.</i>
A shop sold in 1864 for 2,500 <i>l.</i>
A shop sold in 1881 for 3,500 <i>l.</i>
A shop sold in 1864 for 924 <i>l.</i>
A shop sold in 1895 for 3,060 <i>l.</i>
A shop sold in 1897 for 3,620 <i>l.</i>

I have selected instances in which no large expenditure had been made during the periods quoted. I cannot say that the whole of the property in Cambridge has increased in value in every direction; the tendency of the increase of value is principally towards the centre of the town and towards



ray station. In Market Place, Petty Cury, Sidney et and St. Andrew's Street property has increased considerably in value, but property in Trumpington Street towards King's Parade has remained practically stationary. So far as residential property is concerned, the tendency has been towards decentralisation. Tradesmen who years ago were content to live over their shops now have separate houses on the outskirts of the town, and this greater desire for privacy has led to a greater demand for building land on the outskirts; moreover, the old class of houses crowded into a narrow space with underground kitchens and no bath-rooms, &c., has been abandoned in favour of modern houses. On the whole, the prosperity of the town and surrounding district is in a satisfactory state, and there is a much greater demand not only for houses, but for farms in the districts surrounding Cambridge than has been the case for many years. The slightly improved state of agriculture, ready markets, the land and a capital sporting neighbourhood, the district of Cambridge with its educational advantages cannot stand still, and I trust that this is the impression you will all carry away with you.

## RESERVATION OF CROSRAGUEL ABBEY.

At its dissolution as a Society three or four years ago, the Ayrshire and Galloway Archaeological Association writes the Ayr correspondent of the *Scotsman* part of a sum of money in hand for the purpose of preserving the ruins of Crosraguel Abbey from further decay. Prior to this, extensive operations at the ruins had been carried on by J. A. Morris, F.S.A. Scot., architect, Ayr, on behalf of the Association, with a view to determining the original extent of the abbey, and the results of these researches are contained in the second volume of the "Charters of the Abbey of Crosraguel," edited by Mr. F. C. Hunter Blair, and published by the Society in 1886. The abbey, with a few acres of ground attached, is the property of the Crown, and all that is now left to represent the extensive territories granted by Duncan, Earl of Carrick, at the beginning of the thirteenth century for the foundation and upkeep of the institution. The abbey is situated at the side of the public road between Maybole and Kirkoswald, about two miles from each, and occupies a site at the bottom of a shallow valley running towards Maybole. It is not a picturesque site, and one wonders what could have been the inducement to choose such an unlikely spot for the foundation of an important religious house. The name does not afford any definite clue, but it suggests the probability of some incident in the religious annals of the neighbourhood having taken place near the site, and that the foundation of the abbey was a commemoration thereof. What that incident may have been has completely faded from history, and even from tradition, for though there are numerous documents in existence relating to the foundation and subsequent history of the abbey, none of them throw any light on the subject. Indeed, the documents tend rather to obscurity than to elucidation on any point, for it has been pointed out by Mr. Hunter Blair that the name of the abbey is spelt forty-one different ways in these documents, and an examination of the charters shows how arbitrary was the method of dealing with the etymology of the name that within the compass of a single charter it is given in five different ways.

The building of the abbey was completed about the middle of the thirteenth century, and it was occupied by the monks until that time till about the close of the seventeenth century. It was, therefore, in their possession at probably a later date than any of the other religious houses in Scotland. The abbey was of the Cluniac order, and the ruins still bear the impress of their French origin. The buildings, as a whole, are more complete, and some of their parts in a better state of preservation, than the majority of similar remains in the kingdom; but they bear evidence of having been more than once altered and restored, and include scarcely a trace of the original structures. The principal parts of the abbey are the nave and choir of the abbey church, running east and west, and about 150 feet long, the belfry gable on the west, and the belfry with its surmounting cross, the sacristy, chapter-house, gate tower, and dove-cote (almost complete); but there is a large number of walls, arched roofs, fragments, and foundations that show the extent of the abbey, and indicate that it is of a very complete character as a monastic institution. The belfry gable is a curious anomaly in the scheme of the buildings, and no certain explanation has been given as to its existence. It is built across the church, cutting it in half. It is probably it may have been erected after the Reformation to form a church at the choir end, smaller in size and more easily kept in order. There is some warrant for such a view from the circumstance that the north end of the gable is built

partly across one of the original windows in such a way as to entirely block the window out from the choir end, and to leave the remainder open in the nave end. It was not uncommon for abbey churches to be used under the Episcopal and even under the Presbyterian régime. From the castellated structure of the wall heads of some of the buildings, notably the gate tower and its appurtenances, and from early engravings and documentary records, it may be concluded that the abbey was fortified, and that it was surrounded by walls, though no part of the surrounding walls now remain.

One of the most interesting parts of the ruins is that which contains the sacristy and chapter-house. These apartments form the ground floor of what had at an earlier date formed the south wing of the cruciform church. Above them are the scriptorium and library. The original roof of the structure has long since disappeared, but the groined ceilings of the sacristy and chapter-house are entire, and to this fact they owe it that their interiors are the best preserved and most homogeneous parts of the abbey. The arches of the ceilings are complete, and the sculpture and ornamental stone, which in the case of the sacristy is elaborate, are wonderfully preserved. The absence of a roof over the apartments above them, however, rendered it desirable that they should be still further protected from the weather, and it was at this important section of the ruins that the work of preservation was commenced. It may be here noted that there was no intention that the work should be other than preservative. The aim is purely in the direction of preservation, and if it is to a slight extent restorative, it is only incidentally so.

The first thing that was done was to raise the wall head all round to a level in red brick, and to place a flat wooden roof, ultimately covered with lead, over the building, to effectually keep out rain. The red brick on the top of the ancient walls certainly looks incongruous, but if it is not intentionally incongruous, the difference between the ancient and modern construction has been accentuated in order that there may not at any future time be the least likelihood of the protective work being mistaken for ancient work. The work will certainly serve its purpose of preserving the interior as far as that can be practically done. It is in connection with this part of the buildings that such restorative work as was thought desirable was undertaken. In the library there is a small quadrangular window overlooking the cloister court. It was divided into four lights by a stone mullion and transome. The transome was intact, but the mullion and lintel which it supported had disappeared. They were restored, and the window otherwise insured against further decay. The fireplace in the library was also slightly restored and otherwise protected. Three Gothic arched windows filled with tracery, one in the sacristy and two in the chapter-house, were also restored. Only parts of the original tracery remained, but sufficient to admit of its being completed, and with a view to the preservation of the fragments the tracery was filled in and the compartment glazed with leaded cathedral glass. The only original window that is complete, so far as tracery is concerned, is a very beautiful arched window in the north wall of the nave. It can only be said to be original, however, as being part of the abbey ruins as we find them, and it is found to be in a sense a window built within a window, that is to say, it occupies part of the space of an earlier and larger window, traces of which still remain. The dimensions of the original window had been curtailed, presumably to suit the height of the tomb of Lady Rowe, a great benefactress of the abbey, whose body was placed there when she died. The flat tombstone is now on the ground under the window, but its supporting wall pillars up to the sill of the existing window are still in situ. The tracery of the window is similar to that of the three restored windows, with this notable difference, that its transome is curved or arched over each of its two divisions, a feature that is very unusual if not unique in architecture.

The abbot's tower occupies in some respects a remarkable position. The abbey was built on a small burn, and there was a fish-pond before the burn entered the precincts of the abbey and another after it left them. The burn runs right through the abbot's tower, that is, through its west and east walls, with its north and south walls standing on the left and right banks respectively. Whether the tower was built over the stream, or the stream was led through the buildings while it was occupied by the abbot, or whether it broke through afterwards, there is no means of definitely determining; but such evidence as there is leads to the conclusion either that the tower was built over the burn or that the burn was intentionally led through the tower, and that it did not break through accidentally. It is difficult, looking to the contour of the ground outside the south wall of the tower, to conceive how the stream could even have had a channel there, and outside the north wall it is out of the question, other buildings intervening. There is, moreover, a significant sentence in the account of the abbey in "Grose's Antiquities," written in 1789, that seems to support the view now taken. The correspondent who wrote the account of the



abbey says, "This stream, it is thought, was conveyed under the very buildings." This appears to be probable from the fact, further, that the water does not appear to have entered the tower by a breach, but by an artificial opening, which is still apparent in the west wall down to the water's edge. For what purpose the burn was conveyed into the interior of the tower is matter for speculation, but there can be no doubt that to its agency is due the fact that the whole of the north-east angle of the tower, comprising about a third of the building, has been thrown down, and that it was threatening the overthrow of the rest of the building. Means have, therefore, been taken to counteract its effects. The course of the stream has not been diverted—it would be difficult to do that—but it has been slightly altered and lined with masonry and cement in such a way as to prevent the water in flood times doing any further mischief.

The upper part of the west wall and some of the interior masonry are still in a very worn state, and it is understood that if funds are available these will be strengthened. The gate tower, which, with the watch tower on the south-east corner, is four storeys high, is almost intact as regards its outer walls up to and including the battlements. The spiral stairs are also complete, with the exception of the three steps at the top. These three steps have been restored, and lead roofs have been placed on both the gate tower and the watch tower. Being formed within and below the level of the battlements the roofs are invisible from below, and the appearance of the structure from the outside has thus in no way been altered. The water from these roofs and from the previously mentioned one has been led carefully away from the foundations by means of cast-iron down-pipes, and by fireclay pipes underground.

In addition to these, the more important parts of the protective works, minor operations have been carried out. Among these was the clearing out of the old well in the cloister court, which was in a very dilapidated state, and the rebuilding of the walls with the original stones, this work to that extent being restorative. The old steps leading down to the water are still in position. One of the lower steps bears the inscription, almost as fresh and complete as when it was cut, "Dns Johannes Boyd me fecit." During the recent operations a large accumulation of rubbish was cleared away from the outside of the west gable of the nave, revealing a large elaborately moulded doorway filled with masonry, as well as the splayed foundation of the gable in an excellent state of preservation. As there was no trace of this doorway in the inside of the gable, which was not covered to the same height as the outside with fallen *débris*, there was nothing to show that the doorway existed till the outside was cleared. The doorway, which is a pointed arch, is a notable feature of the architecture of this part of the building. A great deal in the way of clearing away rubbish from various parts of the foundations, with a view to counteracting damp in the interior, has also been accomplished, and much of the walls, both inside and outside, has been pointed with cement. All the preservative work has been carried out by Messrs. D. & J. Milligan, builders, Ayr, under the superintendence of Mr. Morris. As a further precaution against the effects of the weather, and also against possible vandalism, wooden doors have been placed on the entrances to the sacristy and chapter-house and the gate tower, and a door has also been placed on the doorway leading into the library, though this can only be reached by a risky climb along the top of a wall. These doors are kept locked, the keys being in the hands of the keeper, whose cottage adjoins, and whose duty it is to show visitors over the place.

### THE NEW CHRIST'S HOSPITAL SCHOOLS.

ON Saturday several members of the Architectural Association visited the new buildings of Christ's Hospital at West Horsham, and were conducted by Mr. Aston Webb, A.R.A., and Mr. Ingress Bell, the architects.

The ground formerly belonged to the Aylesbury Dairy Company, and some of the buildings were converted into laundries, swimming-bath, gymnasium and boiler-house. There are two swimming-baths beneath one roof, that for the elder boys being 88 feet by 25 feet, and that for the younger boys 33 feet by 25 feet. The gymnasium is as yet unfinished. In the centre of the school buildings is a vast quadrangle, on whose four sides, surrounding the lawn, are dining-hall, chapel, school hall and science school, and, on two sides, cloisters. From this quadrangle on either side extend the eight school-houses, four to the east and four to the west, in a great arc. All the buildings are built of red bricks from Cranleigh and white Bath stone. The dining-hall, chapel, and school-hall are roofed with green slates, but all the other buildings with red tiles. Besides the six attached houses for masters, there are four detached houses. The eight blocks of school-houses, all of which are divided into two houses, lettered A and B, are named after "Old Blues." Among these names are Coleridge,

Lamb, Middleton, sometime Bishop of Calcutta, and Barrow. At the corner of each wing are carved in white stone Bluecoat boys. Above each entrance is a sundial, and beneath it an inscription, such as "Dum spectas fugit," "Fes lente," and the like. In the distance were to be seen the infirmary and the sanatorium.

Mr. Aston Webb, in addressing the visitors, said briefly, the idea in arranging the buildings had been to give the old scholastic quadrangle, with its closed corners and fined air, and so to build that sun and air could easily reach the living-room buildings. They had grouped the dining-school-hall, chapel and science school round one large quadrangle, which gave a scholastic character to the centre, either side from this quadrangle the houses extended as detached blocks, with ample spaces between them, and facing south. There were openings between the wings of houses and there was no possibility of stagnant air. There were eight blocks, each of which contained two houses, accommodation for fifty boys in each house, so that every block would hold 100 boys, except the last—the preparatory school which would accommodate 120. Thus the total number of boys accommodated was 820. There were no kitchen arrangements except in the small masters' houses and the great kitchen beneath the dining-hall. To that central point all the servants, matrons and others connected with the establishment would have to come at least three times a day for their meals. For the servants and others there were dining-rooms on either side of the kitchen, and for the masters their common rooms. Leading to the dining-hall was a subway underneath and connecting the houses, which could be traversed by the servants and thus avoiding contact with the boys. This subway was used for the conveyance of the steam pipes and other necessary apparatus. There had been very little alteration in carrying out of the original plans. The infirmary and sanatorium were as originally designed, and there were no rooms in any of the houses. Any boy who was ailing would once be sent to the infirmary. The masters were housed partly in boarding-houses and partly in detached houses, the latter being provided for masters who were married. In one of the two houses which formed a block a housemaster and an assistant master were accommodated with a room and bedroom. The headmaster's house was by the entrance to the quadrangle, so that everyone coming or going to the main approach would pass it. They had had to supply water, drainage, heating and lighting. The drainage was disposed of by the septic-tank process, and two mains through the subway and out to the filter-beds. As to water supply, the well used by the Aylesbury Dairy Company affording insufficient water, it had been deepened to a depth of 480 feet or 490 feet, and now a magnificent supply of very soft water was pumped up from the boiler-house to the reservoir on Sharpenhurst Hill, which held 300,000 gallons. From this reservoir it was conducted down to the large water-tower in the centre of the school buildings, which held 25,000 gallons, and thence it gravitated into the various cisterns throughout the buildings. These cisterns held another 25,000 gallons, that in the buildings they would have two days' supply of water, and in the big reservoir two weeks' supply. Lighting was entirely electric, and the electricity was generated at their own station, where there were three dynamos. All the heating was done from the boiler-house, where there were two boilers always at work, and a third boiler as a lay-by. The steam mains were brought through the subway, which extended to this point. At each block of houses and at each of the other buildings the steam was taken into a calorifere, where the water was heated, and that each establishment had its separate circulation of water more or less under its own control. The system was working extremely well. It was only fair that he should say that a great many more brains and hands had been at work than these buildings besides those of the architects. First foremost were the builders, Messrs. Longley & Co., of Crawley, who had done their work extremely well; he must mention also Mr. Proudfoot, clerk of the works, and Mr. Tingley, a man; Mr. Massey had helped them with the electric lighting; Professor Robinson had advised on the steam arrangements and water supply; Mr. H. E. Milner had laid out the whole of the grounds and roads; Mr. Frith had done the greater part of the architectural sculpture throughout the buildings, and the reredos in the chapel was partly his work and partly that of Messrs. Fagan & Bell; Mr. Hellyer had done the whole of the plumbingwork; Messrs. Clements & Jeakes were responsible for the heating; and Mr. T. R. Spence was doing the glazing of the windows in the chapel. As far as they could, they had brought all the old interesting relics from Newgate Street. The shingles in the windows of the dining-hall came from the old dining-hall, only they had had to intersperse them with plain glass, as in the present hall there was so much more window-space.

The visitors were then conducted over the interior of the buildings. The classrooms are commodious and suitable, in every case the windows are on the left-hand side of



The dormitories, each accommodating twenty-five boys, contain 800 cubic feet of air; at either end are the lavatories, in each dormitory are two little enclosures which form two rooms for "Grecians." In each house there are two staircases. The art school is well lighted and spacious. In the library is placed, above the mantelshelf, the picture of Edward VI granting to the hospital the charter of incorporation. The chapel is as yet unfinished, although the reredos, of the thankoffering of the "Old Blues," has been erected. The roof is of Oregon pine and the fittings of oak. The old organ, which has been repaired, will still be used. The school is large and lofty, and the entrances and exits are so placed that it can be quickly filled or emptied.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute of Architects was held on Monday evening last, Mr. W. Emerson, president, in the chair. The decease of the late Mr. H. D. Shepard was announced. He was elected Associate in 1867, and won the Institute Medal for Essays in 1869.

Mr. T. H. MAWSON read a paper on

### The Unity of the House and Garden,

of which the following is an abstract:—

He explained that the paper bore entirely upon the country house, and although his remarks would in general be true to the town, and be concentrated chiefly upon the union of the house and garden, he purposed to dig deeper and examine the foundation upon which every successful scheme of habitation must necessarily rest. Every truly pleasant, healthy, successful abode must rest upon considerations deeper than stones or bricks and mortar, trees and flowers. At no time, if the scheme is to be successful, can the house and the garden be divorced from the surroundings; all must be viewed together in unity.

Where there is perfect freedom of choice, the three great considerations in deciding upon the site and position of a house are climatic conditions—i.e. whether the prevailing character of the air is humid or dry; the nature of the subsoil, whether gravelly, gravelly, or clay; and the aspect—for no matter what prospect offers, it is unwise to build upon the north or south-west or north-east side of a hill or knoll. The nature of the subsoil is a point needing more than ordinary caution; not only the site of the house itself, but the immediate surroundings should be tested. For health, beauty, luxuriance and ultimate happiness select a site with an under-stratum of gravel or marl and a good surface-covering of loam.

The first great question to be decided is, Are purely artificial considerations to be all-sufficient, or are the artificial considerations to hang upon, and be guided by, the larger aspect fixed by nature? The pure, healthy mind recognises that those who have built well and lastingly have been willing to make personal display and selfish interests subservient to and harmonise with their chosen surroundings. Such a mind respects local customs in building and local material, and indigenous trees and shrubs and acclimatised flowers in planting, making them the characteristic keynote.

The architect and garden designer must realise that the house is the precious thing, and not the garden; that their part is to give to the endearments and necessities of home a suitable expression and dress; their efforts must be concentrated upon the scenic part of the play, true, real and human, to be enacted therein. The needs of the proprietor should be clothed with a character to accord with the surroundings and expressive of his status. The impressions and inspirations of the spot should guide the architect and the garden designer both in respect to the preparations of the plans and also of the relations and of the garden scheme. Given a house designed by itself, without reference to its fixed, unalterable surroundings, and the garden designer has a well-nigh impossible task imposed on him. In the absence of a skilled designer, where the laying out of the garden is entrusted to the local nurseryman, the unity of the house and garden may still be secured, for it is open to the architect to suggest in the most unmistakable manner by his plan the general laying-out of that portion of the site which is nearly concerned the architecture. This point was illustrated by reference to two alternative sets of plans suggested for the same site, it being shown that the approved plan, with a little help from the elevations, had determined the character of the immediate surroundings of the house. Other examples were cited, and the plan and general arrangements described to show how easy it is to make the happy combination of house and garden impossible. Seldom when a plan of a country house is given do we find any indication of the compass points thereon. This consideration deserves more attention than it receives. Its absence suggests the idea of convenience and skilful planning are everything and aspect secondary or nothing.

The author brought the several considerations dealt with in his paper to a head by describing his plan and treatment of gardens on the top of Flagstaff Hill, Colwyn Bay—a site including within its twenty acres almost every difficulty with which the garden-maker could have to deal. The site commands an extensive panorama of sea and landscape scenery, and the proprietor wished the house so placed and planned that he should not only obtain the best views from each room, but also that he should have the best aspect (a great difficulty, considering the direction of views), ensuring the rooms being as sunny as possible and securely protected from the wind, and be able to find a sheltered walk on which to promenade from whichever direction it might blow. The plans exhibited showed how the first conditions were met, all the entertaining rooms excepting the morning-room, which only obtains the morning sun for a very short time, and the billiard-room, on which the sun falls a little after midday, complying. The condition as to protection from the wind was the most difficult to meet. The two prevailing winds are from slightly south to west and east to north. The stables, lodges, cowsheds and kitchen wing made an ample protection from the first, but the second could only be partially guarded against. The curved drive was well protected, the ground between the walk and the kitchen garden having been raised 14 feet or 15 feet, and planted with maritime pines, Scotch firs and evergreen oaks. The latter will in years to come give the best possible protection, without growing so high as to obstruct the view from the house. In its original state there was an entire absence of shelter, but proper treatment had resulted in a garden as sheltered as it was sunny, and as shady as any in the valley below. In the next plan the main and lower terrace and fountain garden came naturally in front of the entertaining rooms and the tennis-lawn on the west; the kitchen-garden, generally the most perfect part of all, was in direct communication with the terrace. There, within the high walls, could be found shelter from the winds; here one could pluck the earliest flower and the last rose of summer, the most delicious strawberry and the most luscious plum.

A country house and garden are impossible without an orchard; one cannot think of an orchard without realising how beauty waits on use. Preferably its position should be near the kitchen garden. Plant regularly in straight rows; do not mix cherries and apples, pears and plums too much, but try to obtain effect by grouping each together. The orchard, however, is by no means the end of the garden. Away in the hollow is the lake, margined with water-hawthorn and water-lilies. On its banks are knolls of oak and masses of rhododendron, interspersed with wild gardens and glades of grass. In conclusion it was observed that the paper had referred specially to neither the formal nor the landscape school. There was work in plenty for both; the help of both was needed. If we could divest ourselves of some of the prejudices called schools, and devote our energies to earnest and unstinting study, and apply that study to the perfection of our craft, and if we could allow our professional jealousies to give place to a spirit of mutual helpfulness, we might yet do something to advance the peaceful arts of our country.

A vote of thanks, proposed by Mr. MILNER and seconded by Mr. W. G. WILSON, was passed to Mr. Mawson for his paper.

## THE DICTÆAN CAVE.

AT an ordinary meeting of the Anthropological Institute on Tuesday papers were read by Mr. Hogarth on the "Excavations in the Dictæan Cave in Crete," and by Professor Boyd Dawkins on the "Animal Remains in the Dictæan Cave."

Mr. Hogarth said that the cave was undoubtedly the ancient cave—the seat of Zeus's legendary birth. It stood near a lake bed, which had a subterranean outlet. The cave was exceedingly rich, but little evidence existed of Mycenaean or pre-Mycenaean times; nearly all the remains were subsequent to that period. The skulls found were clearly of sacrificed animals. A number of pictures on the screen illustrated the excavations. The honours of Dictæ had been usurped largely by the cave of Ida, but the former showed a variety of ancient objects of the Stone Age—symbolical axes of fractional size—and others, a massive Mycenaean wall, and a few specimens of Hellenic and Roman work.

Professor Boyd Dawkins dealt with the geological aspects which led to inferences of the high antiquity of the cave. He showed specimens of skulls and horns, and among them a skull of an ox, to which he had found no exact parallel. He had, therefore, felt disposed to classify it as a member of a distinct species, to which he gave the name of the *Bos Creticus*. Another skull, in some respects varying from all existing specimens, he inferred to be that of a domestic boar. The preservation of these skulls, apparently for ornamental purposes, was a singular note of modernity in prehistoric times. These remains, the only ones in perfect condition, were of



sacrificed animals—the goat, the ox and the hog. The other remains were fragmentary, odds and ends, broken bones, including a single representative of a dog's upper jaw. Of all these specimens sent him by Mr. Hogarth he could not affirmatively state the precise or approximate date. With due deference to Mr. Hogarth, he would like to ask whether some other divinity than Zeus might not have been worshipped in this cave, possibly Aphrodite. Certainly here the double-axed Zeus was worshipped, but there was reason to believe that some other deity was also worshipped.

Mr. Hogarth said that he had excavated another settlement at the end of the Dictæan cave, the little wastrel settlement of Zachro. In two caves he found human bones, and what seemed to be cists like those of the Ægean islands of the prehistoric period. In one cave he lighted on five burials. One cist burial was untouched, including a new kind of pottery more regular than the Neolithic pottery. The vases tended to show the existence of a native pottery lineally following the Neolithic period.

Professor Boyd Dawkins then described the skulls sent him by Mr. Hogarth in detail. The teeth were wonderfully small and some of them decayed, and these and other circumstances led to the inference that they belonged to a highly developed civilisation. Decayed teeth were, unhappily, a mark of an advanced culture. Modification of life led inevitably—as his researches in zoological gardens showed—to a corresponding modification of skull and teeth. The skulls found in Crete seemed to correspond with the older skulls of Attica and Asia Minor. The people interred in this case were, he thought cognate with the Iberian race, long headed, probably of small stature, dark-haired, non-Aryan, and stretching back to the Neolithic age. It was possible they were Pelasgi, but he would not rashly speculate on that question. Certainly Greek civilisation appeared to be based on this pre-Aryan civilisation.

Professor Flinders Petrie noted correspondences from Egypt—e.g. the hanging of skulls as ornaments—with what had been said of Crete. There was, he believed, an invasion of Egypt, of which remains existed like what had been described. These bucrania were a traditional form of ornament from 5,000 B.C. in Egypt, and a connection in this respect seemed to be established between Crete and Egypt. It was indeed interesting to note the indications of a pre-Aryan civilisation in the Mediterranean, and one would like to know whether the use of bronze had been discovered in those at present somewhat dim and distant days.

### GENERAL.

**Princess Henry of Battenberg**, having suggested that the beauty of the monument to be erected in Newport as the island's memorial to Queen Victoria would be greatly enhanced if the figures of "Sympathy," "Fortitude" and "Dignity," with the lions couchant at the base of the column, were executed in bronze instead of stone, as originally intended, the memorial committee, with the object of carrying out Her Royal Highness's wishes, have opened an additional subscription list.

**The Late Mr. Benjamin Weir** has bequeathed funds for the erection of a hospital on the site of his former residence in Grove Road, Balham.

**An Exhibition of Works** by Florentine Masters in the fifteenth century will be held in the Carfax Galleries during June and July.

**The Annual Meeting** of the members of the Art for Schools Association was held on Wednesday.

**M. Jean Baptiste Paul Lazerges**, Algerian painter, died at Asnières at the age of fifty-seven. His works always attracted attention at French exhibitions and were chiefly of twilight effects.

**The Will of Mr. Astley Vigers**, of Messrs. Vigers & Co., 4 Fredericks Place, Old Jewry, surveyors, has been proved at 7,467*l*.

**The Provost and Fellows** of Oriel College, Oxford, have purchased a portrait of the late Mr. Cecil Rhodes, painted by Mr. Tennyson-Cole.

**An Exhibition** of pottery and porcelain was opened in the Fitzwilliam Museum, Cambridge, on Monday, and will not be closed until June 14. There are nearly a thousand pieces, which have been lent by residents in the neighbourhood. One of the examples is a large Dresden chandelier which was made for the drawing-room of Buckingham House before the building was purchased by George III. for a palace.

**Messrs. William Brown & Son**, the contractors for the new Midland Railway Hotel at Manchester, obtained an apology from the proprietors of the *Daily Mail* for stating that the contract had been given to Mr. James Stewart, of Messrs. Stewart & Co., the American contractors.

**M. Jules Didier**, whose large frieze relating to agriculture was published in *The Architect*, is an engraver as well as painter. He has produced a plate from the portrait of Adolphe Thiers by M. Bonnat, which has been presented to the Louvre for publication.

**M. Rodin**, the sculptor, is about to visit Prague, where exhibition of his principal works has been inaugurated.

**Mr. George Lambert** has been appointed by Cardinal Vaughan to be honorary curator of all the works of art of new Westminster Cathedral and of Archbishop's House. The collection of paintings is a very valuable and interesting one, including those on wood of the fifteenth century and beautiful *Assumption*, attributed to Murillo, of the estimated value of 30,000*l*.

**The Congress** of French architects will be held in Paris next week from Monday to Saturday, and as usual of late years the meetings will be in the hall of the Hemicycle of the École des Beaux-Arts. On Thursday there will be an excursion to Sens and to Villeneuve-sur-Yonne.

**The Chapel** at Girton College, Cambridge, was opened Friday. Like the rest of the college, it is from the designs of Mr. Alfred Waterhouse, R.A., and Mr. Paul Waterhouse. The interior is very simple, with a wooden roof, having hammer beams that terminate with carved shields, and these, as well as the oaken panelling of the chancel and inscription over the entrance, are the work of students of the college.

**A Conference** is to be held at Havre during next week by representatives of the proprietors of house property throughout France in order to take measures for the defence of their rights which are supposed to be jeopardised by various projects of new laws.

**The Financial Board** of the University of Cambridge have been authorised to purchase about 6 acres of land in Downing Street for the erection of buildings for university purposes. The annual rent-charge is to be 120*l*. per acre.

**The Royal Institute of Painters in Water Colours**, Piccadilly, will be open for ticket-holders on Sunday next from 2.30 to 5.30 P.M.

**Mr. Wigham**, who is travelling in Arabia, informs the *Morning Post* that the mass of brickwork which is declared to be the remains of the Tower of Babel is of later date. According to him it was Nebuchadnezzar who built the strange pyramid making it of unbaked brick with a thick case of burnt brick outside. The whole is pierced with air-shafts like pigeon-holes apparently for the purpose of drying the bricks. Whether the square sides were originally continued to the top or whether there were steps towards the summit has not been decided.

**Messrs. Doulton** have now an exhibition of pottery at the galleries on the Albert Embankment principally for the benefit of colonial and other visitors.

**The Candidates** for the membership of the Académie des Beaux-Arts rendered vacant by the death of M. Coquart are: M. Charles Gérault, architect of the Petit Palais; M. Guadet of the Post Office; M. Laloux, of the railway station on the Quai d'Orsay, and M. Rémon, of the Rubens Gallery.

**The Archbishop of Canterbury** on Monday consecrated the new chapel at Tonbridge School. It is designed by the architect, Mr. W. Campbell Jones, to seat 500 persons. The bays, cloisters and permanent vestries, however, remain to be added when funds permit. The total cost will amount to 23,000*l*. or 24,000*l*., of which some 9,000*l*. has still to be raised. The length of the completed building will be 156 feet internally by 41 feet wide, and the height from the floor to the top of the arched ceiling is 58 feet.

**The Board of Management** of the Manchester Royal Infirmary are able to announce, on the authority of the sub-committee, that the plans for the buildings will be ready by June 17. Owing to the Coronation festivities it was considered that a delay should be allowed before considering them, and the meeting will accordingly be held in the third week of July.

**Marble** is said to have been found in Prince Edward Island, Alaska, which is comparable in colour and texture with Carrara marble.

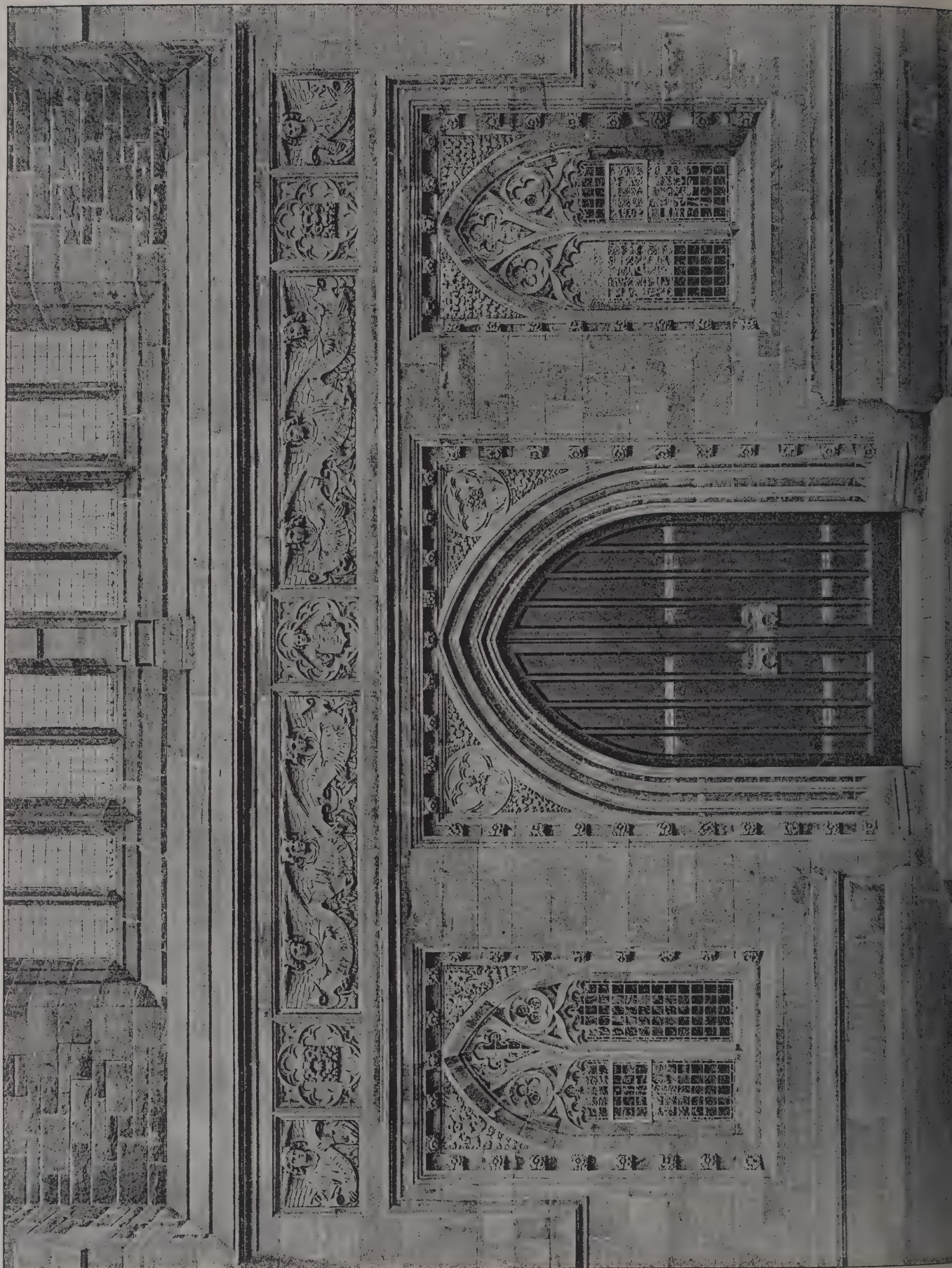
**M. Bouguereau**, as president of the Society of French Artists, has handed to the French Minister of the Colonies 10,000 francs in aid of the distress in Martinique which has followed the volcanic eruption. The Paris Society of American Painters have subscribed 200 francs.

**Mr. Alexander Graham, F.R.I.B.A.**, the assessor appointed by the President of the R.I.B.A. to adjudicate on the plans submitted in competition for an infirmary at Leigh, has made his award as follows:—No. 1. In order of merit. Design No. 51. Scheme 2. J. C. Prestwich, Leigh, Lancs. No. 2. In order of merit. Design No. 27. Authors, Harry W. Pye, A.R.I.B.A., & Roger F. Bacon, A.R.I.B.A., 16 John Street, Bedford Row, London, W.C. No. 3. In order of merit. Design No. 3. Authors, T. A. Buttery, F.I.A.S., & S. Birds, Exchange Buildings, Queen Street, Morley. Fifty-two sets of drawings were submitted.



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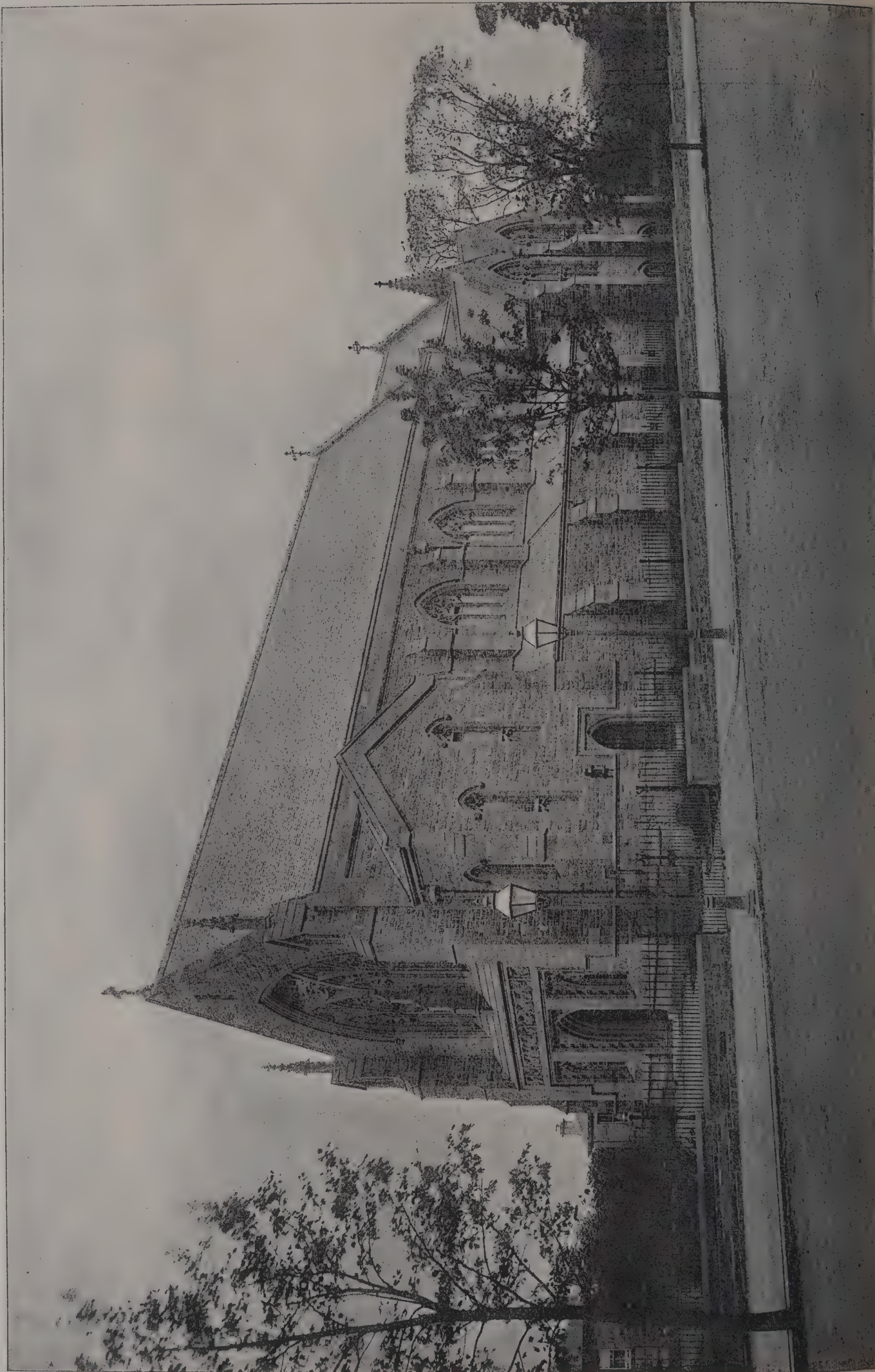
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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*Communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## COMPETITIONS OPEN.

**CREWE.**—June 12.—Designs are invited for new municipal offices and council chamber. The author of the design which is adjudged best will receive a premium of 50*l.*, and he will be appointed to carry out the design; second premium, 25*l.* Particulars will be supplied by the Borough Surveyor, Municipal Offices, Crewe.

**DEPTFORD.**—Aug. 30.—Competitive designs are invited for a town hall and municipal offices. Premiums of 100*l.*, 75*l.*, and 50*l.* are offered for the three selected designs. Mr. Vivian Orchard, town clerk, Municipal Offices, 20 Tanner's Hill, Deptford, S.E.

**HARTSHILL.**—June 16.—The committee of the North Staffordshire infirmary and eye hospital, Hartshill, Stoke-upon-Trent, invite designs for a home for nurses at Hartshill, Stoke-upon-Trent. Particulars may be obtained on application to Mr. Albert E. Boyce, secretary and house governor.

**INDIA.**—Nov. 1.—Competitive designs are invited for the erection of a memorial to Her Majesty the late Queen Victoria at Allahabad. A premium of 2,000 rupees will be awarded to the design selected by the committee. Mr. H. Nelson Wright, Indian Civil Service, honorary secretary, Queen Victoria Memorial Fund Committee, Allahabad, India.

**IRELAND.**—June 2.—The Belfast Harbour Commissioners invite tenders and designs for the decoration and illumination, by electricity or otherwise of the harbour office and the south end of the Glasgow shed, Donegall Quay, in connection with the celebration of the coronation of King Edward VII. Mr. G. F. L. Giles, harbour engineer, Harbour Office, Belfast.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Sept. 15.—Designs are invited for new labourers' dwellings to accommodate about 2,500 persons, to be erected on the Hornby Street area. Premiums of 250*l.*, 150*l.* and 100*l.* respectively are offered for the first three selected designs. Particulars will be supplied by the Town Clerk.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**TOTTENHAM.**—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

## CONTRACTS OPEN.

**ACCRINGTON.**—June 11.—For erection of the basement storey of workshop block, excavating and levelling the site and drainage of the Accrington new works, Spring Hill. Mr. Henry Ross, 15 Cannon Street, Accrington.

**ASHINGTON.**—June 6.—For erection of a Primitive Methodist church, classrooms and vestries at New Hirst, Ashington. Mr. T. Tulip, Whinney Hill, Choppington.

**ASPATRIA.**—June 11.—For erection of a cottage house at Aspatria. Mr. W. Sanderson, 45 Park Road, Aspatria.

**BARNES.**—June 9.—For erection of seven maisonette dwelling-houses, Lonsdale Road. Messrs. F. & W. Stocker, architects, 90 and 91 Queen Street, Cheapside, E.C.

**BIRKDALE.**—June 16.—For erection of a chapel and lodge at the new cemetery, Liverpool Road, South Birkdale. Mr. Albert Schofield, architect, 45 Weld Road, Birkdale.

**BIRKENHEAD.**—June 10.—For erection of a warehouse at Morpeth Dock, Birkenhead, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, W.

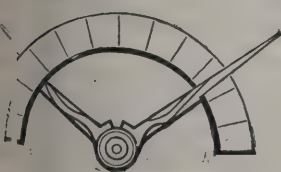
**BIRMINGHAM.**—June 2.—For putting-in the foundations and lower storey of the buildings and the installation of a power station at the Birmingham University. Messrs. Aston Webb & E. Ingress Bell, architects, 19 Queen Anne's Gate, S.W.

**BOSTON.**—June 2.—For additions and alterations to the isolated ward at the fever hospital in Skirbeck, Boston, Lincs. Mr. Jas. Rowell, architect, Borough Offices, Boston.

**BOUGHTON.**—June 9.—For erection of engine and boiler-houses, &c., at Boughton, Notts. Mr. W. B. Starr, architect, 12 St. Peter's Gate, Nottingham.

**BRADFORD.**—June 13.—For erection of a school at Lapage Street. Mr. Thos. Garbutt, clerk, &c., School Board office, Manor Row, Bradford.

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BRIGHOUSE.—June 13.—For erection of a silk mill with engine-house, staircase, &c. Mr. George Hepworth, architect, 20 Bradford Road, Brighouse.

BRINKLOW.—For enlargement of the cemetery, Brinklow. Mr. H. Newitt, Brinklow.

BROOMHILL.—June 20.—For erection of store premises and manager's house at Red Row. Mr. Thos. Tulip, Whinney Hill, Choppington.

BUXTON.—For alterations and additions to Highfield House, Hardwick Mount. Messrs. Garlick & Flint, architects, Terrace Road, Buxton.

CASTLETON.—June 7.—For addition of two rooms and water-closet to the Vicarage, Westerdale, near Castleton station. Mr. Thomas Stokes, architect, Thirsk.

CITY OF LONDON.—June 3.—For alterations and additions to the underground convenience in Circus Place, London Wall. The Town Clerk, Public Health Department, Guildhall.

COCKERMOUTH.—For erection of schoolrooms at the industrial school, Cockermouth. Mr. Geo. Dale Oliver, county architect, Cockermouth.

CROYDON.—June 2.—For erection of a screen wall at the rear of the electric-light works. Mr. E. Mawdsley, town clerk, Town Hall, Croydon.

DEAL.—June 13.—For erection of an orphanage at the convent, West Street, Deal. Plans and specifications, &c., may be seen at the Convent, Deal.

DEWSBURY.—June 16.—For erection of a covered market in Corporation Street. Mr. G. Trevelyan Lee, town clerk, Town Hall, Dewsbury.

DEVONPORT.—June 14.—For the construction of about 1,400 lineal yards of brick culvert, 3 feet by 2 feet, from Ford Valley to the fish pond at Camel's Head, and about 210 lineal yards of 3 feet 6 inch diameter culvert on the fish pond site at Camel's Head. Mr. A. B. Pilling, town clerk, Devonport.

EASTRY (KENT).—June 3.—For alterations and additions to the infectious hospital at the workhouse. Mr. W. J. Jennings, architect, 4 St. Margaret's Street, Canterbury.

EDMONTON.—June 17.—For erection of schools at Montague Road and Houndsfield Road. Each school has four departments, and will accommodate 1,360 children. Mr. H. W. Dobb, architect, 99 Church Street, Lower Edmonton.

ELLAND.—June 4.—For erection of two semi-detached villa residences, outbuildings, &c, in Hullen Edge Road,

Elland, Yorks. Mr. Fred. F. Beaumont, architect, Southgate Chambers, Halifax.

EPPING.—June 4.—For erection of an infants' school to accommodate 250 children at St. John's Road, Epping, Essex. Messrs. Harrington & Ley, architects, 65 Bishopsgate Street Without, E.C.

EXETER.—June 5.—For erection of a Wesleyan church in Sidwell Street, Exeter. Mr. Fredk. J. Commin, architect, 7 Bedford Circus, Exeter.

FARNWORTH.—June 2.—For erection of a warehouse. Mr. J. H. Taylor, architect, 15 Grove Street, Farnworth.

FARSLEY.—June 2.—For reconstruction of boiler-house and dye-house, and the erection of a brick chimney at the Cape Mills, Farsley, Yorks. Mr. Walter D. Gill, architect, Summer-ville Terrace, Stanningley.

GAISGILL.—For erection of a bridge over the river Lune, near Gaisgill, Westmorland. Mr. Joseph Bintley, county surveyor, 7 Lowther Street, Kendal.

GLOUCESTER.—June 10.—For construction of a subway under the railway near Gloucester station, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

GRIMSBY.—June 3.—For erection of a corrugated iron building, 33 feet 6 inches by 19 feet 6 inches, containing six rooms. Mr. H. Gilbert Whyatt, borough surveyor, Town Hall Square, Grimsby.

GRIMSBY.—June 10.—For alterations at the police-station and weights and measures office, King Edward Street. Mr. H. Gilbert Whyatt, borough surveyor, Town Hall Square, Grimsby.

HADLEY.—June 14.—For erection of cemetery chapel, lodge and entrance gates at Hadley, Salop. Mr. C. R. Dalgleish, architect, Central Chambers, Wellington.

HAGGERSTON.—June 7.—For erection of bath and wash-houses, Mansfield Street. Mr. H. Mansfield Robinson, town clerk, Town Hall, Old Street, E.C.

HALESOWEN.—June 7.—For rebuilding a portion of Forge Bridge in the Dudley Road, Halesowen, Worcester. Mr. A. E. Brooks, assistant surveyor, Breedon Cross, King's Norton.

HALIFAX.—June 2.—For new seats and alterations to desks at Wainstalls school, painting and colouring at several schools, for the School Board. Mr. W. H. Ostler, clerk, School Board Offices, 22 Union Street.

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**HASTINGS.**—June 12.—For erection of a boundary wall around the new workhouse premises at Ore. Mr. A. W. fiery, architect, 5 Havelock Road, Hastings.

**HEBBURN.**—June 3.—For erection in the park of tennis-use, store, bowl-house, shelters, &c. Particulars can be obtained from the Surveyor to the Hebburn Urban District Council.

**HULL.**—For erection of the chancel of the new church in Albert Avenue. Messrs. Brodrick, Lowther & Walker, architects, Hull.

**IRELAND.**—June 2.—For erection of a town hall, Macroom. Mr. A. W. Barnard, architect, Macroom.

**IRELAND.**—June 2.—For enlargement of a house at Muneyrney. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

**IRELAND.**—June 5.—For erection of about 100 artisans' dwellings, and the construction of roads and sewers, &c., at Keenstown. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

**IRELAND.**—June 12.—For erection of a villa at Shantallow, Londonderry. Mr. J. P. McGrath, architect, 28 Carlisle Road, Londonderry.

**IRELAND.**—June 13.—For erection of gentleman's residence and offices at Fernhurst Road, Cork. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

**KEIGHLEY.**—June 2.—For additions and alterations to Wake and Tonson's Girls' Grammar school, Keighley. Messrs. J. B. Bailey & Son, architects, 3 Scott Street, Keighley.

**LAMBETH.**—June 5.—For supplying and fitting-up five separate slipper baths in an existing room at the Kennington Road baths. Mr. Henry J. Smith, town clerk, Lambeth Town Hall, Kennington Green, S.E.

**LANCASTER.**—June 2.—For erection of shop and two houses. Caton. Messrs. Austin & Paley, architects, Castle Park, Lancaster.

**MANCHESTER.**—June 5.—For erection of a temporary hospital pavilion at the workhouse, Delaunay's Road, Crumpton. Messrs. Thomas Worthington & Son, architects, 46 Brown Street, Manchester.

**MANSFIELD.**—June 16.—For alterations to and fitting-up of the basement of the town hall buildings as public conveniences. Mr. J. Harrop White, town clerk, Town Hall, Mansfield.

**MANSFIELD.**—June 16.—For alterations and additions to public baths. Mr. J. Harrop White, town clerk, Town Hall, Mansfield.

**MASHAM.**—June 4.—For erection of schoolroom, &c., to the Wesleyan chapel, Ilton, near Masham. Mr. George Thackray, Ilton, Masham.

**NEWTON-IN-MAKERFIELD.**—June 2.—For erection of infant schools, Wargrave, Newton-in-Makerfield, Lancs. Mr. Samuel Dring, architect, Market Chambers, Earlestown.

**PONTEFRAC.**—June 2.—For erection of sanatorium at Ackworth school, near Pontefract. Messrs. Clark & Moscrop, architects, Feethams, Darlington.

**REDRUTH.**—June 11.—For rebuilding shop premises in Fore Street, Redruth, and for alterations to adjoining premises. Mr. Sampson Hill, architect, Green Lane, Redruth.

**RUGBY.**—June 17.—For erection of five shops, assembly hall, educational rooms, &c., in Chapel Street, Rugby. Mr. J. T. Franklin, architect, Regent Street, Rugby.

**SCARBOROUGH.**—June 4.—For erection of an infectious diseases hospital in Newby Lane. Mr. Harry W. Smith, borough engineer, Town Hall, Scarborough.

**SCOTLAND.**—June 2.—For erection of a free library at Lossiemouth. Messrs. A. & W. Reid & Wittett, architects, Elgin.

**SCOTLAND.**—June 6.—For erection of a house in Seafeld Square, Rothes. Mr. William Sharp, Rothes.

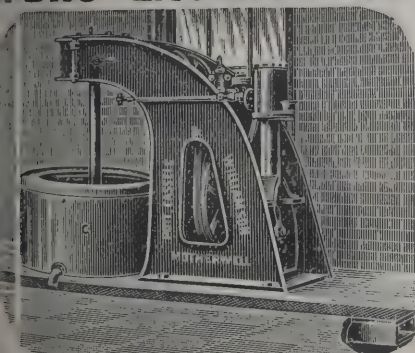
**SHEPHERD'S BUSH.**—June 23.—For erection of a workhouse and infirmary adjoining Wormwood Scrubs. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, W.C.

**SHOEBURYNES.**—June 3.—For erection at the gasworks of a pair of semi-detached cottages, coal-store, office and store, and a roof over purifiers. Mr. Harold Harris, surveyor, Clarence Chambers, Southend-on-Sea.

**SITTINGBOURNE.**—For erection of a villa residence at Green Street. Mr. Lucas, Alfred House, Teynham, Sittingbourne.

**STAFFORD.**—June 2.—For cleaning, repairing and painting the interior and exterior of the annexe at the isolation hospital, Tillington; also the Lammascote Farm buildings. Mr. W. Blackshaw, borough surveyor, Borough Hall, Stafford.

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**WAKEFIELD**—June 12.—For ventilation, cleaning and decoration of the Chapelthorpe Church, Wakefield, and insertion of leaded windows, erection of new screens, alteration of existing screens, supply of gas chandeliers, &c., and paving of chancel. Rev. L. Busch, Chapelthorpe Vicarage, Wakefield.

**WALES**—June 2.—For erection of an infants' school to accommodate about 210 children, with the outbuildings and appurtenances, at the Causeway, Aberavon, Glam. Messrs. Thomas & James, architects, Port Talbot.

**WALES**—June 3.—For erection of a vicarage house at Cwmddauddwr, Rhayader, Radnorshire. Mr. R. Wellings Thomas, architect, Victoria Chambers, Llandrindod Wells.

**WALES**—June 5.—For reslating and restoration of St. Mary's Church, Aberdare. Mr. E. M. Bruce Vaughan, architect, Cardiff.

**WALES**—June 9.—For erection of a vestry at Tyntyla, Llwynypia. Messrs. Lewis & Morgan, architects, Dunraven Street, Tonypandy.

**WALES**—June 9.—For erection of a higher elementary school at Pentre, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

**WARRINGTON**—June 2.—For construction of an underground convenience. Mr. Thomas Longdin, borough surveyor, Town Hall, Warrington.

**WARWICK**—June 3.—For erection of a cottage in Bowling Green Street. Mr. F. P. Trepass, architect, 1 Church Street, Warwick.

**WEST HAM**—June 10.—For erection of mortuary, Ordnance Road, Canning Town, E. Mr. Fred. E. Hilleary, town clerk, West Ham.

**WEST HAM**—June 10.—For cleansing, repair and painting of eighteen schools during the summer vacation, for the West Ham School Board. Mr. William Jacques, architect, 2 Fen Court, E.C.

**WESTON-SUPER-MARE**—June 3.—For erection of stable extension of the model mews, Post Office Lane. Messrs. S. J. Wilde & Fry, architects, Weston-super-Mare.

**WETHERBY**—For pulling-down Bramham Bridge and rebuilding same with steel girders. Mr. John Houfe, Montpelier Chambers, Harrogate.

**WHITEHAVEN**—June 9.—For erection of two houses. Messrs. Pickering, Crompton & Son, architects, 11 Lowther Street, Whitehaven.

**WILLENHALL**—June 2.—For erection of classrooms and cloakrooms at the Short Heath Board schools, near Willenhall. Mr. Joseph P. Baker, architect, Willenhall.

**WORTHING**—June 16.—For erection of a circular brick chimney-shaft at the electric generating station, High Street, Worthing, 140 feet high from the ground level and 7 feet 6 inches inside diameter at the top. Mr. W. Verrall, town clerk, Municipal Offices, Worthing.

## SUBWAYS IN THE CITY.

IN his report to the Corporation on the subject of the work executed during last year by the Public Health Department the City engineer (Mr. D. J. Ross) states that beneath the City streets there are one and a half miles of subways under the control of the Corporation, but there are other subways not controlled by the City authorities. The lengths of gas, water, telegraph and other tubes laid in the corporate subways extend over eleven miles, being an increase of three miles during the year. The electric-light and telegraph conduits alone contain some thousands of miles of wire. The inspector of subways reports that 15,335 workmen and others were admitted during the year for various purposes. The engineer also submits some figures with reference to the cleansing of the City, within which more than 300,000 persons pass the day and nearly 100,000 carriages enter and leave. The quantity of water for washing was 37,708,690 gallons, while the amount of refuse removed was sufficient to fill 44,975 vans, together with sweepings and slops from the public ways, making a total of 75,090 loads. The refuse destroyed at Lett's wharf was represented by 22,657 loads, which produced a residuum of 3,961 loads of valueless clinker, for the removal of which the Corporation had to pay.

THE new rooms erected in High Barhom, N.B., by the Kilbarchan Liberal Association are now open. Mr. Howie is the architect. The new building, which cost upwards of 1,250l., is built of red stone from Lockerbriggs Quarry, and is a double-storey building, the ground floor containing a reading-room, games-room, ladies and gentlemen's committee-rooms, while the upper floor is to be used as a billiard-room.

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Grantham Crank Co.	60	15	0
W. W. COLTMAN, Loughborough (accepted)	60	0	0

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or sewerage works, water supply, street construction, paving, &c. Mr. G. WILSON, town surveyor.

MACLAREN & Co., Embleton Woodstead, Christon Bank, R.S.O., Northumberland (accepted)	£1,254	3	11
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## AYLESBURY.

or sanitary works at the union house.

A. MAYNE & SONS, Station Street (accepted)	£66	10	0
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## BISHOP'S STORTFORD.

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Redding & Sons	£83	0	0
D. Robinson	75	0	0
A. J. MARKWELL, Bishop's Stortford (accepted)	57	10	0

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G. H. WOODS & Co., Northgate, Blackburn (accepted)	£169	1	3
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Note.—Six competitors.

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For proposed new farm-buildings, farmhouse and lodge at Woollet Hall, Bexley, Kent. Mr. ERNEST H. ABBOTT, architect, 6 Warwick Court, Gray's Inn, W.C. Quantities by Mr. A. JOHNSON, 34 Imperial Buildings, Ludgate Circus, E.C.

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Stebbing & Pannett	£1,400	0	0
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W. H. Smith	1,218	12	8

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F. P. Duthoit	997	0	0
W. G. Brown	975	0	0
J. Lonsdale	933	0	0
R. & E. Evans	929	0	0
Henry Dunn	916	15	10
W. H. Smith	883	0	0
S. Salt	870	0	0
J. Ellingham & Sons	867	10	9
Stebbing & Pannett	750	0	0

## Lodge.

F. P. Duthoit	597	0	0
R. & E. Evans	526	0	0
W. G. Brown	495	0	0
J. Lonsdale	487	0	0
S. Salt	475	0	0
W. H. Smith	463	5	9
J. Ellingham & Sons	457	13	0
Henry Dunn	453	19	0
Stebbing & Pannett	400	0	0

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For erection of a residence, Brook Street. Mr. ARTHUR T. G. WOODS, architect, Brentwood.

A. W. Robins	£1,895	0	0
Hammond & Son	1,767	0	0
Parmenter	1,645	0	0
A. Gozzett	1,595	0	0
H. Potter	1,575	0	0
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HARRIS & ROWE, Shoeburyness (accepted)	1,400	0	0

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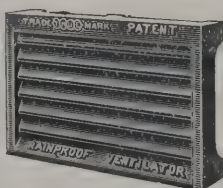
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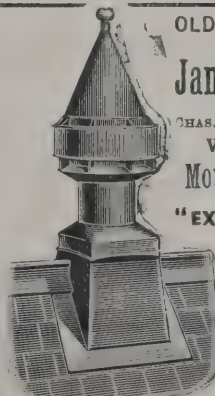
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Swan . . . . .	938	0	0
Meston & Hale . . . . .	863	0	0
Dean . . . . .	833	0	0
Dupont & Co. . . . .	823	0	0
G. R. Mann . . . . .	769	0	0
G. Pitkin . . . . .	687	0	0
H. BROWN, Watford ( <i>accepted</i> ) . . . . .	629	0	0
Swaker . . . . .	622	0	0
G. F. Judge . . . . .	600	0	0

**CARLISLE.**

For reconstruction and rearrangement of the drainage system  
and sanitary fittings at the Board schools. Mr. JOHN  
LITTLE, engineer, Viaduct Chambers, Carlisle.

*Drainage.*

Crow. . . . .	£373	7	8
J. Beaty . . . . .	365	0	0
R. Little . . . . .	357	0	0
J. & R. BELL, Nelson Street ( <i>accepted</i> ) . . . . .	345	0	0

*Sanitary plumbing.*

D. Thomsons . . . . .	272	3	2
Taylor . . . . .	245	17	6
Crow . . . . .	244	15	0
W. Batey, jun. . . . .	223	4	3
Hills . . . . .	219	16	6
Wilson & Faulder . . . . .	217	0	0
W. Foster . . . . .	214	11	11
GRAHAM & CRAWFORD, English Street, Carlisle ( <i>accepted</i> ) . . . . .	212	0	0

**CHELTENHAM.**

For erection of a chalet at the Essex lodge entrance to Pitville  
Park.

Collings & Godfrey . . . . .	£385	0	0
A. C. & S. BILLINGS, Cheltenham ( <i>accepted</i> ) . . . . .	375	0	0

**CHADWELL HEATH.**

For erection of farm-buildings at the asylum, Chadwell Heath,  
Essex. Mr. J. G. MORLEY, borough engineer.

Dupont & Co. . . . .	£6,879	0	0
Gregar & Son . . . . .	6,426	0	0
H. J. Carter . . . . .	6,350	0	0
C. North . . . . .	6,287	0	0
G. Wise . . . . .	6,281	0	0
S. PARMENTER, Braintree ( <i>accepted</i> ) . . . . .	5,933	0	0

**CROPWELL BUTLER.**

For alterations and additions to the Plough inn. Mr. FRED  
C. MARTIN, architect, Dudley Chambers, Angel Row,  
Nottingham.

W. Wilson . . . . .	£450	0	0
J. Bates . . . . .	433	0	0
W. Bickerstaff . . . . .	412	8	4
H. PARR, Radcliffe ( <i>accepted</i> ) . . . . .	411	1	4

**COVENTRY.**

For main drainage works at Foleshill. Mr. C. NICHOLSON  
LAILEY, engineer, 6 The Sanctuary, Westminster.

JOHNSON BROS., The Barton, Hereford (*ac-  
cepted*) . . . . . £22,000 0 0

**DARLINGTON.**

For painting the various buildings at the Corporation farm.

NELSON & TAYLOR, Skinnergate (*accepted*).  
Note.—Four other tenders received.

**DEWSBURY.**

For erection of a boundary wall and street works in Headfield  
Road, Savile Town, Thornhill. Mr. S. W. PARKER,  
surveyor.

F. P. SHEARD, Thornhill (*accepted*) . . . . . £106 0 0

**ERITH.**

For street works in Vickers Road, St. John's Road and Church  
Road, Erith. Mr. A. H. JENNINGS, surveyor.

Fry Bros. . . . .	£1,232	0	0
T. Adams . . . . .	1,215	0	0
Wimpey & Co. . . . .	1,201	0	0
G. Bell . . . . .	1,120	11	2
Wilson, Border & Co. . . . .	1,088	16	10
R. Ballard . . . . .	1,077	11	4
A. T. Catley . . . . .	1,060	0	0
Free & Sons . . . . .	1,059	5	8
Road Maintenance and Stone Supply Co. . . . .	984	14	1
W. H. WHEELER, Southwark ( <i>accepted</i> ) . . . . .	961	4	3

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repairing the exterior stonework and painting certain exterior wood and ironwork at the public baths and wash-houses, London Street.  
W. Mills . . . . . £288 0 0  
W. Preston . . . . . 162 13 0  
J. GRAVES, Greenwich (accepted). . . . . 139 10 0

**HAMMERSMITH.**  
erection of boundary walls to enclose the site of the proposed new Board-room and clerk's offices, receiving home for children, and out-relief department at Goldhawk Road, Shepherd's Bush. Mr. J. H. RICHARDSON, architect, 87 Finsbury Pavement, E.C.  
A. R. Bulley . . . . . £1,522 0 0  
G. Lyford . . . . . 1,511 0 0  
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H. J. Greenham . . . . . 1,275 0 0  
F. G. Minter . . . . . 1,275 0 0  
G. WIMPEY & Co., The Grove, Hammersmith (accepted) . . . . . 1,251 0 0  
J. McManus . . . . . 1,248 0 0  
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Viney & Stone . . . . . 1,197 0 0

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For warming and hot-water supply, &c, of temporary buildings at Brede. Mr. P. H. PALMER, borough engineer.  
UNITY WOOD AND IRON CO., Station Works, Padiham (accepted). . . . . £120 0 0  
For erection of an iron building at the fish market. Mr. P. H. PALMER, borough engineer.  
LIGHTFOOT & IRELAND, Cazenove Works, Cazenove Road, Stoke Newington (accepted). . . . . £255 0 0

**HUDDERSFIELD.**  
For erection of a clothing establishment in Fitzwilliam Street Messrs. JOHN KIRK & SON, architects.  
*Accepted tenders.*  
M. Brook, mason.  
J. Hollings, joiner.  
W. E. Jowitt, plasterer.  
Crossley & Bould, plumber.  
Lunn & Cardew, painter.  
Pickles Bros., slater.  
J. Cooke, concreter.  
H. Brook & Co., ironfounder.  
W. H. Heywood & Co., patent glazing.

For erection of seven blocks of hospital buildings and boundary walls at Spring Hill, Meltham. Mr. J. BERRY, architect, Market Place, Huddersfield.  
*Accepted tenders.*  
A. & T. Haigh, Golcar, mason. . . . . £6,832 0 0  
J. Varley & Sons, Slaithwaite, joiner . . . . . 2,359 0 0  
J. W. Kaye, Meltham, plumber . . . . . 1,185 0 0  
J. Wilkinson & Son, Meltham, slater . . . . . 1,014 0 0  
J. Walker, Slaithwaite, plasterer . . . . . 707 0 0  
A & T. Haigh, roadmaking . . . . . 650 0 0  
J. Cooke, Littleroyd, Huddersfield, concreter . . . . . 488 0 0  
J. H. Preston, Meltham, painter . . . . . 415 0 0  
W. H. Heywood & Co., Birkby, Huddersfield, patent glazing . . . . . 325 0 0  
H. Brook & Co., Colne Road, Huddersfield, ironfounder . . . . . 115 0 0

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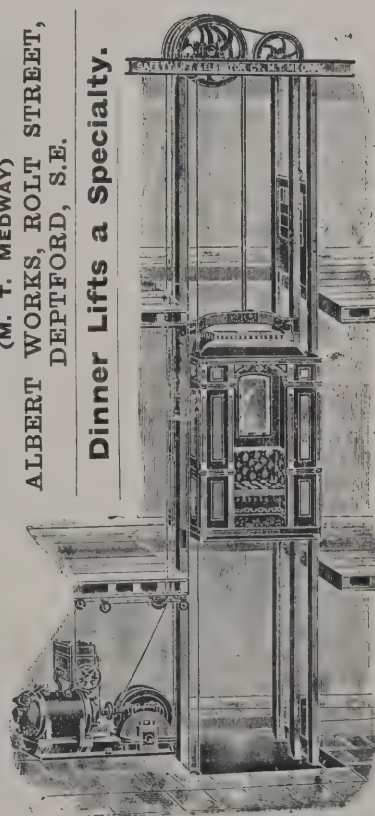
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For alterations and additions to the workhouse, Beverley Road.  
Mr. T. BEECROFT ATKINSON, architect, 11 Trinity House Lane, Hull.

*Bricklayer and plasterer.*

J. CARR, 59 Chornley Street, Hull (accepted) . £2,845 10 0

*Joiner.*

F. SINGLETON, 81 Witham, Hull (accepted) . 1,490 0 0

*Electrical engineer.*

A. REAME & CO., Hepworths Arcade, Hull (accepted) . 61 10 0

*Slater.*

HULL GENERAL BUILDERS, Lockwood Street, Hull (accepted) . 150 16 6

*Plumber.*

ATKINSON & SON, Carr Lane, Hull (accepted) 667 0 0

*Stonemason*

QUIBELL & SON, 40 Fountain Road, Hull (accepted) . 259 0 0

*Painter.*

STEPHENSON & CHRISTOPHER, 42½ Prynne Street, Hull (accepted) . 120 0 0

**IRELAND.**

For extension of Messrs. Cannock & Co.'s premises, Brunswick Street, Limerick. Mr. R. FOGERTY, architect, Limerick.

D. O'Sullivan . . . . . £3,639 0 0

Michael Gough . . . . . 3,600 0 0

P. Kennedy . . . . . 3,350 0 0

John Hayes . . . . . 2,750 0 0

JOHN RYAN & SON (accepted) . . . . . 2,499 0 0

For remodelling buildings at Castleblayney Union infirmary and providing wards for the treatment of consumptives.

P. Duffy . . . . . £684 15 0

J. CALLAN, Castleblayney (accepted) . . . . . 375 0 0

For construction of a storage reservoir at Barnattin, near Drogheda, with a capacity of about 60,000,000 gallons.

W. BAIRD & SON, Lower Abbey Street, Dublin (accepted) . . . . . £6,606 2 0

For erection of seventeen labourers' cottages on selected sites within the Lurgan rural district.

*Accepted tenders.*

T. Collen, Tandragee, ten houses, 134l. 10s. each; seven houses, 132s. 10s. each.

**KEIGHLEY.**

For erection of a laundry, dwelling-house and stabling at Riddlesden. Mr. HENRY SMITH, architect, Compton Buildings, Keighley.

*Accepted tenders.*

W. Baker, Gladstone Street, mason . . . . . £414 0 0

J. Hartley, Lawholme Mill, joiner . . . . . 123 0 0

W. Bottomley, Bow Street, plumber . . . . . 57 0 0

W. Thornton, Bromley Road, Bingley, slater . . . . . 46 0 0

A. Sawley, Parson Street, plasterer . . . . . 20 3 0

T. Harrison, Bow Street, painter . . . . . 6 13 0

**LETCHMORE HEATH.**

For sewerage and sewage disposal works at Letchmore Heath. Mr. ERNEST LAILEY, surveyor.

H. BROWN, Watford (accepted) . . . . . £2,200 0 0

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*Sayer Street.*

J. C. Chalkley . . . . . £214 0 0

W. Banks . . . . . 188 16 6

J. Greenwood . . . . . 188 0 0

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## Accepted tenders.

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J. Raitt, joiner.	
C. Wood & Co., plumber.	
Burness & Son, plasterer.	
C. Brand, Arbroath, slater.	
J. Warden, heating.	
Burness & Son, tiler.	
F. B. Flood & Co, Edinburgh, asphaltting.	
Total, £6,300.	

For reconstruction of Westfields Mill, near Blairgowrie. Mr. LAKE FALCONER, architect, 27 Bank Buildings Blairgowrie.

## Accepted tenders.

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J. Gray & Sons, mason	789	0	0
J. S. Fraser & Son, ironwork	306	0	0
W. Brand & Son, slater	159	17	0
R. Kidd, plumber	81	17	6
J. Bell, plasterer and cementer	44	14	3

For painting of the new general hospital now being erected at Stobhill, Springburn, Glasgow. Messrs. THOMSON & SANDILANDS, architects, 241 West George Street, Glasgow.

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Wm. Grant, plasterer . . . . .	96	0	0
D. Stark, slater . . . . .	5	7	6

For erection of tenements in Harriet Street, Sinclairtown, Kirkcaldy. Mr. D. FORBES SMITH, architect, Kirkcaldy.

##### Accepted tenders.

D. Wilkie, mason . . . . .	£744	0	0
H. Masterton, joiner . . . . .	564	0	0
H. Masterton, plasterer . . . . .	253	0	0
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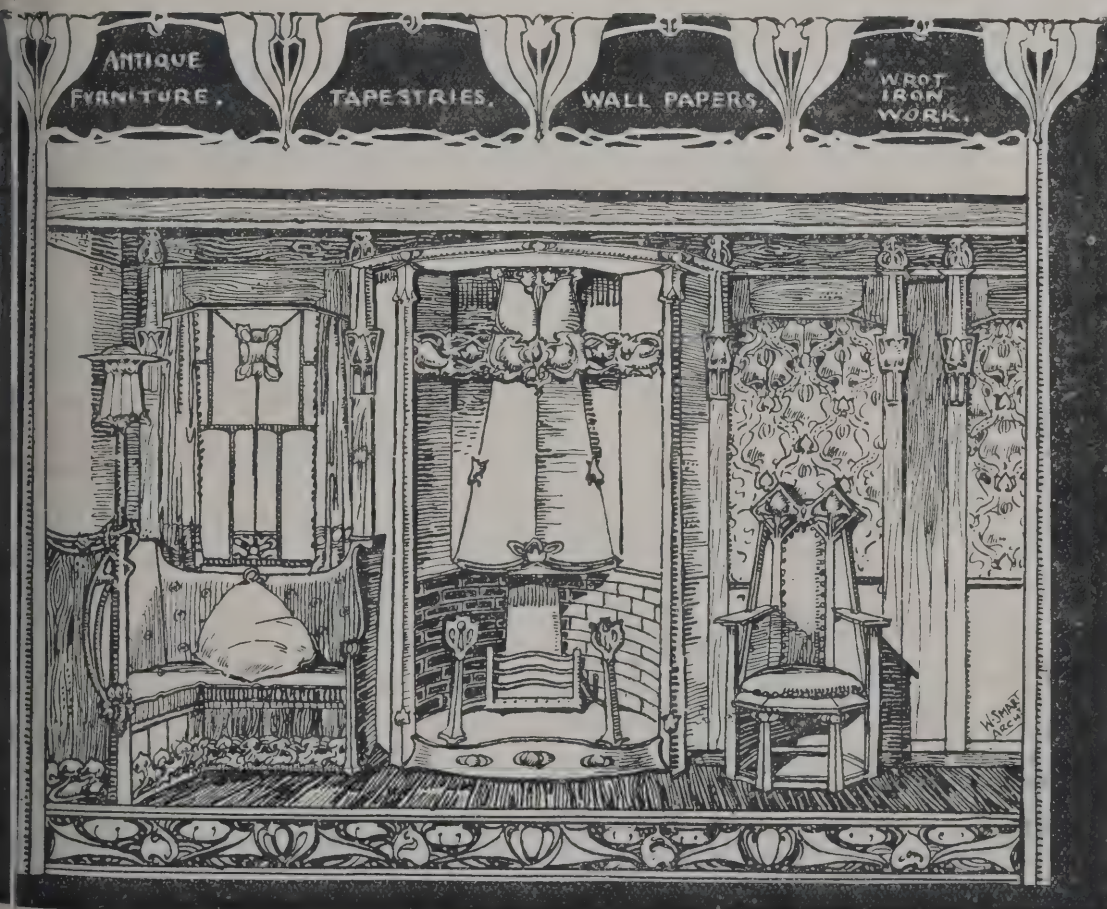
For erection of Sunday schools and other buildings in connection with the Providence Congregational church. Messrs. HERON & BELLAIRS and WM. L. EVES, joint architects, 54 High Street, Uxbridge.

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 J. Jones . . . . . 5,005 0 0  
 D. Powell . . . . . 4,939 0 0  
 N. Bagley . . . . . 4,796 0 0

For erection of bungalows at Porthcawl. Mr. GEORGE F. LAMBERT, architect, Bridgend.

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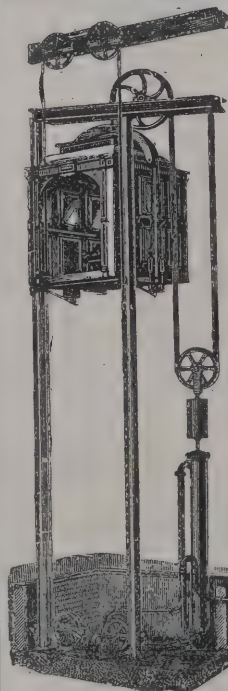
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	s.	d.	s.	d.
Boyce, Ltd.	Ediswan	1 2	1 5	
Malcolm & Allen	"	1 1	1 3	
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Maxter & Gaunter	"	1 0½	1 2½	
Jackson Bros.	"	1 0½	1 2½	
GENERAL ELECTRIC CO., LTD. (accepted)	Robertson	0 11½	1 2	

VARIETIES.

The new fire brigade station erected by Bingley Urban Council was formally opened on Saturday afternoon.

The chapel recently added to Girton College buildings has been inaugurated. The chapel is constructed to hold 200 persons, and forms part of a large addition to the college.

The new Nurses' Home, which has been erected in Grange Field, West Bromwich, by Alderman Akrill at a cost of some £200, was opened by the Earl of Dartmouth on Monday.

A SPECIAL meeting of the Liverpool Architectural Society will be held at 13 Harrington Street, Liverpool, on Monday, June 9, the principal business of which will be to discuss and approve the revised charges of architects.

The engineers of the Pennsylvania Railroad succeeded on Sunday in moving a steel bridge that spans the Raritan river, weighing 1,836 tons, 174 inches in 175 seconds in order that it might be replaced by a stone bridge. The traffic on the railway, which is notably heavy, was not delayed for a second.

MR. WILLIAM FLETCHER ROBINSON, A.M.I.C.E., has been appointed superintendent and clerk of the sewage outfall extension and improvement works, Chester, at a salary of 20*l.* a month, a month's notice on either side to terminate the appointment.

AT a meeting of the Bournemouth Town Council, held on Monday afternoon, in committee, Mr. G. W. Bailey, town clerk of St. Helens, Lancashire, was appointed town clerk of the borough at a salary of 1,000*l.* per annum. There were nineteen applications.

By an unanimous vote the Northampton Town Council has appointed Mr. Herbert Hankinson, deputy town clerk of Bradford, to the post of town clerk of the borough of Northampton. The salary commences at 750*l.* per annum, and increases by 50*l.* per annum to a maximum of 1,000*l.* There were forty applicants for the post.

A NEW Roman Catholic church at Haunton, near Tamworth, was opened on the 22nd inst. The church, dedicated to SS. Michael and James, consists of nave and chancel, and is built in the Gothic style with Hollington mottled stone, and roofed with Broseley tiles. It is surmounted at the west end with a graceful bell turret. Seating accommodation is provided for 250.

THE corner-stone of the new Episcopal church of St. Devenick, Bieldside, Culter, Aberdeenshire, was laid on Tuesday. The building is in the Gothic style, with Scottish features, and the red and grey granites of which it is constructed form a pleasing contrast. The total length internally is 80 feet; width of nave and chancel, 25 feet; width across transepts, 53 feet. Accommodation is provided for about 250, but this may be increased by the addition of a north aisle and transept, making accommodation for 350. The estimated cost of the church is 3,000*l.*

EIGHTEEN applications for the vacant town clerkship of Leicester were received by the finance committee of the Town Council, and the following seven gentlemen were selected for further consideration:—Mr. Hampton, town clerk of Rotherham; Mr. Hayton, town clerk, South Shields; Mr. Hughes, town clerk, Lancaster; Mr. Jarratt, town clerk, Southport; Mr. Lloyd, town clerk, Huddersfield; Mr. Sanders, solicitor to the Liverpool Corporation; and Mr. Hiley, deputy town clerk of Birmingham. The committee will make a final selection of two names to submit to the Town Council. The salary is 1,000*l.*, rising to 1,250*l.* per annum.

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THE Earl of Cork and Orrery, Lord-Lieutenant of Somerset, on the 21st inst. reopened the great hall of Taunton Castle, which has recently been thoroughly restored. The archaeological, natural history and philatelic collections recently presented to the Somersetshire Archaeological Society for their museum in the castle were on view for the first time. The first castle on the site was erected about the year 700, and the great hall, which has been restored, was the scene of the "Bloody Assize" held there by Judge Jeffreys. Lord Cork, in performing the ceremony, said that Somerset now possessed one of the finest local museums in Great Britain.

THE new baths and washhouse erected by the Glasgow Corporation for the use of the inhabitants of the Whitevale district of Glasgow have now been completed, and were opened on the 10th inst. The buildings extend from Whitevale Street to East John Street, and cover 2,675 square yards. The estimated cost of the establishment, including ground, is about 37,000*l.* In addition to the baths and washhouse the buildings contain a reading-room, which is entered from Whitevale Street. This is conducted as a branch of the Libraries Department of the Corporation, and was erected to meet the wishes of the late Mr. John Rankine, who bequeathed to the city for that purpose the sum of 3,073*l.* Unlike the other bathing establishments in the city, Whitevale is equipped with a suite of Turkish baths and a gymnasium. The swimming-ponds have been so designed that they may be used as halls during winter, the pond, as it were, being the pit, and this, with comfortable accommodation in the gallery, will give room for about 1,500 persons altogether. The swimming-pond for men is 75 feet by 40 feet, and there are eighty-one dressing-boxes; the pond for women is 50 feet by 25 feet, with fifty-one dressing-boxes. The lesser pond when used as a hall will have sitting accommodation for 750 persons. For men there are twelve first-class and sixteen second-class slipper-baths and twelve spray-baths; for women there are eight slipper-baths. A feature of these bath-rooms is the adoption of marmorite

(tinted glass) instead of wood or glazed brick for partitions. The gymnasium is equipped with the most approved apparatus. Ample accommodation is provided for washing, there being space for sixty-six women using the washhouse at one time. The buildings are well lit from the roof, the walls are covered with white tiles, and the fittings throughout are of an elegant and substantial character.

### TRADE NOTES.

MESSRS. WM. POTTS & SONS, clock manufacturers, Guildford Street, Leeds, have received instructions from a sister of the Right Hon. Lord Grimthorpe to erect a new hour striking clock at the parish church, Houghton, near Carlisle.

MESSRS. A. E. PODMORE & CO. (late of Messrs. Henry Greene & Sons) inform us that they have commenced business as gas lighting engineers and contractors, and specialists in electric lighting, at 25A Hatton Garden, E.C.

THE Berkefeld Filter Company, Ltd, of 121 Oxford Street announce that they have again acquired the sole right of selling the "Berkefeld" filter in all British territories and Egypt. The manufacture and sale of "Tubor" filters has been discontinued.

THE Royal box at the Royal Military Tournament, which is now running its annual course at the Agricultural Hall, has been artistically fitted up by Messrs. Oetzmann & Co. Luxurious carpet, dainty furniture and softly-veiled electric light combine to produce a charming effect to which, however, comfort has in no wise been sacrificed.

THE Vacuum Cleaner Company, Ltd, gave on Wednesday at the Alhambra Theatre, a demonstration of the powers of their new cleansing machine, which works on the vacuum principle by extracting the dirt instead of expelling it, as has been done by previous machines. Its effectiveness may be judged when we say that from the stall seats alone some 32 lbs. of dust, to say nothing of germs and microbes, was obtained.

### MAY-OATWAY FIRE ALARM.

Since the recent practical test of this system at Ilford, bookings have been very heavy.

Dingle Station, the scene of the late fatal fire, is now protected by the May-Oatway System and connected direct with the Liverpool Fire Brigade.

The Manchester-with-Chorlton Guardians have contracted with the MAY-OATWAY FIRE APPLIANCES, LTD., to protect their Workhouse from fire.

No person need risk life or property by fire. The MAY-OATWAY automatic bedroom indicator will show on retiring that the house is safe, and wake you immediately and indicate its position when a fire breaks out.

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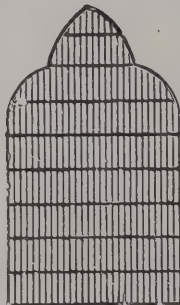
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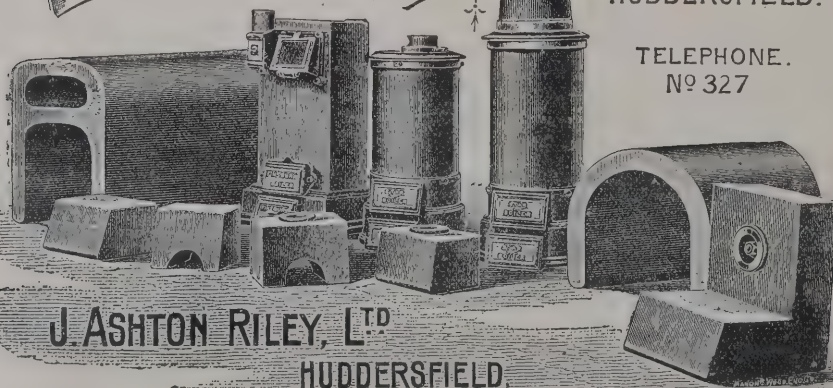
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(W. B. CLARKE.)



FROM the directors' report to be presented at next day's meeting of the Greenwich Inlaid Linoleum Company, Ltd., it appears that the profit on the year's trading amounts to £9,186/ 3s. 10d., which, together with the £2,588/ 9s. 2d. brought forward, makes £11,774 13s. 6d., from which, after deducting the various items of expenditure, amounting to £1,012/ 0s. 3d., including cost of repairs and renewals of plant, machinery, buildings, &c., a balance of £32,795/ 12s. 9d. remains, and, after charging £5,400/ for the interest on mature stock, which leaves £27,395/ 12s. 9d. for the appropriation account, the directors, feeling the need of prudence, in view of the condition of the markets for linseed oil, recommend the payment of a dividend of 15 per cent. (which absorbs £18,000/), and after providing £1,872/ 13s. 2d. dividend on the shares of the new issue, and paying directors' additional remuneration, that the balance, £7,523/ 19s. 7d., be carried forward to next year.

### ELECTRIC NOTES.

Corporation of Southampton have received the sanction of the Local Government Board to the construction of the electric-light works on the Western Shore, and work will commence to be proceeded with.

THE electric supply of the quarry town of Blaenau Ffestiniog, provided by the Yale Electric Power Company, was completed on the 22nd inst. This Company was formed two years ago for the purpose of developing to some extent the immense amount of water power running to waste in the district, and thereby cheapening the production of slate by supplying power to the quarries during the ordinary working hours for hauling, pumping, mill driving and like purposes; also for lighting the streets and for private consumers. The company are enabled to supply electric light to the latter at 4d. per unit, and to supply power to the quarry companies at 1d. per unit. The company have entered into an agreement with the District Council to light the streets and supply private consumers at 4d. per unit for fifteen years. A banquet was held at the town hall in further celebration, when Lord Newborough presided. It was supported by Sir H. B. Robertson, the Hon. C. H. Wilson, and others.

MR. E. A. SANDFORD FAWCETT, A.M.I.C.E., on behalf of the Local Government Board, held an inquiry at the town

hall, Dudley, on the 23rd inst., relative to the application of the Corporation for sanction to borrow £22,000/ for electric-lighting purposes. Mr. H. C. Brettell, town clerk, explained that the assessable value of the borough was £121,074/., and the population 48,820. There were outstanding loans amounting to £127,928/., and they were awaiting the sanction of the Local Government Board to loans of £10,721/. The loan for which sanction was now asked was to enable the Corporation to meet their statutory obligations with reference to electric lighting in the borough, and was the third in connection with the electrical undertaking, the previous loans being £8,500/ and £33,000/ respectively, the former of which was required to enable the Town Council to fulfil their contract with the tramway company, and the latter for the provision of the power station. The first year's operations resulted in a loss of £80/ 6s. 10d., and last year there was a net profit, in excess of repayment of principal and interest, of £92/. Mr. R. Wilson (consulting electrical engineer) observed that the tramways belonged to a company, but the Corporation were under a contract to purchase them at the expiration of the lease. The company would continue to work them under a lease from the Corporation, and were under a perpetual arrangement to take the current from the Corporation at a price to be determined every five years. The power station had now a capacity equal to 700 kilowatts, and in order to meet the increasing demand it was proposed to lay down a 500 kilowatt machine and dynamo, the remainder of the money being required for the provision of street cables. The Inspector promised to report the whole matter to the Local Government Board, and the proceedings terminated.

### BUILDING AND BUILDERS.

THE foundation-stones of the new Primitive Methodist chapel at Antingham, Norfolk, were laid on the 19th inst.

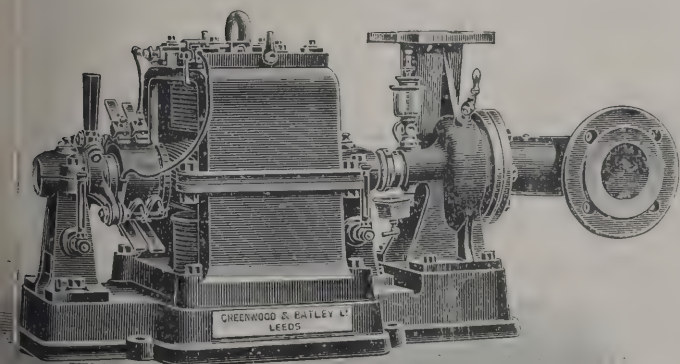
THE plans prepared by Mr. McGregor Chalmers, architect, for the restoration of the parish church of St. Andrews, N.B., have been accepted.

LORD BURTON has offered to build a new church at Horninglow, Burton, at a cost of £14,000/. Bass & Co. give £3,000/ to an endowment fund. This makes half a dozen churches which have been built by members of the firm.

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### MOTORS and DYNAMOS.

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Two blocks of residential flats are about to be erected in Hurlingham Road, Fulham, overlooking the Polo Grounds. These buildings are to have roof gardens. Messrs. Palgrave & Co., of Westminster, are the architects.

At the fortnightly meeting of the Tamworth Board of Guardians on Saturday a resolution was passed consenting to the erection of a new workhouse infirmary, in accordance with plans which had been sealed by the Local Government Board. The expenditure involved is 8,951*l*.

The memorial-stones in connection with the new Wesleyan chapel in course of erection at Birtsmorton, Worcestershire, were laid on Whit-Monday. The cost of the new chapel, which is to be a neat little structure with tower and spire, will be about 820*l*.

The tender of Messrs. Whitehead & Co., Ltd., of Clapham, for 19,570*l*. has been accepted for the erection of D'Eresby House, Ealing Common, to be built from the designs and under the direction of Messrs. Palgrave & Co., architects, Westminster. The work is to be proceeded with immediately.

It is proposed to erect a memorial in the Roman Catholic archdiocese of Glasgow to the late Archbishop Eyre, and it has been agreed that it shall take the form of three industrial schools and a chapel at Bishopriggs. A sum of 40,000*l*. is already in the hands of the trustees for the purpose.

The foundation-stone of the new St. Matthew's Church, which is being erected in the rapidly growing working-class district of Southsea, has been laid. The scheme owes its inception to the Rev. Bruce Cornford, vicar designate, and towards the cost of building—estimated at 14,000*l*.—a lady member of the congregation has given a donation of 5,000*l*.

The new church of the Jesuit Fathers at Stamford Hill is to be undertaken at once. The contracts entered into provide for the erection of the whole of the sanctuary, including the choir, the organ loft and the transepts, together with the first bay of the nave, a total length of 100 feet. It is anticipated that the whole of these works will be completed within twelve months.

The York Corporation have in view an extensive scheme for the widening of Nessgate, where great congestion of traffic exists, from its present width of 29 feet to a minimum width of 46 feet, and to this end have already contracted to purchase, at a figure which has been arranged, the Star and Garter inn and other property between the Coach and Horses

inn and the corner of King Street. Overtures have been made for the purchase of the remaining piece of property the corner of King Street.

A SUNDERLAND house builder named Wilkinson is laying claim to a share of a huge fortune now under the control of the Chancery Court. Upwards of seventy years ago a Richard Heatherington died, leaving property in Hampshire which has since been administered in Chancery, and is said to be worth now about two millions sterling. Wilkinson claims to be one of ten persons entitled to a share of the fortune, and arrangements are being taken to recover the money.

The foundation-stone was laid at Falkirk on the 15th inst. of a new school, which will be known as the Carmuir school. It is a two-storey building. There are in all seven classrooms on the ground floor, and the same number on the first floor, giving accommodation for 800 children, and there is, in addition, a cookery-room on the second floor, which will accommodate forty pupils, and will be fitted up with all necessary cooking utensils and appliances. The school is a commodious building, and should sufficiently meet all requirements of present day elementary education. It is built of red rock from Closeburn Quarry, Dumfriesshire, and cost about 10,000*l*.

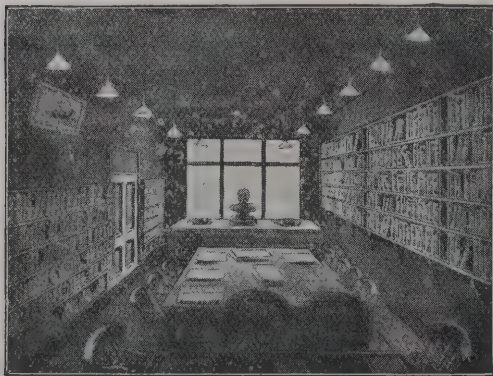
A BLOCK of residential flats and shops called Universal Mansions are just completed at Lower Richmond Road, Putney, overlooking the starting-point of the Oxford Cambridge Boat Race. The property occupies a frontage on the Lower Richmond Road of 111 feet 6 inches, and to a depth of about 97 feet. The contractors were Messrs. Whitehead & Co., Ltd., Clapham, and the architects Messrs. Palgrave & Co., 28 Victoria Street, S.W. The cast wrought ironwork was supplied by Messrs. Hawkins & Bayly, and the electric lift, with patent automatic press-button attachment, by Messrs. Child & Co. The building is fireproof throughout.

The foundation-stone of the new Dean parish church, Edinburgh, situated between the Dean Path and Ravenscroft, was laid on the 24th inst. The new church will occupy the site of the old building, and its cost, including spire, is estimated at 10,000*l*. It will be in the Early English style of architecture, and will consist of nave, side aisles (to be used as passages only) and transepts, together with suitable galleries. Sitting accommodation will be provided for 300 persons. There will also be a hall, seated for 300 persons,

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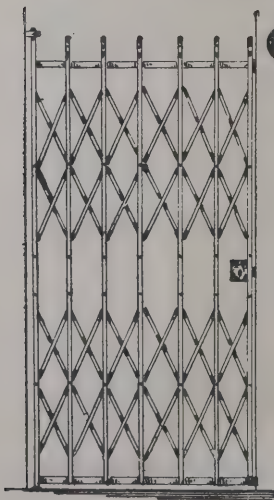
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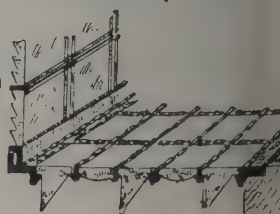
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## PAVEMENT LIGHTS

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ing-rooms. The church is being erected by Mr. William Layson, builder, from designs by Messrs. Dunn & Findlay, architects.

ON Wednesday evening last the new Liberal club at Ton, Cheshire, was opened by Sir John Brunner, Bart. The building consists of large hall with gallery and is capable of seating, in all, about 700 people, billiard-rooms for three tables, which can also be thrown into large hall means of folding screens, dining-room, cloakroom, committee-rooms, kitchen and servery, secretary's office, four rooms, heating-chamber and cellars in basement. A dah has been placed along the west front which overlooks bowling-green. The walls are of brick with red-pressed bricks and white plaster gables. The roof is covered with slate. The internal work is pitch-pine varnished. The heating is by low-pressure hot-water pipes and radiators. The contract has been carried out by Mr. James E. Evans, of Ton. The heating was done by Mr. Lewis Hill, Liverpool, the architect was Mr. T. T. Rees, F.R.I.B.A., May Build- ing, North John Street, Liverpool.

THE foundation-stones of a new Wesleyan chapel at field, in the Ripon Circuit, were laid on the 20th inst. The building is to take the place of the present chapel, which is antiquated and inadequate to modern requirements. A site adjoining the old chapel, half a rood in extent, situated on the north side of the road in the centre of the village, has been secured from the Marquis of Ripon. The new structure will be reached from a porch on the east side, and will accommodate eighty-one adults. There will be two rows of pews with an aisle down the centre, the rostrum being at the south end. At the opposite end to the rostrum, and entered from the porch, a parlour has been designed, which will afford seating for twenty persons. The latter room is separated from the main hall by a readily movable wood partition. The building is designed in the Early Gothic style, and is to be faced on the east and north fronts with red pressed bricks, and the roof is of blue slated. Internally the walls are to be plastered, the ceilings, dados, doors, &c., being in varnished pitch pine. The whole of the work has been let in one contract to Mr. J. Coldbeck, builder, Ripon, the amount being 478l. 10s. The plans and specifications have been prepared by Mr. J. Stokes, architect, Thirsk, and the work is being carried out under his supervision.

THE foundation-stone of the Presbyterian church, Muswell Hill, N., was laid on May 23. The church is designed in the Perpendicular period of Gothic architecture freely treated. Externally the building is faced with whole white flints, the dressings being of red terra-cottawork. A bold square tower, terminating in a quaint spirelet, forms a prominent feature at the angle of the block, the site being a corner one. There are three bold and richly moulded doorways in front, flanked by buttresses, and a handsome seven-light traceried window in central gable, and traceried work in the apex of gable. The plan approximates in form to a Greek cross. The ceiling internally is vaulted, the large central vault being carried up higher than the others for effect and better ventilation, and being carried upon clustered granite columns with moulded stone bases and carved stone capitals, and these support four main moulded arches and other smaller ones spanning to the walls. The windows are all filled in with ornamental lead lights. Electric lighting and low-pressure hot-water heating apparatus have been installed. The seating accommodation is:—On ground floor, 615 adults; in choir, 34 adults; in end gallery, 81 adults—total 730. The contract is let to Messrs. Johnson & Co., Belle Vue Road, Wandsworth Common. The architects, whose designs were accepted in a recent competition, are Messrs. G. & R. P. Baines, 5 Clement's Inn, Strand, W.C.

A CHURCH is in course of erection at Cotteridge, King's Norton, which will cost 19,000l. The style of the church, which is to be dedicated to St. Agnes, will be a modern adaptation of that prevailing at the close of the fourteenth century. The building will be erected in brick, with judicious application externally of buff terra-cotta and green Quarella stone. The plan consists of a chancel with flatly coated apsidal end, 35 feet long and 27 feet wide, out of which the organ chamber opens on the north side. The transept has a seating capacity for eighty-one, and will be used as a morning chapel. There is a massive tower at the west end of the south aisle fronting the road, with belfry for six bells; the tower storey forms a large porch. A corridor flanking the south side of the chancel gives direct access to the mission-room at the back of the church, in which are situated clergy and choir vestries. The choir stalls are the old ones from the recently demolished Christ Church, Birmingham, and will have to be altered somewhat to suit their new position. The designs for the church are those of Messrs. Cossins, Peacock & Bewlay.

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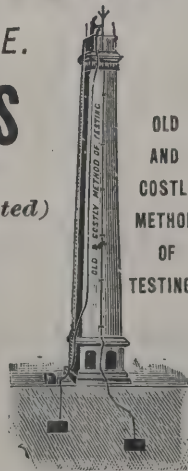
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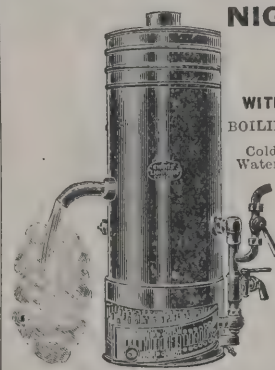
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PREBEND STREET, LONDON ROAD, LEICESTER.



PLANS are now being drawn for an hotel to be erected in Ashland, U.S.A. which, when completed, will be absolutely unique among Maine hostleries. Owing to the situation of Ashland, in the heart of the lumbering districts, the hotel, says the *Bangor (Maine) Commercial*, is being designed to accommodate two classes of customers. One will be the general travelling public, and the other will be the woodsmen. The two departments will be entirely separate and distinct. This is the first time that anything in the nature of a first and second-class hotel has ever been attempted in Maine, and the result of the experiment is being awaited with interest. The hotel will be three storeys high, and will have a flat roof. The main building will be 66 feet by 32 feet, and the two wings will each be 28 feet by 21 feet. Ashland is situated in a rich lumbering district, and the lumbermen frequently stop there on their way to and from the woods on various short trips from the camps. The average Maine woodsman at such times is inclined to be noisy. In addition to the lumbermen, there are many commercial travellers who visit Aroostook towns, besides the general travelling public. The majority of these persons object seriously to being turned into a common dining-hall with the lumbermen. These objections, in many instances, have been proved to be well founded. If the hotel proves a success, the public may be prepared to see them spring up all over the State.

#### BUILDING IN GREECE.

IN a communication to *Stone* from Mr. D. E. McGinley, he says:—Roofing tiles are manufactured in immense numbers in Greece. In and near the cities and large villages, there is scarcely any other kind of roof in existence; but in the mountain villages some of the roofs are covered with flat stones, or slabs of stone.

Tiles are manufactured in or near every city or town of any size in the kingdom, suitable clay for the purpose being plentiful and widely distributed. The tiles are made by hand, the only machinery used being a simple and primitive "mixer," turned by a horse or mule, which mixes the clay in a pit in the ground.

Nineteen-twentieths of the tiles used are of the old shape, and there are two sizes. Each tile is four centimetres (1·5 inches) wider at one end than at the other. The two sizes are of the same length—45 centimetres (17·7 inches). The small size is eight centimetres (3·1 inches) wide at one

end and 12 centimetres (4·7 inches) at the other. The large size is 12 centimetres (4·7 inches) wide at one end and 18 centimetres (4·6 inches) at the other. Sometimes tiles are laid in mortar, but usually they are kept in place by their own weight.

Of late years a new tile, known as the "Belgian tile," is coming into limited use. It is flat and of a rectangular form with hollows on the upper side to carry off the water. The hollows and projections so arranged as to fit into the projections and hollows of the overlapping tile, thus binding each to the other and keeping them in place. The Belgian tile is the best tile for a steep roof.

With the exception of those located in and near Athens, the outfit of the Grecian tile manufacturers is neither elaborate nor costly. A tile manufacturer of the smaller towns often carries his entire outfit on the backs of two or three donkeys, and thus moves his plant from village to village wherever there is a demand for tiles. Drain tiles and chimney tiles are made in considerable quantities. Nearly all chimneys on dwellings in Greece are simply tiles built up the walls of the building and extending to three feet above the roof. Ventilators are made in the same way.

With the exception of those producing marble—of which there are many good varieties—magnesite, or other minerals, the mountains of Greece are principally limestone. Very few cities or villages of the kingdom are far from a limestone quarry, and the houses are frequently built of this material. Many of the best buildings being faced or ornamented with marble. But most of the houses even here in Athens are of stone and stuccoed on the outside—and often on the inside—and painted in good imitation of marble. This stucco has many years on the exterior of buildings in this climate, where frost is seldom seen, and is cheaper than marble.

In some country villages, where the quarries are very far away or the roads are bad, houses are often built of sun-dried brick; but in portions of northern Greece, especially in small villages of Thessaly, houses are built by first erecting a frame of willow poles and rods and then covering this with work with a coating of mud or clay mortar.

Sun-dried brick are used in considerable quantities. The humbler houses in the suburbs of the cities of Athens, Piræus, and Patras, and in many villages where stone is not plentiful or easy of access, are built of sun-dried brick. In fact, in some villages the houses are nearly all built of this material. Fences or walls throughout the country are composed of brick

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ay one yard square and half a yard thick, made in a somewhat similar to the manufacture of sun-dried. The brick, as the name implies, are dried by the heat of the sun only. They vary in colour, according to the colour of the clay used, and measure about 12 by 6 by 2½ inches. The brick are made in every village, town, and farm in the country that has clay, and there are few places in the kingdom where there are no clay deposits. The annual quantity manufactured is not known. They are sold by the number, at from 1·75 pence per thousand. They are sometimes laid in lime mortar, but more often in mud or clay mortar. Sun-dried or burned brick are manufactured in or near Athens, Volo, Chalkis, Pyrgos, and elsewhere in Greece; they are of a hard quality, and usually of a very light cream colour. It is said that no soft kiln-burned brick are made. Sun-burned brick are used for the erection of chimneys in houses, foundries, &c., partitions in buildings, bakers' ovens, furnaces, and sometimes for building drains and sewers. Chimneys or "smoke stacks" are seldom erected. On account of the limited use of kiln-burned brick in the country, the manufactures of this material are few. There are but four or five of importance, and even those do not make brick exclusively—they also manufacture tile. Like the sun-dried, the kiln-burned brick are made by the same machinery used being the simple "mixer" driven by horse-power. The kiln-burned brick measure about 11 by 4½ by 1½ inches. One man can mould 3,000 each day. The annual product of the manufactures of the kingdom cannot be learned. After the bricks are moulded, they are allowed to lie in the open until partially dried and stiff enough to handle easily. They are then built up in an "open-work" manner similar to the method used in the United States, so that the heat from the fire can reach each brick. The fuel used is nearly always coal, and the fire, never very hot, is kept up about fifteen hours. Sun-burned brick are sold by the hundred or thousand directly to the consumer at from 3·50 to 5 pence per thousand. They are very seldom shipped by rail or water, as such transportation is too costly. In building, the kiln-dried bricks are laid in lime and sand on a flat side down, never on the edge; but as the mortar is often bad and gets soft in damp weather, cement is used in laying the brick in a construction which it is desired to make permanent.

NEW CATALOGUES.

MESSRS. JOSEPH CLIFF & SONS have just completed the new Glazed Brick Section of their catalogue, which, beautifully printed as it is in colours and replete with information as to prices, &c., will be found of sterling value to architects and others. In these goods every possible section seems to be included, as well as copings, mouldings, tiles, &c. Messrs. Cliff & Son also make a specialty of brick fireplaces, mantles, &c., in which some admirably artistic designs are shown.

MESSRS. F. BRABY & CO., of Glasgow, have sent us a new catalogue, which, in addition to some useful information, weights of sheets, hoops, bars, zinc, nails, &c., contains illustrated descriptions of their galvanised, corrugated and curved sheets, ridging, skylights, window sashes, sash bars, fixings, W.I. gutters and pipes, ventilators, rustless iron and steel cylinders, boilers, cisterns, furnace pans, sinks, gutters, pipes, gratings, manhole covers, galvanised tanks, cylinders and cisterns, copper cylinders, boilers and furnace pans, sanitary pans and dustbins, cattle troughs and corn bins, tubular garden barrows, &c.

WE have received from the General Electric Company (1900), Ltd., a copy of their new and voluminous catalogue, comprising the various sections which they have issued during the last twelve months or so, together with a great deal of interesting added matter. It contains many well-executed reproductions of the firm's various works, branches and offices, and a host of useful information printed on a pink supplement, comprising tables of weights and measures with metrical equivalents, foreign money tables, data for house wiring, and comparison with gas for private plants, hints to purchasers, and a glossary of electrical terms. For colonial customers a series of estimates for complete plants are included.

The catalogue proper comprises the following sections:—

Switchboard and electric light supplies . . . . .	(S)	80	pages
Wires and cables . . . . .	(W)	56	"
Instruments, meters, &c. . . . .	(M)	42	"
Arc lamps and engineering specialties . . . . .	(E)	112	"
Traction supplies . . . . .	(T)	16	"
Electrical plant . . . . .	(P)	56	"
Electrical heating and cooking . . . . .	(H)	24	"
Electric bells, &c. . . . .	(L)	95	"
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At the end of the catalogue there is an art paper supplement with some excellently reproduced photos, showing the great variety of and enormous field covered by the installation work of the General Electric Company—from dynamos and switchboards to lighting and street telephones.

All these sections aggregate close on 1,000 pages, and (with few exceptions, as in lamps, where the varieties are too great) every article has a catalogue number, and every class of article is accompanied by a short and concise description and specification, which can be embodied by contractors in their own estimates. In the switchboard section several types of distribution, accumulator and dynamo-boards are shown. In the matter of central-station switchboards the company's work is well known, but we would draw special attention to the excellent series of "Peel" and "Adelphi" switches. Of smaller articles in this line there is an almost endless variety of point switches, plugs, cut-outs, &c.

Section W deals mostly with the firm's "Omega" wires and cables and flexible wires in great variety for every purpose. Section M includes the "Stanley" series of ammeters and voltmeters made at the Manchester works, and the well-known "Aron" meters made in London, the "Wilson" time switch and the "Stanley" auto-cut-outs, besides many other instruments and apparatus of the same kind. Section E, which follows, commences with the G. E. C. "Angold" arc lamps and gear for same, Lyons's liquid resistances, stage apparatus, "Freezer" fans, and the high-class motor rheostats, controllers and automatic lift controllers sold by the G. E. C. The rest of this section is mostly taken up by transformers, small motors, accumulators and engineering accessories. All the other sections are equally comprehensive. The G. E. C. catalogue has appeared about every two years for the last twenty years, and has on each occasion been the most up-to-date catalogue in every branch of electrical industries, and the present issue in no wise falls below the aim of its compilers.

### ELECTRIC LIGHT AT ST. PAUL'S CATHEDRAL.

THE electric lighting of St. Paul's, which has been in progress for upwards of three years, has now reached a stage of partial completion, and was used for the first time generally throughout the chancel, dome, nave, and crypts at Whitsuntide. The

installation, which has cost nearly £10,000 so far, is a great gift to the Dean and Chapter from Mr. Pierpont Morgan. The difficulties of wiring and lighting so immense a building are considerable, as, apart from the care necessary in pier thick stone walls and floors, now 200 years old, the distance to be traversed are very great, and the basement is a network of tombs and vaults, which have to be avoided.

The work has been carried out under the superintendence of Mr. Somers Clarke, F.S.A., the consulting architect to the cathedral, and Professor Kennedy, the consulting electrical engineer.

The fittings, which were designed by Mr. Clarke, consist of six large pendants of cast and gilded brass in the choir, hanging from the vault, which, in addition to lighting the floor, throw glow on the mosaics of the vault by means of upturned lights concealed in cups. There are also eight heavy bronze pendants under the dome, and two others in the transepts; four bracket lights upon the chancel screens; and a ten-light fitting in the apse, which also lights the Jesus Chapel. The five standards in the nave and two at the west entrance were designed by Mr. Penrose and Mr. Pegram respectively.

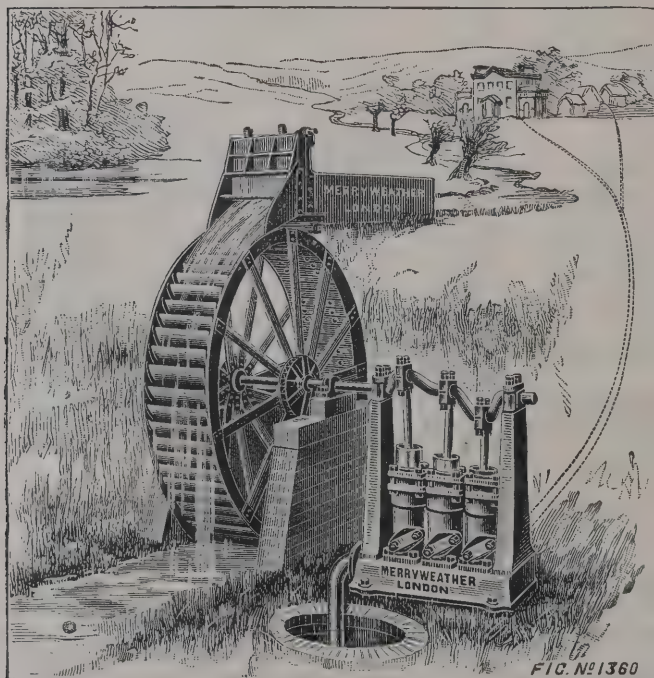
In addition to these the choir desks have been fitted with standards holding concealed lights, and the crypt has been lighted throughout with the handsome old gas fittings in the shape of hanging Roman lamps, which have been adapted for electric light.

The same adaptation has been made in the case of the Pegram and nave standards, the bases and pillars of which remain as before, the heads, carrying electric lights in the shape of glass bowls, alone being designed afresh. These glass bowls transmit a beautiful quality of light, and were the result of many experiments.

The choir aisles, the entrances, the consistory court, the whispering-gallery, and several other points in the church have yet to be lighted or provided with their permanent fittings. A few of the large pendants in the dome and transepts have been replaced at present filled by temporary but solid-looking structures of wood and iron. These, together with the arduous work of channelling and piercing the stone walls to receive the steel tubing in which the wires are carried, must be credited to the cathedral's own staff of workmen, under the clerk of works, Mr. Harding.

The switching arrangements for the lights are necessarily complicated, and require the use of large switchboards, one of which can be seen in the crypt. The others are in a location

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ember off the staircase in one of the main piers of the building. Current is supplied by two different companies, and each case from more than one station, to minimise the risks breakdown.

As evidence of the care devoted to this point, the lights are alternately on different circuits right through the church. It is computed that sixteen miles of cable, containing more than two and a half tons of copper, have been used in the installation.

### BLACKPOOL OPERA HOUSE.

An important work of reconstruction and enlargement in connection with Her Majesty's Theatre, Blackpool, which is the property of the Winter Gardens Company, is about to be put in hand from the designs and under the supervision of Messrs. Mangnall & Littlewood of Manchester, who were the architects of the Empress ballroom and the Indian lounge, according to whose plans the whole of the Winter Gardens Church Street frontage from the present Opera House entrance to Adelphi Street will be taken in hand, and a new façade of French Renaissance style and very striking appearance will be erected. In design and general features the elevation will very closely resemble the Grand Opera in Paris, a building which, for architectural grace and finish, has a world-wide repute. The building will be carried to the height of the Empress Buildings, but will consist of only two storeys. The present entrance to the Winter Gardens will be embodied in the scheme, and remain in its present position. The existing entrance to the Opera House will be utilised solely for the patrons of the pit. West of these entrances will be three shops, so that the present tenants have no cause of anxiety. At the Adelphi Street corner is to be a handsome square tower 100 feet high, surmounted by an ornamental minaret. This and a graceful dome of about the same height immediately over the Gardens entrance will be striking features of the architectural design. It will further be necessary, probably, to raise the existing dome, which is 100 feet high, in order to harmonise the effect and give a more commanding appearance. The elevation on paper, we can assure our readers, looks splendid; in the structure it will surpass any imaginary creation that can be pictured from this perfect description. With granite pillars to the windows

and the free introduction of friezes, scrollwork, and so on, the effect will have a delightful grace and detailed beauty.

The entrance to the dress circle and upper circle will be under the tower at the westerly corner of the block in Church Street. This entrance-hall will be almost as large as the present entrance-hall of the Opera House. Handsome wide staircases lead up to a magnificent foyer. To use the eulogistic language of its designer, this foyer will be "a dream." It will be 120 feet in length by 40 feet in width, but as a statement of measurement does not convey much idea, it may be said that it will practically have a similar area to that of the Victoria Hall, but much more lofty. From the foyer is an entrance to the dress circle, 20 feet wide, and an entrance to the upper circle of similar proportions. Ample cloak-rooms, ladies' retiring-rooms, &c., are provided for. The appointments of the foyer will have a sumptuous luxury not less than that of the Indian lounge; it will be furnished with handsomely upholstered settees, and will be an ideal promenade or lounge during the intervals of the play. It is further projected to provide afternoon teas here in connection with the matinees. The object is to make the Opera House so completely charming as to appeal to the best people of the district and the best people who come amongst us as visitors.

From the shareholders' point of view, it is the enlargement of the theatre that will probably have the strongest appeal. There is much useless room at the back of the theatre, and this is to be remodelled and thrown into the body of the theatre, with a result that is positively amazing. Increased accommodation will be given for 1,500 persons. The bars at the rear of the pit, the dress circle and the upper circle are to be cleared out, along with several stairways that can be dispensed with, and then there will be practically a reconstruction of the auditorium. Extra seating will be provided in the stalls. The pit will be carried ever so much further back, and the extra seating there gained is for the large number of 750. The circles will be entirely taken down and reconstructed, and by altering the "rake" the occupants will get a splendid line of sight. The dress circle, which now consists of only three rows of seats, will be increased to twelve rows. The upper circle, instead of having eight rows, will have fifteen. There will also be accommodation for 300 or 400 more in the gallery, for whose patrons a separate spacious staircase outside the building will be constructed.

Now that we have indicated the nature and extent of the reconstruction, our readers will agree with the opening remark



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that this will be one of the largest theatres in the country. As to the other remark touching its ornateness, that may be left to the well-known good taste of Mr. Huddleston. We are assured that the earning capacity of the theatre will be doubled—that is a big thing to say, it should be enough for the shareholders. The scheme has an element of the novel. Mr. Huddleston calls it a "collapsible theatre." The arrangements provide that in the winter the gallery "gods" can be admitted from their special entrance to the upper circle, and the gallery can be closed. Throughout the theatre attention has been given to the adequacy of the exits, and these are exceptionally numerous.

We understand that the cost of the work will amount to between 20,000*l.* and 30,000*l.*

### CORONATION STANDS.

THE construction of a grand stand for the Coronation is a more elaborate matter than it looks. In some cases, says the *Daily News*, the plans have passed through the hands of two architects before being submitted for the necessary sanction of the local authority's surveyor. At the time of the Diamond Jubilee responsibility for structural safety rested with the County Council, and it was judged a feather in the Spring Gardens cap that of the multitude of various temporary erections none yielded under its burden of excited humanity. Since then the law has been changed, and the supervision devolves upon the local body. Thus the County Council itself has had to obtain the signatures of the Westminster surveyor to the plans for its structures in Trafalgar Square and the Strand.

Nearly all the large stands are being erected on sites that chanced to be in the builders' hands. In some cases the work of demolition has been hastened, so that there shall remain only as much of the old building as will form a convenient base for the temporary structure. In other cases, where the site had been already cleared, the pressure has been to complete the foundations and basement of the new buildings, so that they equally may be a groundwork for the staging. On some sites, as that at the corner of Pall Mall and Waterloo Place, a Scotch derrick crane—startling columns of woodwork rising to a height of 100 feet, with 7 tons of machinery atop—are seen at work, hoisting into position the 3-ton stanchions

necessary for the basement of the permanent building. Naturally it will not be worth while to remove these derrick cranes—whose construction involves the protracted labours of men specially trained—in the interests of the Coronation stands. Those structures will be built around the dizzy columns of woodwork, space for a few seats thus being sacrificed.

The timber yards are daily sending forth, in addition to their ordinary output, hundreds of loads of pitch pine (the principal material for these Coronation structures), besides hundreds of standards of deals (for the braces of joists). Thousands of bolts, nuts and washers are absorbed in the process of knitting together the multitudinous details of each stand, and a goodly number of "dogs" are required for holding sleepers in conjunction. Of those massive parts a great number are needed where, as in Trafalgar Square and the Strand, of Charing Cross terminus, the constructors are debarred from sinking any of their posts into the ground. It is not possible to speak definitely concerning the cost of building a stand, the number of men required for the operation. Both factors are, of course, controlled by the special circumstances of each case. But in the Charing Cross example our representative has been informed that it is to accommodate about 2,000 persons, and that the cost will be between 2,000*l.* and 3,000*l.*, a statement associated with the assurance that as a rough average, the price of Coronation stands may be calculated on a basis of 1*l.* per seat. It will be noted that this estimate is as nearly as possible confirmed by the arrangements of the County Council. As to the amount of labour involved, it was further stated, in regard to the Charing Cross structure, that nearly a hundred men may be engaged on work in its later stages, though it occupies a considerably larger number at present. In another quarter it was mentioned that between thirty and forty men would in one month erect a stand, with refreshment saloon and cloakrooms, to accommodate a thousand spectators. Owing to the painfully overstocked labour market, few carpenters are likely to have a chance of "overtime," or of any increase on the 10*s.* 6*d.* per hour rate of pay which has now obtained for two years.

The question is sometimes asked, "What will become of the wood when the stands are taken down?" It is a question easy to answer. Builders, in tendering for the construction of a stand, submit a price on the understanding that the materials shall revert to themselves. Pitch-pine, deals, sleepers, posts, "dogs" and bolts are among the things of which they are in constant need for hoardings, shorings and buildings.



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# The Architect.

## THE WEEK.

One of the most interesting potentates who has come to London for the Coronation is the Maharaja of JAIPUR. Among the Indian princes he has been pre-eminent in his efforts to uphold native art. He has not been satisfied with endeavouring to have Indian styles produced in modern works. His Highness has also directed costly volumes to be prepared and published in which measured details of the architecture of the district are given for fire use. Whatever may be the fate of Indian work, there will always be a record of its characteristics. The Maharaja owes much to the co-operation of the political officer, Colonel JACOB, C.I.E., who has been most zealous in his efforts to gain appreciation for Indian art in this country. He now accompanies the Maharaja. The demonstration with which His Highness was welcomed at Dover on Tuesday was due to a wise ruler who has ever been loyal to the English administration of the Indian Empire.

M. JULES HENRIVAUX, who was formerly director of the great French glass factory at Saint-Gobain, has become an advocate of a new building material, for which he anticipates sooner or later a prodigious demand. It is a brick made of what he calls stone-glass. The strength of it is not surpassed by any of the building stones, for it can sustain as much weight as a granite block. One of the stone-glass bricks has been found irresistible to blows with a hammer. Another advantage is that colours of all varieties can be imparted to the brick, and will enable it to be used for ornamental purposes. According to M. HENRIVAUX, glass can be employed in buildings from the foundations to the roof. Stone-glass is also applicable to pipes for air, gas, electric wires, &c. It is needless to say the use of glass bricks has been recommended for many years, but it has never been attempted except on a limited scale. It is remarkable that, while glass is suggested to be used instead of stone and brick, thin stone has come into popularity in Germany as a substitute for glass in factory windows.

WHEN the case relating to the Roedean school at Brighton came before Mr. Justice BUCKNILL we referred to the circumstances. The point at issue was the extent of an architect's powers as arbitrator in a work which was carried out under his superintendence. In 1897 a contract was entered into by Messrs. PETERS & SON with the Roedean School Site and Buildings, Ltd., for the erection of a school at Brighton which was to cost over 43,000*l.* The work was to be completed by September 1, 1898. It was agreed that all disputes were to be referred to the architect, Mr. J. W. SIMPSON. As the work was not finished on that date, and the builders became bankrupts, notice was given for determining the contract, and the building was completed under the architect's direction on June 27, 1901. A final certificate was prepared, which testified that some hundreds of pounds were due to Messrs. PETERS. Their solicitors then informed the Roedean Company that they claimed damages for improperly determining the contract. The company requested the architect to arbitrate on any differences which were raised. On one side were a Mr. DAVIS, who possessed an interest in the contractors' business, and a Mr. BELCHER, who had advanced money to the contractors, besides others who had also claims on the settlement. Even, however, the arbitration was about to take place, Mr. DAVIS's solicitor served on the arbitrator an injunction restraining him from proceeding with the inquiry. Another protest came from Mr. BELCHER. The proceedings were delayed, but eventually the inquiry was held and the award was made on April 9, 1902. On the 11th the company sought to enforce the award, and on the 14th a writ was issued on behalf of Mr. BELCHER, in which it was stated that the company had illegally obtained possession of the site and determined the contract. The company were unsuccessful in attempting to stay the action or to enforce the award.

The case was therefore brought before the Court of Appeal, the question being whether Mr. BELCHER should be permitted to continue his action, as the matters in dispute had been determined by the arbitrator. On the other side, it was contended that the trustee for the contractors had a rightful claim to be paid *quantum meruit* for work and materials. As they were not allowed to complete the work under the contract, the contract itself was at an end, and the whole work should be measured up. The Master of the Rolls and the Lords Justices came to the conclusion that as all the parties had agreed to the architect's jurisdiction as arbitrator, they could not after the close of the proceedings say the award was bad or that the arbitrator had exceeded his powers; the award should be enforced by the company, and Mr. BELCHER's action stayed. The position of the architect as arbitrator has been therefore once more upheld in a case which presented some novelties.

FORTUNE has favoured young artists in this year's Salon. For architecture the Médaille d'honneur was awarded to M. EUSTACHE by a majority of votes. He won the Prix de Rome as late as 1891, and the drawings he exhibited were inspired by his studies in the Eternal City, for they formed a restoration of the Via Sacra. First-class medals were obtained by MM. BRUEL (ALEXANDRE); GUADET and PRUDENT; second-class medals by MM. MALGRAS-DELMAS, GUINOT, GROMORT, BRUNET; and third-class medals by MM. CHANU, JAUSSELY, NARJOUX, PARMENTIER, OLLIVIER, SANTERRE. In the section of painting M. JOSEPH BAIL has carried off the Médaille d'honneur by his *Dentellières*. He is son of M. ANTOINE F. BAIL, who is an excellent painter, and his brother has also distinguished himself in the art. M. HIPPOLYTE LEFEBVRE receives the medal in sculpture for his group of blind girls listening to music. He obtained the Prix de Rome in 1882, when he was eighteen. A première médaille was not awarded to any painter. Those for sculpture were gained by MM. CHAMPEIL, CARL LECOURTIER and BEGUIME.

THE late Mr. CHARLES GASSIOT, of Tooting, has bequeathed to the Corporation of London a most important collection of pictures. As, however, Mrs. GASSIOT is to have the enjoyment of them during her life, they will not be immediately available for the benefit of visitors to the Art Gallery. Among the works are CONSTABLE'S *Fording the River: Showery Weather*, for which 10,000*l.* was offered; four works by NASMYTH; seven by WILLIAM COLLINS, R.A.; seven by CLARKSON STANFIELD, R.A.; seven by JOHN PHILLIP, R.A., and two by W. J. MÜLLER. There are also examples by THOMAS FAED, WILLIAM DYCE, E. LANDSEER and T. CRESWICK; four by Mr. J. C. HOOK, R.A. MILLAIS's popular *My First Sermon* and *My Second Sermon* are also given, with Sir ALMA-TADEMA'S *Pyrrhic Dance* and Mr. BRITON RIVIÈRE'S *The King Drinks*. Mr. GASSIOT has bequeathed to the National Gallery JOHN PHILLIPS'S *The Prison Window* and *Gossip at a Well*, besides one by WILLIAM COLLINS and one by NASMYTH. It is to be hoped that before the pictures arrive at the Guildhall some arrangements will be made to allow them to be properly exhibited.

TEN years ago when the tercentenary of the foundation of Trinity College, Dublin, was celebrated, it was decided to erect a memorial of the occasion. The form adopted was that of a building in which accommodation could be found for the various scientific, literary and theological societies recruited by the students of the college. The commission for the building was given to Sir THOMAS DREW. The work having been completed was opened last week by the Lord-Lieutenant. The style is in keeping with the older buildings, which are reputed to have been designed by Sir WILLIAM CHAMBERS, although a letter exists in which he said he declined to have any connection with the college. Additional quarters for students have also been erected. The expenditure has been about 25,000*l.*, of which a third was derived from past and present graduates.



## PEACE AND PROSPERITY.

SOME of the continental journalists are puzzled about the best term to employ for expressing the end of the contest in South Africa. They hear of the satisfaction with which the news of the surrender was received by all classes and parties in this country, but the customary absence of self-glorification among Englishmen excites misgivings in the minds of those publicists that the true value of our success is known to us, and as we have made no fuss about it therefore it is of little importance. During the war between the Cavaliers and Parliamentarians we are told by CLARENDON how Lord FALKLAND was always uttering the word "peace," as if it combined all his desires. Not only in Great Britain but throughout the British colonies no word has been so often used since Sunday last. Compared with the attainment of peace all questions relating to the termination of the contest, whether it was a capitulation, a suppression of resistance, a negotiation, a resolution or an agreement, are held to be of minor interest. What was sought after by the Government and the Empire was expressed by the Secretary for War when he wrote on April 16:—"We have been from the first anxious to spare the effusion of further blood and to hasten the restoration of peace and prosperity to the countries afflicted by the war." Not a peace which was only verbal was desired, but an assured peace bringing with it, as its foremost effect, prosperity.

The condition of mind which converts the pride, pomp and circumstance of glorious war into a material prosperity on which taxes can be levied seems to be as unreal to foreign critics as the utilising of swords for ploughshares. They need only, however, once visit London or any large English town to discover that it is no new condition. A walk through the streets of the Metropolis is enough to demonstrate how glory is valued among us. Britain has been engaged in many wars, but where are the Arcs de Triomphe, the gates of victory and the trophies which are met with in most foreign cities? There is a Waterloo Bridge in London, but it owes the change in its title to a resolution of a company of shareholders. Trafalgar Square received its name in order to give appropriateness to the erection of the Nelson column in a place which was known from the royal stables, which occupied the site. Small streets occasionally are called after military heroes, and their names may be seen surmounting public houses, but all these are individual testimonies of admiration. We have not even the smallest temple of military glory, and many of our bravest captains have not a tablet to serve as a memorial. All this should be enough to convince censors that what now rejoices England is not the triumph over enemies who have fought a good fight against us, but the prospect of the establishment of peace. Compared with the people who were led from victory to victory by NAPOLEON, and who in the end cheerfully submitted to immense sacrifices for the sake of *gloire*, we are only a nation of shopkeepers, but in the general interests of the world it may be as well we are what we are.

It is therefore allowable at the present time to follow the example of the Secretary for War and to think of prosperity as the desirable outcome of peace. There is no doubt that, owing to the war, building in general has suffered more than the majority of businesses. At first we underrated the power of the Boers, and subsequently it was supposed that their resistance might lead to complications in which we should have still stronger enemies opposed to us. At such a juncture capital, which is the most sensitive of all forces, was not to be obtained on equitable terms for the erection of buildings. Prior to the Boer War there was a prospect of a period of prosperity for all who were connected with the building trades, but it was set aside, and for the last two years the progress of building has been retarded, and much inconvenience has been experienced. We may now expect a resumption of profitable operations, when it will not be necessary for work to be executed at a loss in order to keep workmen together and to find use for plant. The time must be regarded as favourable for enterprise. During the struggle in Africa the state of feeling abroad has been gauged, and we can now see that competition in trade assumes with some foreign rivals a spirit that is not unlike what is witnessed in times of actual warfare. If England is to hold her own in

the markets of the world it must be through the production of superior or cheaper goods in all varieties, and in accomplishment of that task suitable structures are without influence. Many English factories are a discredit to the country, and it is dubious whether satisfactory work can be turned out in places which are so defective, it has been necessary to pass a special Act in order to prevent them becoming destructive to the operatives employed there.

It is not to England alone that we need now limit our views when we speak of prosperity. Under an honest and skilful Government there is no doubt that South Africa will become a source of profit for many people in this country. It contains most of the elements of wealth, and they will be increased with the aid of British ability. For several years there was a prejudice against English traders and producers, but we can now look to find a less narrow-minded manner of dealing with us.

In Johannesburg, which seems destined to be the business capital of the British Transvaal, the inhabitants have been acting for some months as if the war was over. Those who are best acquainted with the district and population are aware that although there may be an outward aspect of cleanliness, what is known in England as sanitation has been long neglected. A new spirit is now manifesting itself, and it has a regard for public health to which the preceding rulers were indifferent. The Town Council of Johannesburg have, for instance, requested the Colonial Office to instruct the newly appointed town engineer before he leaves England to inspect the various systems of drainage and sewage treatment which are likely to be of use and adopted in the district. The subject is one which is receiving much attention from the local authorities, and temporary measures which are likely to be resorted to are calculated to cost over 114,000%. In order that there may be no delay it is proposed to employ cast-iron pipes instead of stoneware pipes, and it is anticipated when a completed system is carried out it will be possible to sell the pipes for use in other places. Compared with the large works that are undertaken in England the Johannesburg drainage may appear to be of slight account, but the disturbed state of the country should be considered, as well as the lethargy which characterised former legislation in respect of all sanitary questions. England should not allow the contracts to be carried off by foreigners. A wide field is about to be opened for enterprise, and efforts should be made to prevent intrusion from monopolising it.

The future prosperity of Johannesburg is also indicated by the efforts of the Town Council to obtain possession of the tramways. A system which is not altogether perfect was in use before the war. It was owned by a company under a concession from the Boer Government, but has yet to be decided whether the company's rights will be recognised as valid, and for the present the working of the tramways is suspended. As horse-power alone is employed it is proposed to substitute electricity, and there is no doubt that sooner or later the most expedient system of traction will have to be adopted. In Cape Town the value of the electric trams has been doubled, and it is assumed that in Johannesburg profits will be no less in that town. The Town Council with such an enterprise before them have become advocates of municipal tramways. Whether a company of shareholders or the Town Council will control the tramways they will form an excellent property, and will serve as an auxiliary to building in the suburbs.

There are many signs that business is quickly attaining its normal state in Johannesburg. Sites for commercial premises and residences are being offered for sale. Quarries have been reopened and orders are undertaken for preparing stone "from a window-sill to a mansion." Tenders for buildings are invited. Luxuries are available, and one firm announces that they have on sale "the best assortment of Academy pictures." It is not to be expected that architecture will immediately be shown in costly forms. For a time trade necessities may have to be met by unpretentious buildings, but there is wealth beneath the surface of the Rand which it will take long to exhaust, and where there is wealth there is always a likelihood that architecture will be encouraged. The former settlers mainly drew



come from flocks and herds, and the Dutch farmhouses which have been destroyed during the past two years could not be regarded as satisfactory. Under the new régime trade and commerce will have the ascendancy, and will consequently make more demands on the builder than formerly. The Transvaal, in fact, is about to enter on a new era, and it is not unreasonable to anticipate that better buildings will come into favour, and that British materials will be largely used in all public works.

One hopeful sign is that for professional services liberal salaries are paid. A locomotive superintendent on one of the Indian railways has been able to obtain nearly three times his former salary in South Africa. Several surveyors and medical officers of health have resigned their offices in England in order to take advantage of the larger sums which are held out to them in the same region. Ordinary labour also receives more reward, and the prices paid for machinery, appliances and materials should allow good profits to importers. South Africa appears capable to serve the true purposes of a colony as now understood, and by becoming prosperous to aid in the prosperity of the country which it owes allegiance.

## GREEK ILLUSIONS.

By LAWRENCE HARVEY.

HAVE seen Greece. The sight has dissipated fanciful fables and superstitious beliefs with which I have bedazzled all my life.

My father was a Greek scholar of no little merit. He had read HOMER four times in its Greek text. He had made for his private use an Homeric vocabulary written on cards, which he used to carry in his pocket and study in every spare moment. He had engaged the services of three modern Greek masters, one a learned monk escaped from Mount Athos, and he used to speak the old Greek language with the modern Greek accent, and write it in the current Greek hand. No wonder that I was brought up in the veneration of all that was Greek. Greek art was early imprinted out to me as the supreme type of perfection, which portraits of coarser clay like ourselves might by constant study approach, never equal and still less excel.

Another of my beliefs had its origin in the lessons given me by the French Academician, VICTOR HERBULIEZ, whom my father had engaged to instil in me the true principles of art and literature. HERBULIEZ was when a young man, he had lived some time in Greece, and as an enthusiast, had seen all in rosy colours. He told me so to explain Athenian superiority, the climate of Athens is so delightful that he had felt himself mentally transformed while residing there. The light was such that it lent a charm to every object, and Greek art and architecture could not be rightly appreciated if not seen in the place where it is created.

My first teacher in the art of architecture, the celebrated architect, Professor GOTTFRIED SEMPER, used to speak somewhat in the same vein. A crowd of writers in German, French and English all proclaimed the same things in more or less enraptured tones. I now ask myself how much of all this was due to real sentiment, and how much was due to posturing snobbism, eager to travel in the land of accepted intellectualism.

To begin with the descriptions of the extraordinary freshness of the atmosphere in Greece, I beg to say that during a two months' stay I have not found any day brighter than those one can enjoy in Brighton during the summer. In Athens I have even seen some hazy days which reminded me of London. For purity of air and distinctness of vision Athens seems to me decidedly inferior to Geneva, where I am actually residing. It therefore follows that if Greek architecture was beautiful to behold in Greece, it would produce an equally good impression in Brighton and in Geneva.

Has Greek art been also overrated?

I cannot speak of literature, sculpture and painting, which are subjects with which I am only slightly acquainted. I shall limit my appreciations to architecture.

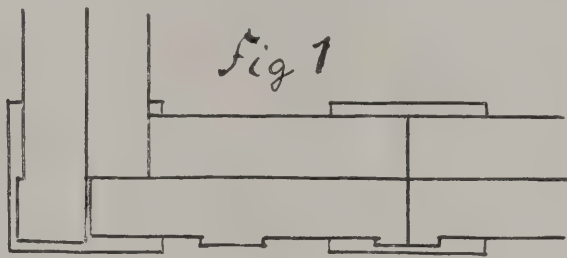
Now that I have seen the Temple of Theseus, which after more than two thousand years seems as fresh as many a

building in London of a few years' standing, and have visited the Acropolis, contemplated and studied what remains of the Propylea, the Erechtheion and the Parthenon, as well as the ruins of Olympia, of Delphi and Corinth, I am able to form an opinion on the merits of Grecian architecture in the Golden Age of Greece.

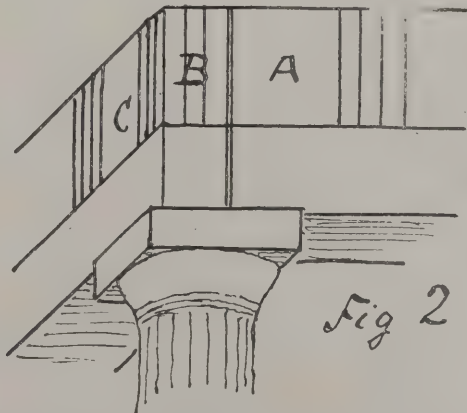
In my opinion the Greeks of the age of PERICLES fail entirely in two most important parts of architecture. They are weak in construction, and they hardly have an idea of what architectural composition means.

Their edifices are simply timber structures, executed in stone instead of wood. To carry out these structures they have put themselves to great expense for carriage and hoisting. In the Propylea I have measured marble beams 27 feet long, 2 feet 6 inches high and 3 feet wide. In the Erechtheion there are such beams *in situ* carrying the ceiling. Although this is a strange way of using stone, I admit that this system of construction may have been used by the Greeks not through ignorance, but from hieratical motives as part of their religious rules. Where the Greek fails as a constructor is in not carrying out his system properly. He often plans his buildings without taking the construction of the ceiling into account. In consequence one sees beams, the ends of which rest neither on the axis of columns nor in the middle of intervening spaces, but anywhere haphazard. This gives very unsightly results.

The Greeks do not seem to have appreciated the importance of alternating the joints of their stone courses so as to obtain a proper bond. In the ruins of the Temple of Corinth, in the Temple of Theseus at Athens I have ascertained that the builders were not able to find a way of preventing that the joint at the angle of the architrave and the joint of the frieze above fall exactly one over the other. Fig. 1 shows the plan of the architrave



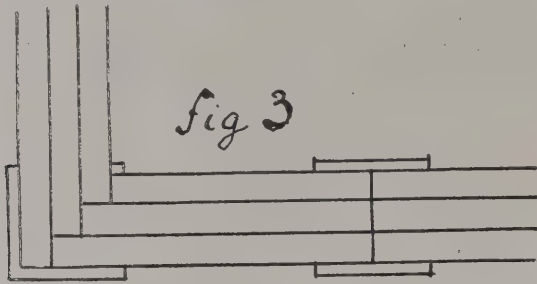
formed of two slabs placed side by side, and fig. 2 is a perspective sketch of the angle of the entablature, showing the vertical joint going through the architrave and the frieze. The solution of this problem is very simple. It consists in forming the metope A and the triglyph B of one piece of stone so that the vertical joint should fall on C; but this obvious constructional device did not occur to the Greek mind.



Worse still remains to be told. The architrave of the Parthenon, the plan of which is sketched in fig. 3, is composed of three slabs set side by side. I cannot say whether it is as faulty in the jointing at the angle as the buildings mentioned before, but I was surprised to see that the triglyphs of the frieze did not form bond stones through the wall as I naturally expected, but only overlapped a little the middle course of the architrave below, forming thereby a very defective bond between the outer and the inner wall. In such an expensive and important building as the Parthenon such defects can only be ascribed to want



of constructional instinct in the builders. True, the Greeks make up for want of bond in their masonry by an extensive use of iron clamps, but that proves little for their intelligence as builders.



To whatever nation they may belong architects agree in considering that architectural composition consists in grouping a quantity of component parts—sometimes independent structures—in one harmonious whole.

I have already shown that the Greek did not in his temples combine the plan so that every part should fall harmoniously together. When passing from the simple arrangement of one temple to the combination of a number of buildings, as seen in the Acropolis, the Greek produces the greatest higgledy-piggledy piece of happy-go-lucky disorder the mind can conceive. Greek architecture shows the same mental phenomena as Greek polity. In politics the Greek conceived nothing beyond the citizenship of his native city. He had some vague ideas of the unity of the Greek race, but he was never able to combine all the cities of Greece in one workable confederation, such as the Swiss Confederation or the United States of America.

If Greek architecture be so defective, whence comes the reputation it has enjoyed throughout ages?

I see two reasons for this: the one lies in the intrinsic merit of some of the Greek works, the other in the fame of Greece in other respects.

The Greek had an exceptionally refined feeling for form, which made him the first of sculptors; that feeling he applied to the very simple structure which forms a temple. He studied therein every question of outline and proportion as he would have done for a statue, and that was sufficient to give to a temple a high artistic value.

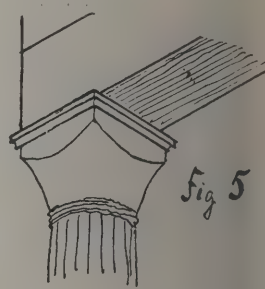
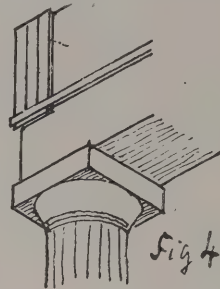
People have a tendency to prize everything which belongs to a nation successful in war. When I came over to England after the Franco-German war of 1870 I was surprised to find that the credit enjoyed formerly by French art and French taste had suddenly dropped about 50 per cent. I should not be surprised that the effects of the happily concluded South African war will be felt in the value of English furniture on the Continent. At the time of PERICLES a mere handful of Greeks had successfully repelled the invasion of the most powerful empire of the East; they had practically saved Europe from slavery, and it is no wonder that everything Greek, and especially Athenian, was looked up to with admiration.

The Greeks were, are even now, gifted in speech and writing. They made a very liberal use of their talent in trumpeting the fame of all that was Greek. Hence Greek things have come down to us enshrined in the halo of Greek poetry and Greek rhetoric.

As to the great fame of the Parthenon, I believe it was due to a large extent to the admirable situation of this building. This temple soared in the blue sky above a rock of about 300 feet, and when picked out in colours and gold must have been a most impressive object to contemplate. But as a building, apart from its surroundings, I consider it to have been inferior to the Madeleine in Paris.

To begin with, the Doric cap, even that of the Parthenon, is a defective solution of the problem which every cap contains. A cap is a transitional feature for passing from the round column to the square abacus. The Doric cap does not solve that problem, for it leaves the corners of the abacus unsupported. This feature is all the more unsightly in the Parthenon (see fig. 4) as the architrave is wider than the shaft of the column and really bears on the beetling cap. Everybody knows how admirably the Corinthian cap passes from the round column to the square abacus; this fully justifies the favour it has found everywhere from the time of the Romans to our days. A less fanciful and more

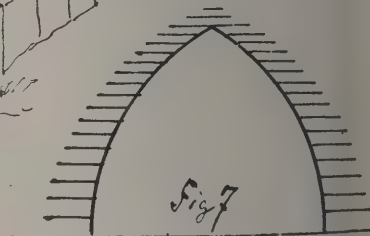
durable cap is obtained by crowning the shaft by inverted cone as in fig. 5, a device adopted in Media architecture.



I remember VIOLLET-LE-DUC accuses the Greeks putting their figure decoration in the wrong place, where cannot be seen. The view of the Parthenon fully substantiates that accusation. The only place where one can enjoy metopes of the Parthenon is the British Museum. In they look so small, and are so indistinct, they are not worth looking at.

Another superstition one gets rid of in Greece is that the beauty of white marble as a building material. This superstition is based on one's reverence for value. It belongs to the same order of beliefs as that of some people for costly medicine. In reality white marble is the ugliest of building materials. In Athens, where it is the freestone available, its principal merit is that of serving as a slate for the boys, who scribble their sums on the wall while going or coming from school. Marble, by its polish and whiteness, dulls every effect of light and shade, and is in effect so objectionable that many people have coloured their marble walls with drab colour in tempera. Such as SCHLIEMANN'S palace amongst others, where the marble appears owing to the rain having washed out the colour. I am now fully convinced that the marble temples of Athens were completely coloured so as not to let the marble appear anywhere. If marble were used it was simply that in other material could beams of 28 feet long be obtained tough enough to carry the weight of ceilings.

A voyage in Greece is instructive by the insight it allows in the beginning of things. At Corinth I have seen people building their houses out of blocks of earth or bricks measuring 14 feet by 7 feet by 5 feet. With such material wood frames are required to form the windows and wood posts to support the floors and roofs. Hence the origin of the frames carved round our windows and pilasters on the walls, which are utterly meaningless on stone walls. The ruins of Mycenæ have shown me even then the inhabitants of Greece constructed their walls with raw bricks. Close to the Lion's Gate there is a large circular hall, the walls of which are indicated by a lower row of slabs 4 feet high and 4 inches thick. The space between the two rows is 3 feet, and the upper parts of



slabs present notches wherein were dovetailed pieces of timber to tie the two rows together (fig. 6). In places the two rows are covered by horizontal slabs, which has been preserved the kernel of the wall in bricks or rammed down earth. Here again we see in the beginnings the construction of the dado or base to protect the earthen wall, an architectural feature which has a practical purpose with stone walls.

Everybody knows through descriptions and drawings the beehive tomb near Mycenæ called the Treasury of Atreus. It is a circular underground dome 50 feet



nd 50 feet high, the vertical section of which is that of a Gothic arch (fig. 7). The work, although dating from at least 200 years B.C., is as fresh as if built yesterday. It has always been described as built of layers of stone beetling outward one over the other so as to produce the surface of the vault. The structure being strictly preserved I cannot say whether this description of its construction be true, but I see great practical inconvenience in constructing in this way the upper courses of the dome. There every ch stone would present a feather edge on its upper joint and an obtuse angle on its lower face; this should inevitably lead to the breaking off of the sharp-edged arrisses of the joints. Near the Treasury of Atreus is another beehive-shaped tomb of similar shape and construction called the Treasury of Clytemnestra. The vault of this tomb is half fallen down, and I picked out of the ruins a perfect arch-stone with top and bottom bed with conical surfaces such as I have had worked hundreds of times in my classes of masonry in London and Geneva when constructing cupolas. We have there the proof that the proper way of constructing cupolas has been known and practised from at least 1,200 B.C. on Grecian soil. If to this fact we add the jewellery which Dr. SCHLIEMANN has found in the graves of Mycenæ, rich in perfection of workmanship and design would carry the palm if compared to the jewellery exposed in the Paris and Geneva shops of to-day, we are forced to admit that the world has progressed very little during the last 3,000 years. Our pride and self-sufficiency comes merely from our ignorance of past ages, and that is the main lesson to be gathered from a trip to Greece.

## RECENT ARCHÆOLOGICAL DISCOVERIES.

At the Manchester Museum, Owens College, on Saturday last, Professor Boyd Dawkins delivered an address on recent archaeological discoveries. He first referred to "the wonderful temple of Stonehenge." One of the large stones in the great circle of Stonehenge tumbled down about a year ago, he said, and in the excavations which were made in the course of putting it up a considerable number of implements had been found. These were described in the newspapers, and for the most part described wrongly. We had, however, nothing in the discoveries which added to our knowledge of the date of Stonehenge. It was built by the people who used bronze implements and weapons. Stonehenge might be looked upon as the Westminster Abbey of the Bronze period, and the smaller and less important stone circles, to be found far and wide in the British Isles, as parish churches, chapels-of-ease and the like. He turned to a discovery he had the good fortune to make some two years ago, and which he had recently brought before the Archaeological Institute, consisting of a number of iron and bronze articles, to be seen by those present. Some of these articles were of iron, and others of iron coated with bronze. There were axes, adzes, hammers, chisels and gouges; there were sickles and billhooks, and spears and dagger or spear-head. The bronze things were mostly snaffle-bits or pieces of them. All the bits of the prehistoric age were made of iron, or iron coated with bronze, and they were all of the snaffle kind. The collection illustrated the life of the prehistoric inhabitants in Kent at a place near Canterbury. The most singular things found there, and nowhere else in this country as far as he knew, were shackles or collars, probably for horses. He said probably, because for he knew they might have been put round the ankles of prisoners or slaves. They were very well made, and along with them was a chain upwards of 20 feet in length, with a number of circular iron bars. All the implements were found together in an old encampment, and this represented the site of Canterbury in the prehistoric Iron Age, before the Romans were here. It also fixed the date of one of the important roads in the South of England called "The Pilgrims' Way," leading from Canterbury along the downs westward into Wiltshire and beyond. It acquired this name because the pilgrims to St. Thomas's shrine were in the custom of taking that line. We now knew from these remains that it belonged to the prehistoric Iron Age, and might be looked upon as one of a network of narrow roads that ran from one centre of population to another, that spread nearly all over this country, and that were in some parts, as in the case of the Pilgrims' Way, still used. It represented, as far as he knew, one of the best roads intended for the use of wheeled vehicles. In conclusion, Professor Dawkins described the important discoveries of Dr. Arthur Evans in Crete. "These now allowed us, he said, to form a comparatively clear idea of the wonderful civilisation which existed in the Mediterranean region long before the

name of Greek was known, and from which their civilisation and their manifestations of art, as in sculpture, were derived by the Greeks.

## THE ASSOCIATION IN ARCTIA.

THE poets of the Architectural Association have laid so many lands under contribution, it has been necessary this year to go far north to Arctia, a region which is unknown to most of the world, but exists somewhere, as William Morris says, "Betwixt the ice hills and the cold grey sea." It is ruled by a King of democratic tendencies, who in his turn is under the tyrannous sway of a Queen whose mind cannot soar above the practical commonplaces of life. They have one fair daughter, the last of the royal race of the Icebergs, and the difficulty of the hour is to discover a spouse worthy of her Highness, for there is not "a single eligible Duke or even a Coronation Knight to be found in the length and breadth of the land." The royal matron has decided to bestow her daughter's hand on old Vinolia, the Architect-in-Chief, as the most desirable *parti* in Arctia. He has one quality to recommend him—his freedom from conscience. The Princess is aghast at the thought of marrying a common architect, but she is informed that Vinolia is a most uncommon architect, for he is successful. How he has gained success he describes in song:—

You may talk of architects,  
And their merits and defects,  
Of their powers of construction and design;  
But such trifles do not matter,  
You ignore them and grow fatter  
In a little State monopoly like mine.  
If a tower should collapse,  
Then you hang the builder chaps,  
While exhibiting a little decent grief;  
If a town hall look unsightly  
You behead your staff politely—  
It's your duty as the Architect-in-Chief.

Yes, a modest execution  
Is the speediest solution,  
And affords me inexpressible relief,  
His Majesty's most venerated,  
Adulated, imprecated,  
Underrated Architect-in-Chief.

In the days of competition  
It was made the first condition  
That the Architect-in-Chief was to assess,  
With absolute discretion,  
To announce in due succession  
Each competitor in order of success.  
But I found out to my pain  
Plans would often cheques contain,  
Or a bank-note of a value past belief;  
So in order to checkmate them  
I resolved to confiscate them—  
'Twas my duty as the Architect-in-Chief.

Yes, in cases of commission  
In a public competition  
You must set an architect to catch a thief,  
Like His Majesty's most implicated,  
Irritated, aggravated,  
Antiquated Architect-in-Chief.

So I undertook a mission  
To abolish competition,  
For I saw that architectural design  
To be executed properly  
Should be a State monopoly,  
And now that snug monopoly is mine.  
I've built temples by the score,  
And of town halls even more,  
But my list of working drawings is quite brief;  
They are wholesale and not retail,  
For I use the same old detail—  
That's the beauty of an Architect-in-Chief.

Yes, I'm P.R.I.B.A.,  
And I'm boss of the A.A.  
And of titles I've a modest little sheaf;  
I'm His Majesty's unvaccinated,  
Second-rated, silver-plated,  
Addle-pated Architect-in-Chief.

The King's objection to the union is that he has made a solemn vow to give his daughter in exchange for the Pole, or, in other words, she will become the prize of the discoverer of that important position, which is more interesting to the people of Arctia than to other races. Opportunely a band of Vikings under the command of Beowulf, arrive in an airship. They had



heard of a green land beyond the mountains, and had sworn to find it. The vessel is known as the "Exseltzor," an appropriate name, as the inspiration for it came through the medium of a soda-water bottle. It was only courtesy to show the strangers the architectural beauties of Arctia, and Vinolia, as in duty bound, offers to point out the famous sights of the city, as well as the building sites. Sigurd, a prince, is not delighted when afterwards the Princess informs him that the Architect-in-Chief is to be her future husband unless some one discovers the Pole, and he resolves to seek it regardless of the dangers. All the Princess can tell him about the Pole is that she possesses a magic wand, or divining-rod, which in right hands will lead to success. It bears the following inscription:—

True steel am I, and made for hearts of steel,  
Hearts that can brave the turn of Fortune's wheel.  
If such an one shall bear me to my goal  
I'll stand upright upon the Northern Pole.

It is needless to say that Sigurd sets out upon his quest confident of the result. The Queen and the Architect-in-Chief are not satisfied with what has taken place. Her Majesty asks her intended son-in-law whether he is learned in the law, and he replies he knows a little about the Building Act, especially the part relating to surveyors' fees. The Queen would have preferred that he was acquainted with another metropolitan enactment, the Alien Immigrants Act, and suggests that if one does not exist he might try and create a substitute. The moral representative of the mother of the arts consoles himself with the thought that after all one does not need to be very bad to perform forgeries nowadays, since that is left to the "Goudie-goudies." At length the worthy pair profess to have brought to light an ancient law which applies to strangers who visit Arctia for the first time, and which is thus expressed:—

If ever by some superhuman skill  
A stranger, be he well-disposed or ill,  
Succeed in passing the impassable,  
And set his foot upon our native soil,  
Not for another day shall he draw breath,  
But pay for his audacity with death.

As Sigurd is away Pole-hunting the letter of the law cannot be immediately enforced. There is no sign of his returning from his exploration, so the marriage of the Princess with the Architect-in-Chief appears to be inevitable. With an architect marrying into the royal family it is time to take notice of the art that was honoured in its representative, and accordingly the King determines to found a College of Architecture. This gives an opportunity for conversation about the profession. One courtier defines an architect as a man who is expected to know every other man's trade or profession better than they do themselves. He also says he has heard the architect leads the life of a hunted hare; that he is never known to smile, because he has not any time; for the same reason he never takes exercise and also never goes to bed. He draws details all day long with both hands; writes specifications with his feet, and dictates letters while at lunch. Thereupon all join in pitying the poor architect:—

A was an Architect, old in his prime.  
Pity the architect.  
B was a Builder, who took his own time.  
Pity the architect.  
C was a Client who had his own views,  
D was the Details that no one would use,  
E the Erection he tried to excuse.  
Oh, pity the architect.

Oh, pity the architect,  
On his trials and troubles reflect,  
Sing his story pathetic,  
O Muse alphabetic,  
And pity the architect.

F was the Frontage exceedingly tight.  
Pity the architect.  
G was the Ground Plan exceeding the site,  
Pity the architect.  
H the Half-timber he had to reveal,  
I was the Ironwork he had to conceal,  
J was the Joinery, mostly of deal.  
Oh, pity the architect.  
Oh, pity the architect, &c., &c.

K was the King-post that ought to have stood.  
Pity the architect.  
L the stone Lintel that proved to be wood.  
Pity the architect.  
M was the Mullion that blocked out the light,  
N was the Newel too thin for its height,  
O the Oak sill that was not water-tight.  
Oh, pity the architect.  
Oh, pity the architect, &c., &c.

P was the Price on the contract agreed.  
Pity the architect.  
Q was the Quantities down to a bead.  
Pity the architect.  
R was the Rage that the client displayed,  
And S the Sarcastic remarks that he made,  
When T was the Total that had to be paid.  
Oh, pity the architect.  
Oh, pity the architect, &c., &c.

U was the Umpire called in to decide.  
Pity the architect.  
V was the Value the client denied.  
Pity the architect.  
W stands for the Words that he said,  
X was the Xtras for which he was bled,  
Y Z the Young Zealot who wished he was dead.  
Oh, pity the architect.

Oh, pity the architect,  
On his trials and troubles reflect,  
Sing his story pathetic,  
O Muse alphabetic,  
And pity the architect.

The King afterwards explains the process of thinking which his Architectural College was arrived at. At first intended to give his Architect-in-Chief a nasty fall; a confession of royal ingratitude. Then he thought it was politic to have only one man to design all the vast buildings which were being raised daily, and he came to the conclusion there must be a nursery to foster the growth of budding architects; a university to cram and stuff and turn them out blown geniuses like a sausage machine—a confusion of figures worthy of royalty. The Architect-in-Chief preferred they should all become his pupils, but His Majesty recognised the evils of the pupilage system from his own experience, and at last the Royal College of Architecture or Home for Lost Pupils evolved. The royal invitation to candidates was conveyed in the following song:—

Come hither, pups of every breed, and listen to my lecture  
On the trials and the troubles and the joys of Architecture;  
On the uses and abuses of the set-square and the sector,  
And the ink, puppy, ink, ink, ink.  
Come hither, pups, with lengthy hair and Arty-coloured ties,  
And pups with massive foreheads looking infinitely wise,  
And pups with scrubby, chubby cheeks, and pups with laughing  
And drink, puppies, drink, drink, drink.

Drink, puppy, drink,  
Let every puppy drink  
From the free-flowing fountain of knowledge.  
You shall learn your little duty  
To build in Truth and Beauty  
At the Royal Architectural College.

You shall learn to treat the office as a sort of social club,  
You'll come late and you'll go early, and you'll take two hours  
grub;  
And in summer you'll occasionally slip out to the—A B C,  
For a drink, puppy, drink, drink, drink.  
With a tee-square as a bat, and with the fireplace as a wicket,  
And the office duster as a ball you'll play at office cricket;  
When you hear the well-known footsteps in your pocket you  
stick it,

With a wink, puppy, wink, wink, wink.  
Drink, puppy, drink, &c.

You shall learn on every building to express your youthful views;  
You shall make some full-size details far too wonderful to use,  
Or trace a drainage block-plan which you'll paint in brilliant hues,  
Blue and pink, puppy, pink, pink, pink.  
And in time it is just possible, though not beyond a doubt,  
With care and with attention in three years or thereabout,  
You will suddenly discover you're beginning to find out  
How to think, puppy, think, think, think.

Sigurd returns and has to confess his failure to reach North Pole. The Princess consoles him by modestly proposing they shall elope in the airship, but as he declines to leave his companions an alternative is suggested, which is that he shall meet the Princess at sunset in the High Priest's mansion



ere get married. The Architect-in-Chief overhears the plot, and although he feels he ought to say, "Bless you, my children, I shall be very happy to be your best man, and what sort of wedding would you like in the way of a tea-service?" yet he cannot, for the not having the faintest idea of how he ought to act has been one of the misfortunes of his career. All his plotting and schemes come to an end, for although Sigurd is unable to find the Pole the divining-rod serves as a substitute, and he and the Princess are happy. It is the old story, Harlequin—Sigurd, wins Columbine—Hilda, despite the machinations of the Queen—Vinolia; and Pantaloon—King, can exclaim, "Here at last is an end to all my anxiety."

The play was pleasantly written, and the skilful treatment of an exacting subject does credit to Mr. Gervaise Bailey's skill. That Mr. Leonard Butler's music has not declined in melodiousness through his increased experience as a composer is proved by the general admiration of the songs. Mrs. Stalman and Miss Cray, Messrs. Carvill, Bentham, Preston, Dare Clapham and Baker acted efficiently, and the evening was an enjoyable one for the members of the Association and their friends.

#### *Dramatis Personæ.*

Dolph, King of Arctia	Mr. G. B. CARVILL.
Queen of Arctia	Mrs. STALMAN.
Prime Minister	Mr. A. W. BENTHAM.
Architect-in-Chief	Mr. GEORGE PRESTON.
Rowulf { In command of Viking Exploring Expedition	Mr. F. DARE CLAPHAM.
Sigurd, Son of Seawolf, King of Fjordland	Mr. DALTON BAKER.
Line { Ladies-in-Waiting	Miss SOPHIE TYLER.
Yola {	Miss ADA YERBURY.
Ever Stick-in-Waiting	Mr. ALEC SMITHERS.
Old Stick-in-Waiting	Mr. GERVASE BAILEY.
and	
Princess Hilda { Daughter of the King and Queen of Arctia	Miss EMMIE CRAY.

*Ladies and Gentlemen of the Court, Pages and Vikings.*—Edith Byrne, Jessie Carvill, Nellie Carvill, Florence Lyton, Gwendoline Low, Mary Seaman, Mabel Smithers, E. Turner, Lulu Tyler. Messrs. R. F. Arkwright, Fred Judfield, Percy Crockett, T. Fraser, Eustace Harrington, Harrison Hill, A. C. Kelly, A. W. Smith, T. S. Taylor, G. Turner, Leslie Ward, Duncan Williams.

#### BIRMINGHAM ARCHÆOLOGICAL SOCIETY.

THE first excursion of the Society for the present season was held on Saturday, when Tong and Shifnal were visited. A very pleasant drive from Shifnal brought the party to Tong, where the church was carefully examined under the leadership of the Rev. J. G. Auden. The date of the church is known to be the first decade of the fifteenth century, and the whole edifice is a striking example of unity in design, the earlier building having completely disappeared, while no material additions have been made to that now standing, and restoration has been prudent and merciful. The most striking feature is the octagonal central tower, an almost unique temple for its age. The historical glory of Tong lies in its noble series of monuments to the Vernon family, but there is also a literary interest of no small value, arising from the fact that it was here that Dickens imagined the last rest of Little Nell. The Gilden Chapel, though small, is a really exquisite temple of lavish decoration, and there are valuable remains of ancient glass. After visiting the church the party, by the kind permission of Mrs. Hartley, drove through the park and inspected Big Castle, perched on a high mound, surrounded by a remarkably deep moat, which in its present dry state is spectically a ravine. The castle itself is an eighteenth-century erection in a style which would now merit no commendation, but it is as pleasing an example of its style as could probably be found. Returning to Shifnal, and after an excellent tea at the Birmingham Arms hotel, Shifnal Church was visited. The Rev. J. Cavis-Brown carefully explained all the details of this most interesting building. Large portions of the church are Norman, and remains of the earlier edifice are to be found in most unexpected places. The tower, for example, is Early English, but it would seem to have been built inside the older Norman tower, of which one fine arch is left intact. A beautiful Norman entrance has been built up, and a buttress stands right across the centre; but the carved capitals and columns seem to have appealed to the innovator, and are left receding into the wall in the most singular manner.

There is a parvise or church meeting-room, but instead of being built over the porch, as is usual, it is boldly projected into the church itself and supported on arches. The general appearance of the interior of the church, while simple, is of great dignity, and although restoration has in the past been too lavish, the utmost care is now taken to preserve all details of interest. In the glebe land are two well-preserved British camps or sites of fortified villages.

#### SHROPSHIRE ARCHÆOLOGICAL SOCIETY.

THE annual meeting of the Shropshire Archæological and Natural History Society was held in the Music Hall Buildings, Shrewsbury, on Friday afternoon, when the Right Rev. Bishop Allen presided.

The Rev. T. Auden, chairman of the Council, read the report, which was as follows:—

The past year may be regarded in several respects with satisfaction. The accounts show a more favourable balance than has been the case for many years, and it is matter of congratulation that this has arisen partly from the number of new members who have joined the Society during the year. On the other hand, however, the Society has to lament an unusual number of deaths. Mr. James Cock, Mr. T. Thornes, Mr. F. R. B. Walton, Mr. John Corbett, of Droitwich, Mr. Humphrey Sandford and Mr. Stanley Leighton have all passed away. Of these Mr. Sandford had occupied an important position in connection both with the borough of Shrewsbury and the county for an unusual number of years, and during the whole of his long life had taken a warm interest in their past history. The greatest loss, however, not only to this Society, but to archæology generally, has been the death of Mr. Stanley Leighton, who had filled the office of vice-president from its foundation, and had frequently made valuable contributions to the pages of the "Transactions." In the words of a resolution unanimously passed by the Council when his death occurred, "In spite of absorbing interests in other directions he had attained the foremost rank among the antiquaries of Shropshire, and his lamented death leaves a void in this as in other respects which it will be very difficult to fill." It will be seen from the accounts that the Council have had to spend a considerable sum in the repair of the fences at Uriconium, which had become dilapidated. They had hoped it would have been possible this year to renew the systematic exploration of the site, but after correspondence with Lord Barnard and the Society of Antiquaries they have been forced to the conclusion that the matter must wait a while longer. Excavations at Wenlock Priory have revealed the foundations of at least one earlier church on the same site, and traces of a lake dwelling have been discovered near Ellesmere. It is hoped that further investigation will, in each of these cases, lead to important results. The "Transactions" have maintained their interest. A new feature has been introduced in the form of an index to each volume as it is completed; it is hoped that this will materially add to their usefulness for purposes of reference. The forthcoming volume will contain the first instalment of an account of the bells of the county, from the pen of Mr. H. B. Walters, F.S.A., of the British Museum, who has devoted himself to the subject for several years past. One other topic may be alluded to, though the event is at present comparatively distant. Next year is the 500th anniversary of the battle of Shrewsbury. The Council venture to hope that when the time draws nearer the inhabitants of Shrewsbury and the county will be ready to join in a suitable commemoration of that important and interesting historical event.

The Court of Aldermen will erect on the occasion of the Royal processions of June 27 and July 3 next strong barriers, 4 feet high, at an expense of 3,843<sup>7</sup>/<sub>8</sub>, across all streets and public footways abutting on the route within the City from Temple Bar to London Bridge.

A Meeting of the Garden City Association was held at the Holborn Restaurant on Monday, when a letter was read from Messrs. Emerson & Co. giving an account of the garden city that is to be built between Hull and Haddon, consisting of 14,000 houses with a garden to each, at a cost of 420,000<sup>7</sup>/<sub>8</sub>. This will take four years to complete. The Association will hold a conference at Port Sunlight on July 12.

London Bridge will be decorated for the Coronation festivities. On both parapets of the bridge will be placed alternate columns and masts, the columns being of a height of 30 feet and the masts 12 feet. Each column will be connected by floral festoons and surmounted by an Imperial crown of suitable proportions. The masts bear a gilded British lion rampant, and each carries a trophy of arms, floral festoons linking up each mast, while the columns will be connected by rosettes of red and white—the Corporation colours.



### NOTES AND COMMENTS.

THE excavations at Silchester during last year have had some unusually interesting results. The site, it will be remembered, has been divided into insulae which are mostly squares. One house in Insula XXVII. was evidently enlarged as if to accommodate a greater number of occupants. As far as can be judged from the plan the additions were not all laid out at right angles. One room was circular. Another peculiarity was the combination of wattlework and plaster, from which it has been inferred that the Roman builders were acquainted with what is now known as half-timber work; examples, which are similar to what is seen in Silchester, have been found in many parts of the Continent. In one room several jars were found which were fitted into holes in the floor. Both Greek and Roman builders were accustomed to use pottery in construction, although the purposes served by pots and jars is not always evident. In Silchester it is thought that they may have served to support props or perches for birds. The remains are now on view in the rooms of the Society of Antiquaries, where they can be seen until Tuesday next. The excavations have been in progress during twelve years. It is contemplated in the next season to open the area adjoining the churchyard of Silchester. The exploration is conducted with much care and is deserving of public support.

It is remarkable how quickly the reputation of some French painters passes away, and as a kind of compensation some of those who were forgotten appear to excite renewed interest, as it were, by accident. At the present time LOUIS LEOPOLD BOILLY is the most remarkable of the revivals. He was born as far back as 1761, and died in Paris in 1845. It has now been discovered that his pictures are invaluable as illustrations of events which he witnessed, and are therefore truthful materials which the historian can utilise. The prices given for his pictures in the Lutz sale in Paris last week were unusual. His *Distribution of Wine and Food in the Champs-Élysées* in 1822 was sold for 30,000 frs.; *A Gratuitous Representation at the Ambigu-Comique* realised 28,500; his *Little Savoyards*, 27,000; his *Cabaret*, 11,500. The largest price, however, which was attained by a picture was given for the *Lac de Garde* of COROT, the amount being 231,000 frs. The whole collection was paid for liberally, the total amounting to 1,811,565 frs. It may be mentioned that two of BOILLY's works are in the Guildhall exhibition, which are examples of the fine finish which he sought and was able to attain.

OWNERS of property along the line of the Central London Railway have complained that they were unable to obtain compensation for the inconvenience suffered through vibration. The experts who investigated the subject have testified that no real damage can be traced, but in connection with railways the mere suspicion of damage is supposed to be a sufficient cause for an action. In connection with the "Tube Railway Bills" which are now before Parliament, it has been decided to introduce a clause by which owners, lessees and occupiers of any land, house or building which shall be injuriously affected by reason of the working of the railway can claim compensation. Lord WINDSOR, who was chairman, has had an onerous task; he has stated that the intention was to make the new clause applicable only to that part of a metropolitan underground railway which is constructed in tunnel and not to the continuation of the line in open cuttings. Claims will have to be lodged within two years, and the amount of compensation can, if necessary, be determined under the provisions of the Arbitration Act.

### ILLUSTRATIONS.

#### WESTMINSTER CITY HALL.

THE extensive alterations and additions which have been carried out to the old St. Martin's Town Hall to transform it into the new Westminster City Hall, which was opened by H.R.H. the Duke of CAMBRIDGE, K.G., on May 29, consists of removing all the old roofs; pulling-

down the two old staircases; removing one of the entrances; constructing new and larger staircase in central position, with an electric lift to run up the whole of same; lowering the walls of one end of the public hall and forming a new council chamber, which is lighted from the ceiling, panelled in oak and decorated in the Renaissance style; constructing two new storeys on the other or front end of public hall, containing on the first floor ante-room to the council chamber, members' room, committee-room and mayor's parlour, and on the second floor large office for the finance department, &c.; rebuilding the west wing from the upper part of ground-floor storey where two old storeys existed, and building three new storeys in the same height as the two former ones, making the floors of the whole building level throughout; constructing, supporting and building a new top or third storey throughout the front portion of the whole building; constructing new roofs over the whole building; remodeling the front elevation and carrying the horizontal lines of the architecture level throughout the full length of the building; arranging and constructing new offices in the basement. The drainage of the building has been entirely renewed.

The dampness of the plaster prevented the building from being completely decorated now, which can be done, however, later, when the building is fit to receive it.

The hot-water and heating is entirely new throughout the building being heated with hot-water pipes and radiators on the low-pressure system, executed by Messrs. Z. D. BERRY & SONS.

The electric wiring throughout and the new fittings have been executed by Messrs. SLATTER & GOATCH. The new ironmongery has been supplied by Messrs. CHARLES SMITH, SONS & CO., LTD.; the marblework staircase, which is Grecian Skyros and Derbyshire alabaster, has been executed by Messrs. FARMER & BRINDLEY; the artificial stone staircase is by Messrs. B. WARD & CO., LTD.; the wrought-iron railing to staircase is by Messrs. HARMAN, POWELL & CO., and the lifts are by Messrs. WAYCOCK & CO.

The furniture in the council chamber has been supplied by Messrs. MAPLE & CO.

The general contractors for the whole of the works are Messrs. PATMAN & FOTHERINGHAM, LTD., who have carried it all out to the designs and under the personal direction and superintendence of the architect, Mr. JOHN MURRAY, F.R.I.B.A.

#### CANTERBURY PARADE, WESTGATE-ON-SEA.

#### MAUSOLEUM ERECTED AT HAMPSHIRE CEMETERY.

#### CATHEDRAL SERIES.—RIPON: PORTION OF NORTH TRANSEPT SHOWING OLD STONE PULPIT. THE SOUTH TRANSEPT.

#### HOTEL DE VILLE, LA ROCHELLE.

THE town of La Rochelle (MACAULAY'S "Proud City of the Waters") should have especial interest to English visitors. It was part of the marriage portion of the wife of HENRY II. The French captured it in 1224, but in 1360 it again came under English sway, and possession was held of it for twelve years. When it became Huguenot capital two centuries afterwards English aid was invoked. Readers of "The Three Musketeers" are aware of the importance which La Rochelle attained in the time of Louis XIII. CHARLES I. sent two expeditions to the relief of the last stronghold of Calvinism in France. BUCKINGHAM was the commander, but he had not capacity for the task, and as a consequence he was assassinated. The gloomy JOHN FELTON. RICHELIEU wished to gain military renown and undertook the siege. The Rochellois were able to hold out for thirteen months before they were rendered. The population was reduced through suffering from 27,000 to 5,000. The Hôtel de Ville was headquarters of the Huguenots. It will be seen from the illustration that the building belongs to the time of FRANCIS I., when the masons were frequently capable sculptors. Unless in terra-cotta, it would be difficult to have so much ornamental work executed in our time, except at a price which would be prohibitive to a French English municipality. The Hôtel de Ville is one of the buildings in charge of the Historic Monuments Commission, and was restored under the direction of M. LISCH.



## THE SHELDONIAN THEATRE, OXFORD.

AN interesting work has been completed in Oxford, for the paintings of the ceiling of the Sheldonian Theatre, the first building erected by Wren, are now restored. The care which has been taken in the operations will be evident from the rejoined reports, for which we are indebted to the Rev. principal of St. Edmund Hall:—

*Report of the Curators on the Ceiling Paintings of the Sheldonian Theatre for the Year 1898.*

The attention of the curators has been directed to the condition of the ceiling paintings. Not only is the covering varnish much discoloured and deteriorated, but in several of the pictures the canvas is split, the paint is in danger of coming away (though as yet it has not done so to any serious extent), and in places there is damage by wet which must at some time have come through the floor above. The curators have consulted Professor Church, who has most kindly and generously given them the benefit of his great experience and scientific knowledge. He has made a careful examination of such portions of the ceiling as could be reached from a temporary scaffolding.

He reports that besides the actual damage which they have sustained, the paintings are very much disfigured by the present state of the varnish. Its remains are so irregular in distribution that both the draughtsmanship of the figures, and the original colour-scheme of the work, notably in the sky and clouds, are very much obscured.

His advice is that steps should be taken as soon as possible to arrest further mischief, and also to restore something of the original effect of the pictures by the renewal of the varnish. The question is one that demands very serious consideration, for whenever any such work may be undertaken, the cost of it would necessarily be large and its execution would need to be carried out with the greatest possible care and skill. It was hoped that the stretchers on which the canvas is fixed might be got at from above, and each panel taken out and dealt with separately, but the removal of a few boards from the floor above showed this to be quite impossible. The work can only be effected on each panel *in situ* from below by the help of scaffolding. Happily, owing to the generosity and forethought of Dr. Wills, warden of Wadham College and curator of the theatre early in the present century, the curators are provided with a fund for meeting an emergency of this kind.

In 1805 Dr. Wills bequeathed to the University 2,000*l.*, the interest to be appropriated first to the "payment of whatever debt may be due to the University from the curators of the theatre for monies borrowed by them of the University on account of the late great repairs done to the said theatre, which debt being fully discharged, . . . one moiety of the said dividends and interest to be annually laid out in purchasing other stock, and to be suffered to accumulate for the future benefit of the theatre" (the other moiety to be paid to the delegates of the Press, Learned Side). In 1826, the debt to the University having been discharged, the moiety belonging to the theatre was invested in 3 per cent. Consols, as the "Wills Accumulated Fund," and this has since been allowed to accumulate; except that recourse has been had to it once or twice for sums comparatively unimportant in amount to meet some special outlay. The curators do not propose under any circumstances to undertake any expense which will involve a charge upon the general funds of the University.

It is perhaps not generally known that Archbishop Sheldon, besides munificently providing the whole cost of the construction of the theatre,\* gave 2,000*l.* "to buy lands . . . to keep it in repair." The income received from this source, together with that from savings invested from time to time, is still applied to the ordinary repairs and current expenses of the theatre, for which they have generally been found sufficient, while the accumulated fund of Dr. Wills provides a reserve out of which extraordinary expenses can be met.

Having had occasion to investigate the history of the ceiling paintings, the curators think it may be interesting to put on record such information as they have been able to obtain, especially as the minute books of the curators before 1872 (if any) seem unfortunately to have disappeared. The following facts are taken chiefly from Walpole's "Anecdotes of Painting in England," s.v. "Robert Streater" (1624-80), supplemented

(as will be seen) by references to the University accounts now in the archives. These paintings are acknowledged to be Robert Streater's most important work, and they were finished about 1669, or soon after, as they were seen approaching completion in that year by Pepys.\*

Contemporary opinion as to the merits of Streater as an artist, and of this work in particular, varied very much. Walpole's own judgment is that "the theatre at Oxford, his principal performance, is a very mean one." One writer, however, quoted by Walpole, *l.c.* describes him as the greatest and most universal painter that England ever bred. Others expressed similarly exaggerated opinions, all however being surpassed by one Robert Whitehall, author of "Urania," or "a description of the painting at the top of the theatre at Oxford," which ends thus:—

That future ages must confess they owe  
To Streater more than Michel Angelo.

These paintings appear to have been already repaired or restored on three several occasions, viz. in 1762, in 1802 and in 1826.

In a note appended to this edition of Walpole it is stated that this painting was first restored in 1762 by Penny, the professor of painting in the Royal Academy, after "it had been exposed to the corrosion of the air for a century," and Walpole saw it before that restoration. This no doubt explains the item in the University accounts for 1762:—"Mr. Kettle's bill for painting, gilding, lining, &c., 373*l.* 16*s.*"

The note proceeds:—"In 1802 the roof of the theatre, being in a state of decay, was then replaced by one, externally extremely dissimilar. The whole ceiling was taken down and effectually restored by Mr. De la Motte, a distinguished pupil of the late Mr. West, by a method and upon a system suggested and always practised by that eminent painter. What is now seen has not been painted on, so that Streater's work remains as he left it, which is no inconsiderable advantage to the artist's fame."

This explains the large expenditure, amounting to about 3,000*l.*, on "a new roof to the theatre" which appears in the University accounts in different entries from 1803 to 1805. The structure of the original roof was designed by Sir Christopher Wren. A full description of his highly ingenious plan will be found in Elmes's "Memoirs of Sir C. Wren" (pp. 518, 519), and also in Plot's "Natural History of Oxfordshire,"† which latter work contains besides a very full and minute description of the ceiling paintings (c. ix. sections 154-163). An alarm was raised as early as 1720 as to the dangerous condition of the roof, which Elmes characterises as a "groundless rumour," contrived "to annoy Sir Christopher Wren in his declining age" (he was then eighty-eight). The Vice-Chancellor in consequence procured a certificate of the sound condition of the roof, a curious document which is preserved by Elmes (*op. cit.* p. 517). The document is signed by one mason and two carpenters of the city of Oxford, and certifies that the "whole fabric of the said theatre is like to remain and continue in such good repair and condition (as at present) for one hundred or two hundred years yet to come."

In 1802 Wren's roof was entirely removed, the statement (as given above) being that it was "in a state of decay." It would be interesting to know on whose authority this statement was made, and under whose direction or advice the curators acted in undertaking such a serious responsibility. No record can be found of this. The expression "externally extremely dissimilar" might seem to suggest that some of the internal features of Wren's construction of the timbers may have been reproduced.‡ No doubt the elaborate descriptions preserved of that design would enable experts to determine this question. The completeness of the external alterations can be seen at once by referring to Loggan's print, to the frontispiece of the Oxford Almanacs for 1774 or 1800, or to the picture on the title-pages of early books printed at the

\* In the notes to Walpole, *op. cit.* ii. p. 434, ed. 1849, the following extract is given from Pepys's *Diary*, an. 1669:—"Went to Mr. Streater, the famous history-painter, where I found Dr. Wren (Sir Christopher) and other virtuosos looking upon the paintings he is making for the new theatre at Oxford, and indeed they look as if they would be very fine, and the rest (meaning the connoisseurs then present) think them better done than those of Rubens at Whitehall, but I do not fully think so. But they will certainly be very noble, and I am mightily pleased to have the fortune to see this man and his work, which is very famous, and he is a very civil little man, and lame, but lives very handsomely."

† The original of both of these plans seems to be that (which is also on a much larger scale) given by Stephen Wren, grandson of Sir Christopher, in his *Parentalia*, pp. 324, 325.

‡ Mr. G. V. Cox (Esquire Bedel from 1815 to 1866), in his *Recollections of Oxford*, says, "I know not whether the old roof was as scientifically constructed as that which replaced it, but the interior of it in its restored state is well worth inspection and is easily accessible."

\* This is estimated by Stephen Wren (*Parentalia*, p. 336) at more than 16,000*l.*; but John Evelyn, who was present at the opening of the theatre, says that Sir Christopher Wren himself told him that the cost had been 25,000*l.* (Elmes, *op. cit.* p. 270). Evelyn further states that the opening ceremony lasted from eleven in the morning till seven at night. "Besides a long speech from Dr. South, the University's orator . . . there were divers panegyric speeches both in prose and verse, interchangeable, pronounced by the young scholars, placed in the rostrums . . . mingled with excellent music, vocal and instrumental, to entertain the ladies and the rest of the company."



Clarendon Press.\*—The old roof was surrounded by a series of large oval dormer windows,† each surmounted by an archiepiscopal mitre.

The following personal recollections of the alterations then made both in regard to the roof and the painted ceiling by Mr. G. V. Cox are specially interesting, as there appears to be no other definite record existing of the work which was actually done.

In Cox's "Recollections of Oxford," p. 46, under the year 1801, we read:—

"The grand ceremony of the *Encaenia* was held this year in the Radcliffe Library—the Sheldonian Theatre being not only under repair, but actually and completely unroofed. A notion had got into people's heads that the roof (at that time one of the largest unsupported roofs in the kingdom) was in an unsafe state; and builders and architects advised not merely an examination, but even the removal of the roof. The thing, however formidable in idea, was safely done. The allegorical painting which covers the ceiling was carefully peeled off; so carefully and successfully, that on its being replaced no mark of injury was discernible—as, indeed, its present perfect condition shows. The striking effect on entering the building when entirely open to the sky could be compared to nothing but to that of an ancient amphitheatre, so that, when the work of reconstruction began to exclude the blue sky, it excited a feeling of regret for the loss of an effect never again to be enjoyed. On the plea of lightening the roof of the theatre, the circular windows (richly ornamented and partly gilded, which, to the number of ten or twelve, relieved and all but concealed the old roof) were unscrupulously removed, on the substitution of the new roof. Without pretending to architectural knowledge, I confess my eye still regrets the old ornamental roof, and is hurt by the entire exposure of the new one. The old cupola or lantern was (in the judgment of many) more elegant, with streaming gilt flambeau, and more centrally placed than its larger and more conspicuous successor."

The following is the item in the University accounts in 1803 for the work then done upon the pictures:—

"Mr. Wm. De la Motte for cleaning and repairing the pictures of the Theatre Ceiling, 100*l*."

The smallness of this amount is probably due to the cost of removing and replacing the ceiling having been included in that of renewing the roof, the actual work upon the pictures themselves being thus rendered comparatively simple.

Finally, in 1826 a third restoration of some kind was carried out, of the details of which no record can be found except an item of 70*5**l*. to "Dixon, decorative painter," in the theatre accounts for that year. Such a large sum can scarcely refer to anything but the ceiling paintings.

These paintings have a special value and interest as being part of Wren's original design for the theatre,‡ no doubt having been ordered and paid for by Archbishop Sheldon himself,§ and they were certainly there when the theatre was inaugurated on July 9, 1669. The design is thus explained by Stephen Wren, "*Parentalia*," p. 336:—"In imitation of the theatres of the ancient Greeks and Romans, which were too large to be covered with lead or tile, this by the painting of the flat roof within is represented open." (Compare the account (*supra*) of the effect of the unroofing in 1802 as described by Mr. G. V. Cox.)

The curators hope that, acting under the best advice attainable, they may be able to adopt means by which the progress of any further injury to this very interesting work may be effectually prevented. They also hope that besides this the removal of the inevitable decayed varnish may, as Professor Church anticipates, "brighten and enrich the ceiling to an unexpected degree," and that at least the effect produced by the painted ceiling may again more nearly resemble that which was intended, and no doubt produced, by the original artist.

#### Report for 1901.

The curators are glad to be able to report the completion of the restoration of the ceiling pictures under the advice and direction of Professor Church. They wish to express once more their obligation to him for the help which he has most

kindly and freely given them. It should be distinctly understood that the suspicious word "restoration" has included nothing but cleaning and varnishing and, in some cases, rebacking the pictures. There has been no repainting whatever, except where small patches of paint had actually fallen off, leaving the canvas bare. The condition of many of the pictures, when examined closely, turned out to be far worse than had been suspected, and it is certain that if the work had been delayed for a few years there would have been nothing left to restore in the case of some of the panels. For, in spite of the somewhat rude precautions that have been taken in many years with a view to catching the water which frequently came through to the floor above the pictures from certain parts of the roof and especially from the base of the cupola, the injury of the pictures from this cause was in constant operation. Further, it was found that the backs of the pictures were covered with shavings, sawdust, old nails and other rubbish which, at the time of the construction of the floor, had been thus disposed of by the workmen, presumably to save the trouble of their removal in a proper way. By this means the evil effects of the frequently recurring moisture were much intensified.

In consequence of the discovery that the mischief was far more extensive than had been suspected, the originally estimated cost had to be largely exceeded, and it amounted in the end to about 1,150*l*. To this there has to be added the cost of the erection of the scaffolding and its hire for ninety-two weeks which exceeded 200*l*. Hence the total cost has been about 1,400*l*.

Mr. Nairn, by whom the work was mainly executed on the part of Messrs. Morrill & Son, has very kindly placed at the service of the curators a detailed report of the condition of the pictures and of the work that has been carried out upon them. This will be found printed at the end of the present report of the curators. The curators wish to express their thanks to Mr. Nairn for this valuable and interesting record.

It was obviously important to adopt measures entirely to prevent any further injury of the same kind occurring in the future. The following steps have therefore been taken:—

1. The cupola, which ever since its erection early in the last century (unfortunately on a much larger scale than in Wren's original design), has been a constant source of trouble and expense, being far from water-tight, has been thoroughly overhauled and strengthened, especially at the parts of junction with the roof. The cost of this has been nearly 180*l*. It is now scarcely possible for any serious leakage to occur, or indeed any at all, unless in exceptionally violent storms.

2. The floor above the pictures has been covered with linoleum with closely fitted and water-tight joinings, so that any accidental leakage should ever occur it would be arrested before reaching the pictures.

3. The slated portion of the roof was found to be in a bad state, and the overlap of the slates insufficient to securely exclude wet. Thus occasional repairs were inadequate to meet the case. The whole roof has, therefore, been renovated and reslated at a cost of about 450*l*.

Occasion was taken of the necessity for removing the pipe of the organ to have the instrument cleaned throughout (this not having been done since its erection in 1877), and also to introduce some modern improvements in the pedal action and other details. This work amounted to 180*l*.

The cost of all these and of other minor improvements including the addition of a lavatory, has involved an expenditure in the last two years of about 2,400*l*. This has been defrayed from the accumulated fund arising from the generous and far-sighted bequest, about 100 years ago, of Dr. Wills, warden of Wadham College, whose experience as curator of the theatre impressed upon him the value of such a reserve to meet occasional and exceptional expenditure. But for this fund it would probably have been impossible to carry out the work which were absolutely necessary if these pictures, forming part of Archbishop Sheldon's original gift and of Sir Christopher Wren's original design, were to be saved from inevitably perishing.

#### Notes of Observations during its Restoration, 1899-1901, by Mr. R. J. Nairn.

1. The painted ceiling measures 72 feet by 64 feet, and is composed of thirty-two canvas sections.

Each section is stretched across and fastened to a wooden frame. When the ceiling was painted in 1664-69, canvas was not manufactured very wide, so the width of each section was made up by joining several pieces of canvas (24 inches wide) together at their edges. The sections are screwed to a framework corresponding in shape to the gilt-rope pattern moulding which hides the joints of the sections.

2. This framework is in turn fastened to and suspended from large beams of timber which rest on the walls of the building. The oak flooring above the ceiling is supported by oak joists resting on those beams. There is a space of about 4 feet between the floor above and the painted ceiling.

\* The work of the Press was conducted on the floor above the painted ceiling of the theatre until 1714; after that, at the old Clarendon building in Broad Street. In 1831 it was removed to the present Clarendon Press. This explains the division of the bequest of Dr. Wills (*supra*) equally between the theatre and the University Press.

† The novel and very ingenious designs of these windows as well as of those "round windows below" (now also removed) "being contrived to admit Air in foul Weather, yet not one Drop of Rain," is minutely described in Wren's *Parentalia*, p. 336.

‡ The Sheldonian Theatre is said (Elmes, *op. cit.* p. 131) to have been the first public building erected by Wren. His model and design were exhibited to the members of the Royal Society on April 29, 1663, by whom they were much commended.

§ There is, as might be expected, no entry of any payment for them in the University accounts of that period.











acing of letters. The two lines below show words spaced by e two methods. The upper line is made exactly according Professor Jacoby's proportions and spacing. It can be ticed that in it the masses of white between the letters are proximately equalised, while in the lower line the letters emselves are so evenly distributed that no two appear to and closer together or further apart than any other two.

SIDE ELEVATION  
SIDE ELEVATION

By knowing the exact widths of the letters and the exact aces between them, a draftsman, engraver, sign-painter, ultor or designer can lay off words precisely the length sired, and know they will be all right without spending time d effort in sketching them in beforehand and changing them. his is especially desirable in lettering maps.

In practice the measurements may be laid off on a piece of iff, thin paper, very close to its edge. It can then be moved out until the word occupies the right position on the drawing. hese marks can be projected from the edge of the paper or icked through to the drawing.

A very close rule for determining the length of a word efore laying it off is, Multiply all the letters by 8 and all the aces by 4.

The relations between the widths and spacing of the letters eing determined throughout the alphabet, they may be varied many ways, provided the variations are uniform. When it desired to spread out the letters and make the words longer, ny unit may be added to the spaces given in the table. The ea is the same as that of printers in spacing type when they ert blanks of equal width between the letters. If it is esired to make a word shorter, the letters can be crowded ore closely by measuring their widths by one scale and the aces between them by a scale with slightly closer divisions.

There is another method, which is derived from the evious table, and which avoids the trouble of adding the spacing s given in it. By this second method the spacing between all e letters is laid off exactly equal. The measurements, how- ver, are not taken from the extreme widths of the letters, but re laid off from points near the left of each letter (except J.). he alphabet given below shows the points from which the pacing is measured, and under each letter is given its width etween these equidistant measurements. The extreme width f each letter is the same as that given in the previous table. his uniform spacing may be any distance which is not less an three-sevenths the height of the letters.

A	B	C	D	E	F	G	H	I	J	K	L	M
16	16	16	16	16	16	16	16	16	16	16	16	16
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
17	16	16	16	16	16	16	16	16	16	16	16	16

This method is best for very wide spacing on account of the apidity with which the words can be laid off; and as slight effects in wide spacing are not very apparent, the width of the etters between the spacing may be measured by the eye and ly their extreme widths measured accurately.

From numerous specimens measured and tests made, it was ound that the spacing is most pleasing in appearance when he uniform distance is some fractional part of the height of he letters, as one-half for close spacing; four-sevenths, three- ifths, or five-eighths for medium; and two-thirds, five-sevenths, r three-fourths for wide. In the following examples the stems f the letters are one-seventh of their height; the spacing in he upper line is three-sevenths, in the lower line five-sevenths, nd in all the examples shown elsewhere it is three-fifths the eight of the letters.

CLOSEST SPACING  
WIDE SPACING

When a definite length is given for a word, the spacing etween the letters can be found by multiplying all the letters y 6 and dividing the remaining distance by the number of apaces.

The roman small (lower case) letters were investigated by he same method—i.e. quite a number of the best examples ere selected, and every detail of each letter was carefully easured and averages found. The results are shown in the ollowing alphabet. Under each letter is given its width etween the equidistant spaces, as explained in the last table f capital letters.

The extreme width of each letter was found to be as ollows:—i, l = 1 $\frac{3}{4}$ ; t = 4 $\frac{3}{8}$ ; f, j, r = 6 $\frac{1}{2}$ ; g, n, h, s, u = 8 (g has

a	b	c	d	e	f	g	h	i	j	k	l	m
16	17	16	17	16	17	16	17	16	17	16	17	16
n	o	p	q	r	s	t	u	v	w	x	y	z
16	17	17	17	16	16	16	16	16	16	16	16	16

width of top, including ball, 11 $\frac{1}{4}$ ; width of bottom, 10); a, v, y, x, z, k = 8 $\frac{1}{2}$ ; b, d, p, q = 9 $\frac{1}{8}$ ; e, c = 9 $\frac{1}{2}$ ; o = 10; w = 13 $\frac{1}{2}$ , and m = 14 $\frac{3}{8}$ .

The height of the short letters is taken as 10, and the tall ones was found to be 16, which is the pleasing proportion of 5 to 3 between the lower and upper parts of the tall letters.

In slanting letters, the average slant was found to be the proportion of 2 to 5 between the sine and the cosine of the angle of slant. The proportion of 3 to 8 gives a slightly less slant, while 3 to 7 gives one which is slightly greater.

There are numerous optical deceptions in the alphabet which must be overcome in order to make the letters appear correct. They are as follows:—

A, and all letters with round tops, like O and S, must be about one-fortieth higher than the other letters, or they will appear to be too low.

C, G, O, Q, S, and the curved parts of B, D, P and R, must have the widest part of the curve about one-eighth greater than the straight stems, or it will appear too narrow.

B, E, F, H, R and S must have the middle part slightly above the centre, or it will appear too low.

B, C, E, K, S, X and Z must be narrower at the top than at the bottom, or they will appear wider.

E, N, S and X must have the bottom spur slightly larger than the top one, or it will appear too small.

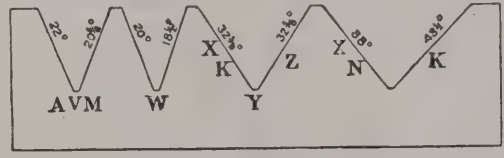
The fine horizontal lines at the bottom of the letters must be slightly heavier and longer than those at the top, or they will appear lighter and shorter, and the little curved lines which fill in the angles at the bottom of the letters must be almost horizontal, while those at the top must be very small and almost vertical.

A, N, V, W, and the left half of M, must lean about three-fourths of a degree to the left, or they will appear to lean to the right, and they must have the pointed ends of the oblique stems swelled slightly, or they will appear sunken.

X must have a slight offset in the fine cross line, or the line will not appear straight.

K must have the lower part of the fine oblique line bent down very slightly, or it will not appear straight.

A piece of transparent celluloid, about one-twentieth of an inch in thickness, can be cut in the shape shown below. It



not only facilitates the work, but it greatly lessens the effort required to make the letters accurate. These angles were found by carefully measuring about two hundred well-formed letters with a protractor and taking the mean of these measurements for each angle. They are given from a vertical line. In the corresponding small letters (except y) the angles were found to be slightly greater.

Similar devices are sold by manufacturers of drawing instruments, but in them the angles have not been accurately determined and they do not give good results.

GREEK MARBLES.

A REPORT on the mineral resources of Greece, by Mr. Percy Bennett, commercial attaché to His Majesty's Legation at Athens, contains the following account of the various marble quarries:—

The marble wealth of Greece, so extensively worked by the ancients and especially by the Romans before the Italian quarries were opened up, lay neglected for many centuries. It is only during the last decade that any serious attempt has been made to develop this great national industry.

The green marble of Tinos, falsely put on the market as the genuine "Rosso Antico," and the "Rosso Antico" of Laconia were worked in a small way half a century ago by a Bavarian sculptor named Seigel, who settled down in Greece for that purpose. On the death of Seigel the property was purchased, and the business in these two marbles carried on



by a German named Kloebe. At Kloebe's decease in the eighties the estate went into bankruptcy, and his executors tried in vain to find purchasers for the quarries.

The next steps taken to reopen other Greek marble quarries were made by William Brindley, an Englishman who had been searching for many years for the genuine "Verde Antico," and who at last in 1894 discovered the original quarries of this, perhaps the most valuable marble of antiquity, between Larissa and the Vale of Tempe in Thessaly. Brindley thereupon formed a company, called the "Verde Antico Marble Company, London," for the working of these famous quarries, from which it may be mentioned were extracted the pillars of the new Roman Catholic Cathedral in London.

This marble is brought down by rail to Volo, and thence either shipped to the central dépôt at Leghorn or direct to the purchasers. It is the genuine "Verde Antico" in different shades, some dark and some light. In all probability the large antique columns of the church of San Sophia, Constantinople, the large columns in the Neapolitan and Roman Museums and the rich decorations in St. Mark's, Venice, came from these quarries.

In 1896 an English company was formed under the name of "Marmor, Limited," with a nominal capital of 300,000*l.*, with central offices in Finsbury Square, London, for purchasing, renting or working the various quarries of white or coloured marbles throughout Greece.

The Pentelikon quarries near Athens owned by this company are of world-wide fame, and produce the celebrated blue and white marbles. The old quarries on this mountain, from which the columns of the Parthenon and other buildings of ancient Greece were extracted, still remain and are worked in a small way; but the most extensive extraction is now carried on at the western end of the south side of the mountain and on the north side. The Pentelikon marble is principally white of various qualities, but there is also a good deal of dark blue marble called "Melana" or ink marble. To work these quarries the company has laid down railways, inclined planes, wire-sawing machinery and sawing and polishing sheds. An interesting contract to which the "Marmor Company" is committed calls for 900 tons of Pentelikon marble per month for three years.

After Pentelikon, the largest number of quarries are found in the island of Skyros, where the alabaster white, white tinged with violet, white tinged with yellow, and the variegated red and white marbles are all extracted. These marbles, however, are of exceedingly fine grain and are difficult to obtain in large blocks.

The old quarries of Seigel and Kloebe in Tinos have been purchased by the company and are being worked by steam machinery. The Seigel and Kloebe quarries in Laconia have also been purchased by "Marmor, Limited," but at the present time are not being worked owing to the unfriendly attitude of the peasants. This marble, which is perhaps as valuable as the "Verde Antico" of Thessaly, is found in layers in the mountains far from the sea. At intervals of 10 to 15 inches white patches appear, and the good marble of the deep red pigeon blood colour is taken from between the two veins of white. It is proposed to work these quarries after the manner of coal-mining by following the strata underground.

Perhaps the largest quarries of antiquity, larger even than Pentelikon or the "Verde Antico" in Thessaly, are the Styra quarries dotted round the southern end of the island of Eubœa (Negropont). Of all coloured marbles this is most in vogue at the present moment. It has the great advantage that it can be extracted in almost any lengths, and pillars and other decorations of this marble have recently been supplied for the Royal Academy, the Roman Catholic Cathedral at Westminster and the Belfast Town Hall, the contract for the latter being the largest ever taken out for marble decoration. The quarries of this marble are owned partly by "Marmor, Limited," and partly by Mr. Brindley. The quarries in the island of Paros have not yet been satisfactorily reopened. From the Parian marble the Venus de Milo in the Louvre was carved, but it is believed that some of the veins have already been worked out. These quarries are owned partly by "Marmor, Limited," and partly by a Greek company, which, however, is in course of liquidation. Nearly all the other known marble quarries in Greece are owned by "Marmor, Limited," and are intermittently worked by them. This company extracted:—

Year.	Quantity. Cubic metres.
1896-97 . . . . .	756
1898 . . . . .	1,472
1899 . . . . .	2,275
1900 . . . . .	3,016
1901 . . . . .	4,355

Of the 4,355 cubic metres extracted in 1901, 857 cubic metres were exported, 930 cubic metres were delivered for use in Athens, 1,625 cubic metres were delivered for the Stadium, and 943 cubic metres remain at the quarries.

## TESSERÆ.

### Stothard Studies.

WHEN a student at the Academy, Stothard never down to draw for a long period from a single figure and disapproved of the tentative practice of rubbing out and groping after correctness. He made quick but careful lines in pen and ink, changing frequently his position, and producing many drawings of the same figure. Truth of outline he felt to be first necessary, after which light and shade would be easily studied. Like Hogarth, he never painted from a living model. A friend, who was painting an historical picture and wished to have his opinion of it, asked Mr. Al. Stothard to bring his father while the living model was standing. On being told that he never used a model, "Then stands alone," was the answer; "I can now understand it is all Stothard's works are so graceful." He had acquired the art of storing images in his memory. In seeking the images, when not at his easel or his books, he was ever active and busy. Faces and forms he met with in the streets or in society were treasured with the same care that Turner treasured passing effects of clouds and shadows. When Boydell, Lord Mayor, asked him to a ball at the Mansion House, he took his sketch-book, and perhaps the citizens of "Cheape," the "Canterbury Pilgrims," are reminiscences of that evening. His country rambles were frequent; as early as 1777, visiting with his mother her native town of Shrewsbury, he made sketching excursion into North Wales. Such tours he afterwards made, and used his sketches for the beautiful backgrounds of his pictures. Having to paint a sylph, he said to a friend that he hardly knew how to paint such a being in fancy. "Give a butterfly's wing, and you have it," was his remark. "That I will," he replied; "and, to be correct, paint it from nature." He went to the distant fields and brought home a peacock butterfly, and on an accident happening to a portrait before it was finished he went again and brought a tortoiseshell species. Astonished at the beauty and variety of the combinations of colour, he thenceforth became a lover and collector of Papilionaceæ, and used to tell how much he owed to their "study in the art of colouring." Of flowers and plants he was an ardent admirer for the purposes of art, and delighted to ramble among the fields or hedgerows, and on the spot copy the wild plants which arrested his notice. When he could not be out of town, he used to go in the morning to Covent Garden, and bring home any flowers to paint which struck his fancy. These flower sketches proved of great use in a style of work in which he had much employment—designing patterns for plate and ornamental jewellery. Even in shops he found useful studies, and he used to walk sometimes on purpose to note the effects of the rich silks displayed in some mercers' windows. The draperies of many of his female figures are much admired, and were doubtless the results of these frequent observations. In all his works, whether the most important or the most trifling, he endeavoured to attain whatever correctness study could command. When illustrating Shakespeare he took his dresses and armour and everything historical from the authority of ancient monuments and manuscripts, and spared no effort to acquire the correctest knowledge on his subjects. And in the same spirit he used to take sketches from all illustrated books of voyages and travels, that they might be of use when his scenes happened to be laid in those countries.

### Orientation of Roman Churches.

The question of orientation is of great interest in Roman architecture. It has often been assumed that the Roman use was to orient churches always to the west; that is, to have the apse and altar at the west part of the building, and the chief entrance at the east end. This way would be the direct reverse of our own custom—which is to always have the chief entrance at the west and the choir and altar at the east end of a church—for the circumstance that it was the custom to turn the altar round, as it were; in other words, for the celebrant to stand behind the altar with his back to the apse, and looking over the altar towards the people in the nave. In this case, if the basilica orientated west, the priest and altar would obviously face, or orientate, correctly. Although correct orientation was a law of the ancient Church generally, yet it could not be made an essential rule in Rome for the very same reason that explains faulty orientations in some of the old cities of Northern Europe, viz. that free sites could not always be had, and that the lines of existing streets had to be followed. Many of the most ancient churches will be found to lie parallel with, or else at right angles to, existing streets which we know to occupy the same directions as in ancient Rome. Examples are: St. Cesareo, St. Clemente, St. Giorgio in Velabro, St. Giovanni in Portam Latinam, St. Maria in Trastevere and St. Lorenzo in Pane e Perna. But where large sites were probably cleared, then, as in St. Peter's and St. Giovanni Laterano, the basilicas were made to orientate west while their altars orientate east; that is, the orientation of the altar was preferred to that of the church. Another thing to be remembered is the practice



difficulty occasioned by the peculiar basilican arrangement. The shop and priest being in the apse behind the altar would have been in a great measure cut off from the Liturgy if the altar had not been made to orientate differently from the church. The natural way, considering their locality, was to orientate the altar so that the celebrant should stand with his back to them. This accordingly was done, and the people were enabled to witness the eucharistic service, by the altar being easily raised, and having no superaltar or "altar-piece" of any kind to obstruct their view. It will simplify one's thoughts on this subject to remember that the basilican arrangement very much differs from our own in this, that the choir and altar are inverted. If in a basilica one could turn the apse and altar into a round, the result would be our own arrangement; the magnificent choir of course making way for the holy doors, and the bishop's seat being placed on one side. The impossibility of orientating both altar and church rightly, so long as the basilican arrangement was retained, was one great reason for its arrangement being discarded. In the churches of Ravenna, Torcello and St. Miniato, the altars are made (at least now) to orientate like the churches; and in Rome itself churches built at a later date, such as St. Maria del Popolo, St. Maria sopra Minerva and SS. Vincenzo ed Anastasio are orientated rightly both in themselves and their altars.

### Thorwaldsen the Sculptor.

Thorwaldsen's career commenced in poverty and darkness; when the world came to know him he was famous. In his early years no one had an interest in the fate of the poor ill-dressed and lank-haired boy who helped his father—a third or fourth-rate carver and frame-maker at Copenhagen—to execute his clumsy figure-heads and "gallions," or who carried a tool-basket after the drunken old artisan, when that person went for some job-work to the houses of the wealthy merchants and auctioneers of the Danish capital. The boy's talents, indeed, attracted some attention, and it was remarked that by his assistance old Thorwald succeeded now and then in carving a real lion for some ambitious merchant captain; whereas, before young Bertel Thorwaldsen grew up, the clownish old fellow could only carve lions and made them French poodles. But what of that? The world as it goes is far too busy with its own affairs to care much for the precocious talent of a poor artisan, especially if he have only his talent to rely on, and if, like Bertel, he wants assurance, fluency of speech, and that mixture of boldness and humility which the patrons of art value more than even art itself. Hence it is no wonder that Bertel's way of life the world could not keep pace with the development of his genius. His youth passed unnoticed in his father's workshop and the drawing school of the academy, and the little that is known of the boy Bertel is chiefly derived from a few anecdotes told his friends and partly from certain documents which the Copenhagen Academy preserved, not because it attached any particular value to them, but merely because the rules required all such papers to be filed and registered. These documents show that Bertel Thorwaldsen, after gaining the three highest prizes for drawing, composition and modelling, had to petition for a wretched pittance of 20*l.* per annum to assist him in his studies, and that afterwards the same course of humble petitioning was gone through for the sake of the "travelling stipend" of 80*l.*, to which successful young artists were entitled. The grant of this "stipend" concludes the young artist's history in his own country. Scarcely a trace is left of his career between the day of his departure from Copenhagen and the day on which his first independent works revealed him to the astounded world (that is to say, to the small part of the world which cares for such matters) as a rival of Canova.

### Lorenzo Ghiberti.

Besides his excellence as a sculptor, Lorenzo Ghiberti has other titles to fame. Not only did he design the window for the cupola of Santa Maria, Florence, but he exercised so marked an influence on art in general that we are sure to find his name wherever a progress is visible. The bas-reliefs on the bronze doors of the Baptistery also form an epoch in the history of painting, or at least in that of design, which he raised at once to a degree of elegance and purity to which no painter before him had approached: indeed Raphael himself did not disdain to profit from his manner of draping, grouping, and arranging his figures; and there is cause to regret that the Florentine school did not avail itself of his inspirations in reference to all others. It is to Ghiberti that we are indebted for the first history of art in Italy, a noble and patriotic undertaking, for the execution of which he united every possible advantage, since, on the one hand, the materials for it abounded everywhere, either in the archives or in the monuments, the greater number of which were still perfect; while on the other, he found himself placed exactly on the limit which divided the old school from the new. Unfortunately, a fatal prepossession in favour of ancient art made him attach such an importance to the authority of Pliny and Vitruvius that the extracts from these two authors fill the greater part of his manuscript, whilst

the history of modern painting only occupies a small number of pages. The sculptures of Ghiberti laid the foundations of a progress which was realised in the works of his disciples, who, like himself, had served their apprenticeship in the workshops of the goldsmiths before they assisted him in giving the finishing touches to the doors of the Baptistery. The most skilful of his coadjutors was Masolino, who understood the distribution of light and shade better than any of his predecessors, as may be seen in the famous chapel of the Carmine, where he began at an early age to paint the history of St. Peter, which death did not permit him to complete. The work was continued by Masaccio, who interests us still more both on account of his early death, which happened in his twenty-sixth year, and also from the more lasting and universal admiration he has excited.

### Fra Angelico.

It is a curious and instructive circumstance and one which illustrates the unforeseen bearings of one branch of knowledge upon another, that the surest indications of the approximate dates of Fra Angelico's paintings (where external testimony is wanting) are to be found in certain accessories, and more especially in the architectural setting which he so often introduces into his pictures. Once this key to the problem is grasped, it becomes a comparatively easy matter to trace, for instance, the progress from the Gothic framework of his earliest *Annunciation* to the Corinthian columns of his Cortona picture of the same subject, from these again to the imperfect Classical entablature of the Madonna di Annalena, and thenceforward to the full entablature with cornice, festooned frieze and architrave of the Madonna di S. Marco. It is not merely that the points of difference mark an advance from an earlier to a later period, but in more than one case the actual sculptural prototypes of Fra Angelico's canopies, which are in fact works of Brunelleschi or of Michelozzi, can be positively dated, and thus a *terminus a quo* can be established, before which the particular paintings cannot be placed.

### Irish Romanesque.

The introduction of Romanesque architecture into England is marked by the erection of Westminster Abbey by Edward the Confessor in 1066, portions of which original building may still be seen in the Canons' Garden of the Abbey. Fifty years before this date the little church of St. Caimin of Iniscailtra was built by King Brian Boru, and this building marks the transition to the enriched round arched style of Ireland. It appears that at this period in England a primitive Romanesque style already prevailed, which, though it has been termed Anglo-Saxon, was of purely Italian origin. This early style modified the character of that which in the reign of Edward the Confessor came as a fresh importation from Normandy, and to this source may be traced whatever distinctive features separate English-Norman from that of Normandy itself. In Ireland, as we learn from such buildings as Maghera, Banagher and Temple Martin, a distinct style also prevailed at the time in which the Romanesque of Normandy was introduced there. Rude as many of its examples are, this primitive architecture still had sufficient vitality and character to modify the incoming Romanesque and to live on, manifesting itself notwithstanding the fresh forms engrafted upon it. The style in Ireland of the eleventh and twelfth centuries is an Irish-Romanesque style, and the peculiarities by which it is distinguished are "native traditions handed down from earlier native buildings," such as the primitive erections of the fort builders and of the early Christian missionaries, characterised by the horizontal lintel or entablature, a style to be seen in the first buildings of all countries, and which may be classed as belonging to the architecture of necessity. The Romanesque churches of Ireland are remarkable for the diminutive size and simple ground plan. They are characterised by the lingering of horizontal forms and incorporation of such in the round-arch style, the retention of the inclined jambs of the primitive doorways, their rich and delicate decoration and the constant use of certain ornamental designs, characteristic of the late Celtic period, which had been common to Britain and Ireland before the Roman occupation of Britain.

### Individuality in Art.

Industry alone can only produce mediocrity, but mediocrity in art is not worth the trouble of industry. Genius, great natural powers, will give industry and ardour in the pursuit of their proper object, but not if you divert them from that object into the trammels of commonplace mechanical labour. By this method you neutralise all distinction of character—make a pedant of the blockhead and a drudge of the man of genius. What, for instance, would have been the effect of persuading Hogarth or Rembrandt to place no dependence on their own genius, and to apply themselves to the general study of the different branches of the art and of every sort of excellence, with a confidence of success proportioned to their misguided efforts, but to destroy both those great artists? "You take my



house when you do take the prop that doth sustain my house." You undermine the superstructure of art when you strike at its main pillar and support, confidence and faith in nature. We might as well advise a person who had discovered a silver or a lead mine on his estate to close it up, or the common farmer to plough up every acre he rents in the hope of discovering hidden treasure, as advise the man of original genius to neglect his particular vein for the study of rules and the imitations of others, or try to persuade the man of no strong natural powers that he can supply their deficiency by laborious application.

#### Galleries of Sculpture.

At Rome in the eighteenth century Cardinal Albani formed a collection of the finest remains of ancient sculpture that could be procured; and by attaching to him all the most distinguished litterati and the best artists of his day made his palace the resort of all who felt an interest in the pursuits to which he himself was so devoted. Under the auspices of this "Hadrian of his age," as Cardinal Albani has been justly called, Winckelmann produced the first work in which the history of the arts of design had been treated in a learned, philosophical and scholarlike manner; and it has been the model and groundwork of all succeeding and improved works upon the same subject. The popes Clement XII. and Benedict XIV., as well as Clement XIII. and Clement XIV., contributed also to create a feeling for the sculpture of the ancients by accumulating monuments of various kinds in the pontifical palace. To Clement XIV. we are indebted for the foundation of the Museo Clementino in the Vatican, which received such noble additions by the liberality of his successor Pius VI., that the name of the latter pontiff was associated with that of its founder in giving a title to the collection, and a considerable portion of the gallery of ancient sculpture is still known as the Museo Pio-Clementino. Till Pius VI. issued an order to prevent the removal of works of art, the remains of antiquity discovered in Rome and its neighbourhood could be sold and taken out of the country. The Pope, desiring to increase his collection and preserve to Rome whatever could be recovered by excavation, prohibited anything being removed out of his dominions without a special permission. This order procured for his agents the first choice of whatever statues or other monuments of sculpture were found, and the extensive purchases effected by this means soon filled the Vatican with works of ancient sculpture, which, with the additions made by succeeding popes, have made it the most celebrated, as it is the most valuable collection of its kind in the world. The discovery of the long-buried remains of art in Herculaneum and Pompeii led to the formation of a museum of the same kind at Portici, and in bronzes especially the Neapolitan collection is without a rival. Among the sovereigns of Italy who contributed to the revival of design, Leopold, grand-duke of Tuscany, must likewise be included.

#### The English Records.

Whether we consider them in relation to antiquity, to continuity, to variety, to extent, or to amplitude of facts and details, the English archives have no equals in the civilised world, for the archives of France, the most perfect and complete in continental Europe, do not ascend higher than the reign of St. Louis, and, compared with ours, are stunted and jejune; whereas in England, taking up our title (so to speak) from Domesday, the documents, which by the Record Act, the Treasury minute of August 8, 1848, directing the incorporation of the State Paper Office with the Public Record Office, and the Order in Council, are or will be placed under the care of the Master of the Rolls, contain the whole materials for the history of this country, in every branch and under every aspect, civil, religious, political, social, moral, or material, from the Norman Conquest to the present day. Chasms there are, but the only one of importance is that intervening between Domesday and the Great Rolls of the Exchequer, viz from 1088 to 1130; and inasmuch as in the reign of Henry II. we have authentic testimony that scarcely any documents of the reign of the Conqueror, with the exception of Domesday, existed, it is most probable that none were ever framed. And with respect to subsequent periods, though occasionally particular classes of documents may fail us, yet the place of the documents lost or non-existent is always fairly well supplied by others affording information nearly equivalent. It is needless to state that the Public Records, accompanied by the State Papers and Government archives, now united to the department of the Public Records, constitute the backbone of our civil, ecclesiastical and political history; but their value is equally great, though as yet not sufficiently appreciated or acknowledged, for the investigation of those special and collateral subjects without which the mere knowledge of public or political affairs affords but a small portion of the information needed for elucidating the mutations and progress of society. The real history of the Courts of Common Law and Equity, nay of every branch of jurisprudence, save and except the statute

law, has never yet been written, and so far as respects the earlier eras, the standard work first placed in the hands of the legal student is a congeries of errors, equally with respect to our ecclesiastical, our political and our legal institutions. The statistics of the kingdom in every branch or head of inquiry—revenue, expenditure, population, trade, commerce, or agriculture—not one of which has been treated otherwise than imperfectly and preparatorily, can from these sources be investigated with marvellous satisfaction and accuracy. In some respects no portion of their contents will be found more interesting than those transmitted from the Treasury, of which the existence even can scarcely have been said to have been known. For naval history, in like manner, the Admiralty documents are of the greatest importance. No less useful are the State Paper Office, Government Papers, records and archives for the exploitation of special subjects of research. The documents afford also untouched mines of information relating to private history of families.

#### GENERAL.

**The Senate of Dublin University** have conferred the honorary degree of D.Litt. on Professor W. Ridgeway, Professor of Archaeology in the University of Cambridge.

**Mr. Alfred Waterhouse, R.A.**, has given 100*l.* towards the national memorial to Queen Victoria.

**The Contract** for the third section of the Paris underground railway has been let, the amount being 17,000,000 francs. The line will be constructed under the Boulevard des Capucines, the Place de l'Opéra, and the Rue de Quatre-Septembre.

**Mr. Robert Burton Buckley**, chief engineer and secretary to the Government of Bengal in the Public Works Department, was invested by the King on Monday with the Order of the Star of India (C.S.I.).

**Mr. George Frampton, R.A.**, has been commissioned to execute the monument which is to constitute the Lee memorial to Queen Victoria, and which includes a statue of his late Majesty.

**M. Georges Becker** has completed his painting which represents the visit of the Emperor and Empress of Russia to the Hôtel de Ville, in Paris, in October 1896. It is to be placed in the Imperial Palace, St. Petersburg, and a replica to be executed for the Paris Municipality.

**A Committee** has been formed to present to the St. Deiniol Library, at Hawarden, a statuette in silver of the late Mr. W. E. Gladstone, by Signor Raggi, whose Gladstone statue at Manchester was recently unveiled.

**M. E. Bénard**, architect, has been appointed Professor of Elementary Architecture at the Ecole des Beaux-Arts, in the place of the late M. Coquart.

**Mr. David Robertson, B.Sc.**, lecturer in electrical engineering at the Bradford Municipal Technical College and formerly assistant lecturer at the Glasgow and West of Scotland Technical College, has been elected to the vacant chair of electrical engineering in the Merchant Venturers' Technical College, Bristol.

**M. Ernest B. Michel**, portrait painter, died at Montpellier at the age of sixty-nine. M. Michel was conservator of the Fabre Museum at Montpellier, honorary director of the district Ecole des Beaux-Arts, and formerly inspector of instruction in design.

**The Belfast Harbour Board** will shortly invite tenders for a dock 750 feet long on the county Down side of the harbour, with an entrance of 100 feet in width.

**The Falls of the Rhine at Schaffhausen** are now illuminated at night by means of electricity. The spectacle will take place three times a week during the present month, and afterwards on every evening until September.

**The Late Mr. Thornycroft's group of Boadicea** in a war chariot will shortly be in position on the Embankment near Westminster Bridge. The complete bronze casting will weigh about 12 tons.

**The Baths at Worthing** are to be improved at a cost of about 5,000*l.*

**The Metropolitan Asylums Board** have forwarded complete drawings, and a detailed estimate of cost amounting to 3,779*l.* 18*s.* 3*d.*, of the proposed additional staff accommodation at the Caterham Asylum to the Local Government Board for formal approval.

**The Court of Appeal** decided on Wednesday that Drury Lane Theatre was not to be considered as a "factory" under the Workmen's Compensation Act.

**A New Union Workhouse** is to be built at Abergavenny and Mr. E. A. Johnson, F.R.I.B.A., of that town, has been appointed architect for the work.



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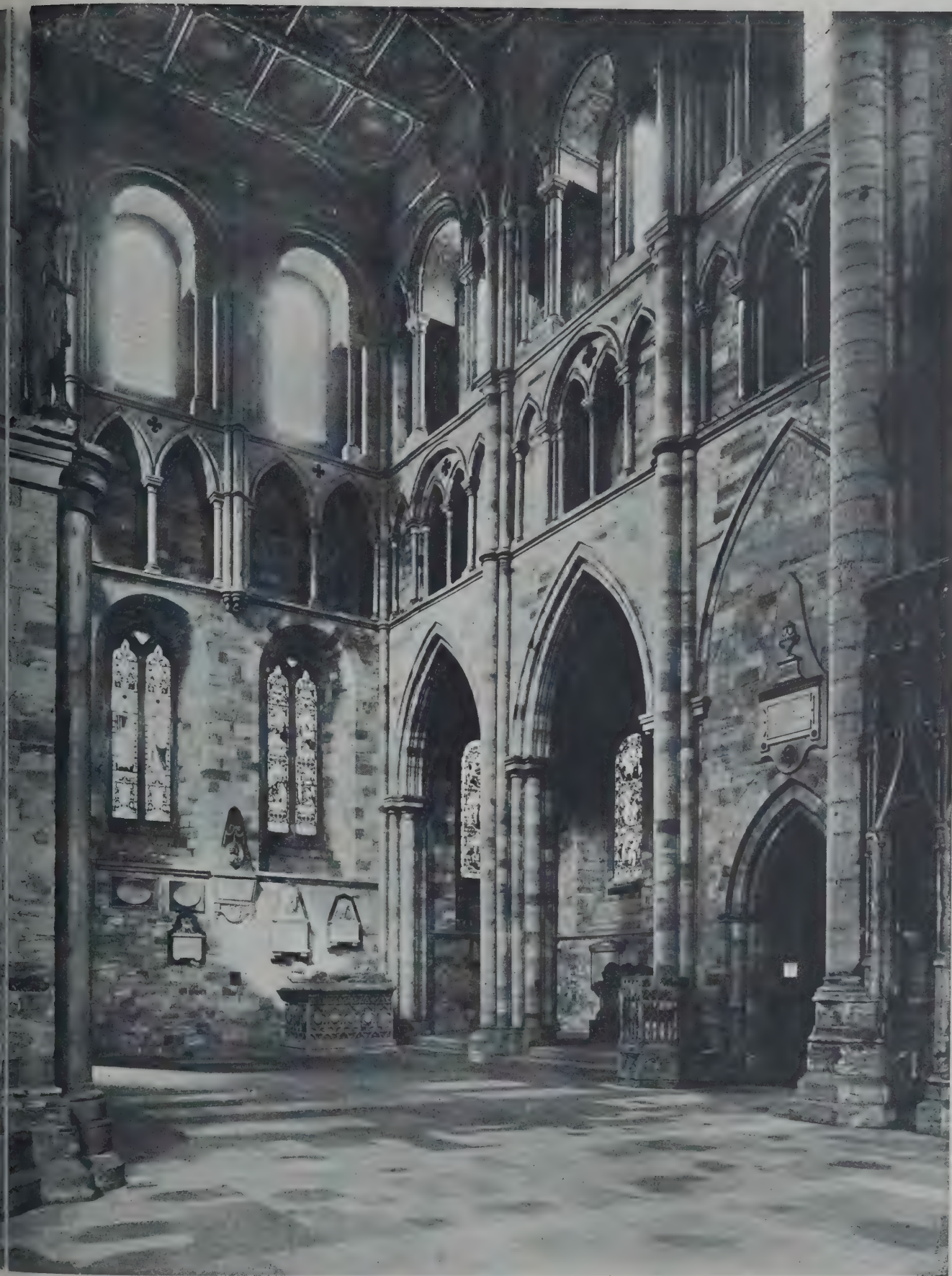


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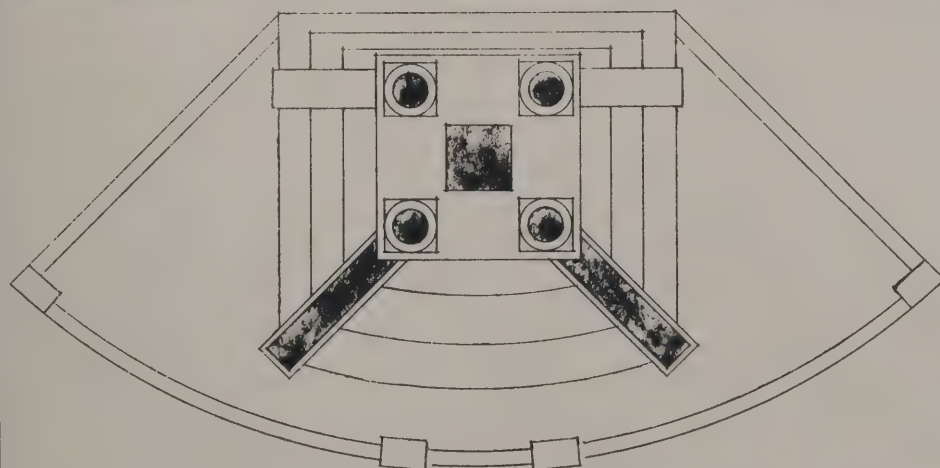




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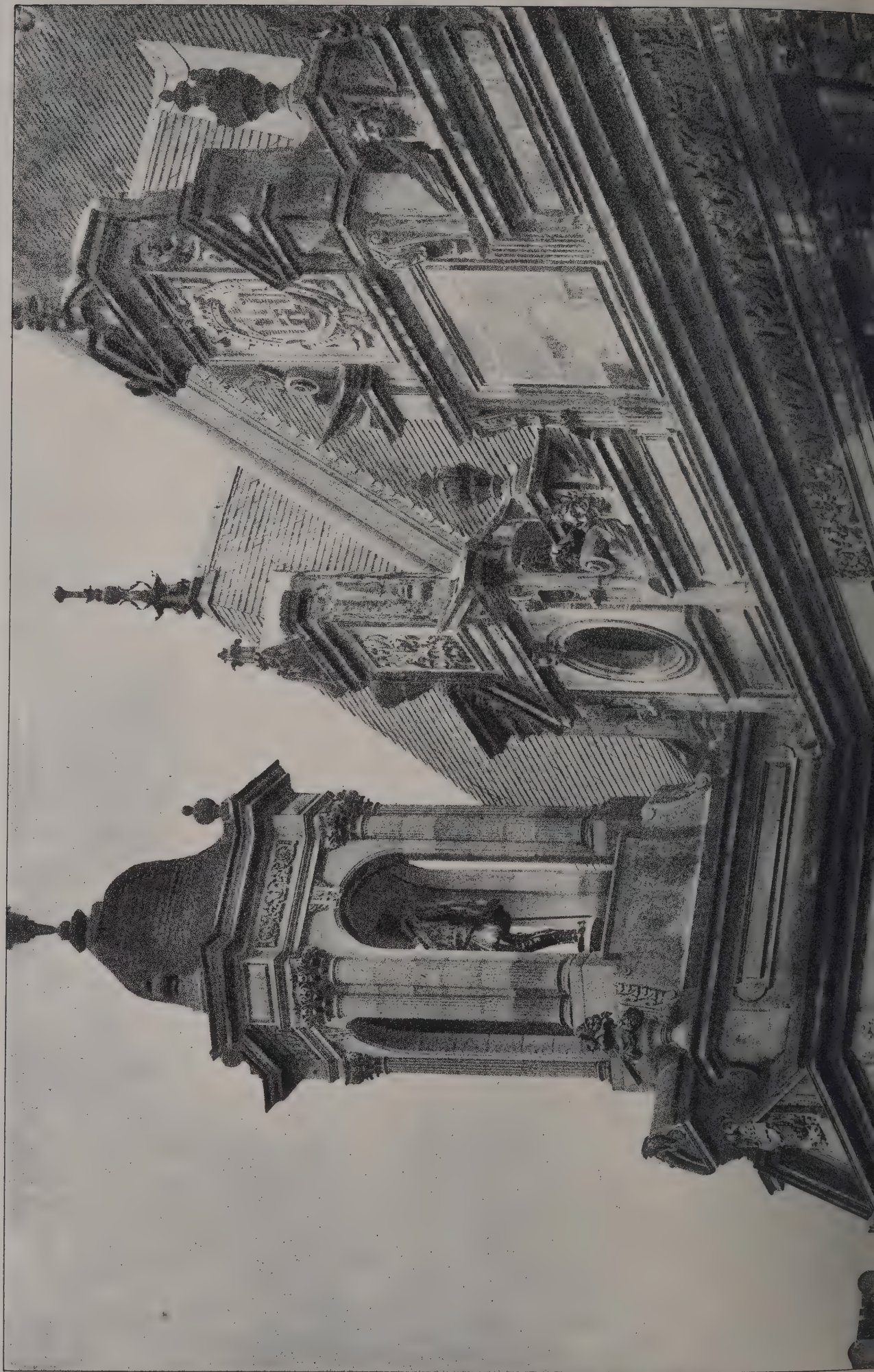
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The Architect, June 6<sup>th</sup> 1902.







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THE

## Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## THE CORONATION.

**THE ARCHITECT will be published on WEDNESDAY, JUNE 25. All Advertisements, Tenders, and Contracts Open intended for insertion in that issue must be received at the Office, Imperial Buildings, Ludgate Circus, not later than 3.30 p.m. on Tuesday, June 24.**

## COMPETITIONS OPEN.

**CREWE.**—June 12.—Designs are invited for new municipal offices and council chamber. The author of the design which is adjudged best will receive a premium of 50*l.*, and he will be appointed to carry out the design; second premium, 25*l.* Particulars will be supplied by the Borough Surveyor, Municipal Offices, Crewe.

**DEPTFORD.**—Aug. 30.—Competitive designs are invited for a town hall and municipal offices. Premiums of 100*l.*, 75*l.* and 50*l.* are offered for the three selected designs. Mr. Vivian Orchard, town clerk, Municipal Offices, 20 Tanner's Hill, Deptford, S.E.

**HARTSHILL.**—June 16.—The committee of the North Staffordshire infirmary and eye hospital, Hartshill, Stoke-upon-Trent, invite designs for a home for nurses at Hartshill, Stoke-upon-Trent. Particulars may be obtained on application to Mr. Albert E. Boyce, secretary and house governor.

**INDIA.**—Nov. 1.—Competitive designs are invited for the erection of a memorial to Her Majesty the late Queen Victoria at Allahabad. A premium of 2,000 rupees will be awarded to the design selected by the committee. Mr. H. Nelson Wright, Indian Civil Service, honorary secretary, Queen Victoria Memorial Fund Committee, Allahabad, India.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Sept. 15.—Designs are invited or new labourers' dwellings to accommodate about 2,500 persons, to be erected on the Hornby Street area. Premiums of 250*l.*, 150*l.* and 100*l.* respectively are offered for the first three selected designs. Particulars will be supplied by the Town Clerk.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**TOTTENHAM.**—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

## CONTRACTS OPEN.

**ACCRINGTON.**—June 11.—For erection of the basement storey of workshop block, excavating and levelling the site and drainage of the Accrington new works, Spring Hill. Mr. Henry Ross, 15 Cannon Street, Accrington.

**ALLERTON BYWATER.**—June 12.—For erection of a dwelling-house in Brigshaw Road, Allerton Bywater, Yorks. Mr. Arthur Hartley, architect, County Chambers, Castleford.

**ALLERTON BYWATER.**—For erection of seven houses, Allerton Bywater, Yorks. Messrs. Garside & Pennington, architects, Pontefract.

**ALLERTON BYWATER.**—June 11.—For erection of a chancel, morning chapel and an organ chamber, and alterations to the present mission-room in Lock Lane, Allerton Bywater, Yorks. Mr. Arthur Hartley, architect, County Chambers, Castleford.

**ASPATRIA.**—June 11.—For erection of a cottage house at Aspatria. Mr. W. Sanderson, 45 Park Road, Aspatria.

**BARNES.**—June 9.—For erection of seven maisonette dwelling-houses, Lonsdale Road. Messrs. F. & W. Stocker, architects, 90 and 91 Queen Street, Cheapside, E.C.

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**BINGLEY.**—June 12.—For additions and alterations to the National schools, Bingley, Yorks. Mr. W. Rhodes Nunns, architect, Market Street, Bingley.

**BIRKDALE.**—June 16.—For erection of a chapel and lodge at the new cemetery, Liverpool Road, South Birkdale. Mr. Albert Schofield, architect, 45 Weld Road, Birkdale.

**BIRKENHEAD.**—June 10.—For erection of a warehouse at Morpeth Dock, Birkenhead, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station, W.

**BISHOP AUCKLAND.**—June 11.—For alterations to premises, South View, Bishop Auckland. Mr. F. H. Livesay, architect, Bishop Auckland.

**BRADFORD.**—June 13.—For erection of a school at Lapage Street. Mr. Thos. Garbutt, clerk, &c., School Board office, Manor Row, Bradford.

**BRIGHOUSE.**—June 13.—For erection of a silk mill with engine-house, staircase, &c. Mr. George Hepworth, architect, 20 Bradford Road, Brighouse.

**BRIGHTON.**—June 12.—For erection of a pavilion at the borough sanatorium, Bear Road, Brighton. Mr. F. J. C. May, surveyor, Town Hall, Brighton.

**BRISTOL.**—For additions to Fishponds Church, Bristol. Mr. E. H. Lingen Barker, architect, 15 Bridge Street, Bristol.

**BRISTOL.**—June 18.—For construction of a relief culvert in Broadweir, from Narrow Weir to Lower Castle Street. Mr. T. H. Yabbicom, city engineer, 63 Queen Square, Bristol.

**BRIXTON.**—June 23.—For converting the baths in Ferndale Road into a technical institute. Particulars at the General Section of the Architect's Department, London County Council, 18 Pall Mall East, S.W.

**BOUGHTON.**—June 9.—For erection of engine and boiler-houses, &c., at Boughton, Notts. Mr. W. B. Starr, architect, 12 St. Peter's Gate, Nottingham.

**BROOMHILL.**—June 20.—For erection of store premises and manager's house at Red Row. Mr. Thos. Tulip, Whinney Hill, Choppington.

**CAMBERWELL.**—June 10.—For erection of a shelter for infectious diseases at the dépôt in Peckham Park Road, Old Kent Road. Town Clerk, Town Hall, Peckham Road, Camberwell.

**CARLISLE.**—June 14.—For erection of five dwelling-houses, Norfolk Road. Messrs. Johnstone Bros., architects, 39 Lowther Street, Carlisle.

**CLAYTON.**—June 12.—For erection of a boiler-house, with seating, &c., at the workhouse, Clayton, Yorks. Mr. Sam Spencer, architect, &c., 344 Great Horton Road, Bradford.

**DARLINGTON.**—June 10.—For erection of banking premises and manager's House, High Road, Darlington, for the North-Eastern Banking Company. Messrs. Clark & Moscrop, architects, Darlington.

**DEAL.**—June 13.—For erection of an orphanage at the convent, West Street, Deal. Plans and specifications, &c., may be seen at the Convent, Deal.

**DEWSBURY.**—June 16.—For erection of a covered market in Corporation Street. Mr. G. Trevelyan Lee, town clerk, Town Hall, Dewsbury.

**DEWSBURY.**—June 11.—For alterations and enlargement of Oakville, Oxford Road, Dewsbury. Messrs. John Kirk & Sons, architects, Dewsbury.

**DEVONPORT.**—June 14.—For the construction of about 1,400 lineal yards of brick culvert, 3 feet by 2 feet, from Ford Valley to the fish pond at Camel's Head, and about 210 lineal yards of 3 feet 6 inch diameter culvert on the fish pond site at Camel's Head. Mr. A. B. Pilling, town clerk, Devonport.

**DONCASTER.**—June 9.—For alterations and additions to house known as Bentley Grange. Mr. Thompson, Bentley Grange, Bentley Moor, near Doncaster.

**DONCASTER.**—June 10.—For conversion of the school-room at the workhouse, Thorne, into an infirmary ward, &c. Mr. Henry Beck, architect, Dolphin Chambers, Doncaster.

**EALING.**—June 19.—For erection of a branch library, West Ealing. Mr. Wm. Ruston, town clerk, Town Hall, Ealing, W.

**EDMONTON.**—June 17.—For erection of schools at Montague Road and Houndsfield Road. Each school has four departments, and will accommodate 1,360 children. Mr. H. W. Dobb, architect, 99 Church Street, Lower Edmonton.

**GLOUCESTER.**—June 10.—For construction of a subway under the railway near Gloucester station, for the Great Western Railway Company. Mr. G. K. Mills, secretary, Paddington Station.

**GREETHAM.**—June 12.—For restoration of Greetham Church, near Horncastle, Lincs. Mr. C. Hodgson Fowler, architect, Durham.

**GRIMSBY.**—June 10.—For alterations at the police-station and weights and measures office, King Edward Street.

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Mr. H. Gilbert Whyatt, borough surveyor, Town Hall Square, Grimsby.

HADLEY.—June 14.—For erection of cemetery chapel, lodge and entrance gates at Hadley, Salop. Mr. C. R. Dalgleish, architect, Central Chambers, Wellington.

HALIFAX.—June 21.—For erection of five houses in Shaw Street, Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

HALIFAX.—June 18.—For alterations at Popples, Holmfild. Mr. Frederick Fielding, architect, 7 Fountain Street, Halifax.

HAMPSTEAD.—June 19.—For construction of public conveniences at South End Green. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

HASTINGS.—June 12.—For erection of a boundary wall around the new workhouse premises at Ore. Mr. A. W. Jeffery, architect, 5 Havelock Road, Hastings.

HINCKLEY.—For erection of two cottages at Kirkby Mallory, Hinckley. Mr. A. W. Byron, 5 Low Pavement, Chesterfield.

HULL.—June 18.—For taking-down part of the existing premises and rebuilding the Empress inn, Alfred Gelder Street. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

IDLE.—June 14.—For erection of Wesleyan Sunday schools at Idle, Yorks. Messrs. J. P. Kay & H. W. Long, architects, 10 St. Paul's Street, Leeds.

ILFORD.—June 23.—For erection of a boys and girls' school for 880 children, with latrines, play-sheds, &c., at The Horns, Ilford, Essex. Mr. C. I. Dawson, architect, Bank Buildings, Ilford.

IRELAND.—June 10.—For erection of eighteen cottages at Strabane. Mr. J. E. Sharkey, clerk to Rural District Council, Strabane.

IRELAND.—June 12.—For erection of a Protestant chapel at the Omagh district asylum. Mr. J. L. Donnelly, architect, Omagh.

IRELAND.—June 12.—For erection of a villa at Shantallow, Londonderry. Mr. J. P. M'Grath, architect, 28 Carlisle Road, Londonderry.

IRELAND.—June 13.—For erection of gentleman's residence and offices at Fernhurst Road, Cork. Messrs. W. H. Hill & Son, architects, 28 South Mall, Cork.

KEIGHLEY.—June 9.—For erection of a residence at Bracken Bank, Keighley. Messrs. Jackson, Priestman & Marks, architects, Keighley.

LODDON.—June 14.—For enlargement of school at Loddon, Norfolk. Mr. Arthur Pells, architect, Beccles.

LONDON.—June 17.—For erection of Thackeray, Dickens and Coram Buildings, Herbrand Street, W.C., for the London County Council. Particulars at the Architect's Department, Housing of the Working Classes Branch, London County Council, 19 Charing Cross Road, S.W.

MANCHESTER.—For erection of Conservative club at Moston, Manchester. Mr. S. Moore Chadwick, architect, Bindloss Chambers, Chapel Walks, Manchester.

MANCHESTER.—June 13.—For construction of an underground lavatory for males in Victoria Street. The City Surveyor, Town Hall, Manchester.

MANSFIELD.—June 16.—For alterations to and fitting-up part of the basement of the town hall buildings as public conveniences. Mr. J. Harrop White, town clerk, Town Hall, Mansfield.

MANSFIELD.—June 16.—For alterations and additions to public baths. Mr. J. Harrop White, town clerk, Town Hall, Mansfield.

NEWCASTLE-ON-TYNE.—June 10.—For erection of a Board school, Heaton, Newcastle-upon-Tyne. Mr. S. D. Robins, architect, 129 Percy Street, Newcastle-upon-Tyne.

NEWCASTLE-UPON-TYNE.—June 10.—For erection of blocks of dwellings for the labouring classes in Walker Road and Albion Row, Newcastle-upon-Tyne. Messrs. Liddle & Brown, architects, Prudential Buildings, Newcastle-upon-Tyne.

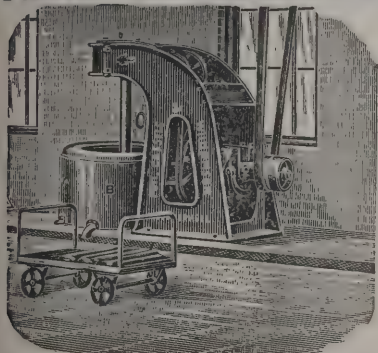
NEW MILLS.—June 9.—For conversion of a gasholder-tank into a tar and liquor storage-tank at the gasworks. Mr. Joseph Pollitt, town clerk, Town Hall, New Mills.

NORTH SHIELDS.—June 11.—For erection of bakery adjoining the new quay. Mr. F. R. N. Haswell, architect, 77 Tyne Street, North Shields.

NOTTINGHAM.—For erection of new Wesleyan church, St. Ann's Well Road, Nottingham. Mr. A. E. Lambert, architect, 22 Park Row, Nottingham.

NOTTINGHAM.—For erection of villas on Sherwood Rise. Messrs. Collyer & Slater, architects, 8 Bridlesmith Gate, Nottingham.

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**NUNEATON.**—June 10.—For construction of a semicircular brick culvert about 90 yards in length, together with works incidental thereto, in Coventry Street and Mill Walk. Mr. J. S. Pickering, engineer, Council Offices, Nuneaton.

**REDRUTH.**—June 11.—For rebuilding shop premises in Fore Street, Redruth, and for alterations to adjoining premises. Mr. Sampson Hill, architect, Green Lane, Redruth.

**RUGBY.**—June 17.—For erection of five shops, assembly hall, educational rooms, &c., in Chapel Street, Rugby. Mr. J. T. Franklin, architect, Regent Street, Rugby.

**ST. ALBANS.**—June 9.—For repairs to the corn exchange. Mr. A. H. Debenham, town clerk, St. Albans.

**ST. JUST.**—June 20.—For renovation and reseating of Boscaswell B.C. chapel, St. Just, Cornwall. Mr. John Maddern, Pendeen.

**SALFORD.**—June 11.—For erection of St. Matthias's new schools in Blackfriars Road. Mr. L. C. Evans, town clerk, Town Hall, Salford.

**SHEPHERD'S BUSH.**—June 23.—For erection of a workhouse and infirmary adjoining Wormwood Scrubs. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, W.C.

**SOWERBY BRIDGE.**—For alterations to 15 houses at Sowerby Bridge. Mr. J. Crawshaw, architect, Esslehill, Bradford.

**SUTTON-IN-ASHFIELD.**—For erection of a villa residence at Sutton-in-Ashfield. Mr. J. P. Adlington, architect, Sutton-in-Ashfield.

**WAKEFIELD.**—June 12.—For ventilation, cleaning and decoration of the Chapelthorpe Church, Wakefield, and insertion of leaded windows, erection of new screens, alteration of existing screens, supply of gas chandeliers, &c., and paving of chancel. Rev. L. Busch, Chapelthorpe Vicarage, Wakefield.

**WALES.**—For erection of stables, harness-room, coach-house, gardener's house and coachman's house at Tan-y-Bryn, Abergele, North Wales. Messrs. John Eaton, Sons & Cantrell, architects, Stamford Street, Ashton-under-Lyne.

**WALES.**—For erection of two semi-detached villas at Pontyclun, Llantrisant. Mr. W. Morgan, 11 Bute Crescent, Cowbridge Road, Pontyclun.

**WALES.**—For erection of a live-stock auction yard at Llantwit Major. Mr. E. Jenkin Williams, architect, 31 High Street, Cardiff.

**WALES.**—June 9.—For erection of a vestry at Tyntyla, Llwynypia. Messrs. Lewis & Morgan, architects, Dunraven Street, Tonypandy.

**WALES.**—June 9.—For erection of a higher elementary school at Pentre, Ystradyfodwg. Mr. Jacob Rees, architect, Hillside Cottage, Pentre.

**WALES.**—June 9.—For erection of sixty houses on the Wingfield and Mackintosh estate, Aberfan, Merthyr Vale. Mr. William Dowdeswell, architect, John Street, Treharris.

**WALES.**—June 9.—For alterations to Graig C.M. chapel, Llanfagdalen. The Rev. R. Humphreys, Graig, Llanfagdalen.

**WALES.**—June 10.—For erecting twenty-eight houses. Mr. William Dowdeswell, architect, John Street, Treharris.

**WALES.**—June 10.—For erection of an isolation hospital at Rhiwfelen Fawr, near Llantrisant. Messrs. James & Morgan, architects, Cardiff.

**WALES.**—June 11.—For erection of a public steam laundry, with caretaker's house, stabling, &c., at Caeracca, Dowlais. Mr. William Dowdeswell, architect, Treharris.

**WALES.**—June 11.—For erection of a pair of villas in Pencisely Road, Cardiff. Mr. Philip E. Hill, surveyor, 23 St. Mary Street, Cardiff.

**WALES.**—June 14.—For completion of boys' school for 440 children at Skewen. Mr. J. Cook Rees, architect, St. Thomas Chambers, Neath.

**WALES.**—June 16.—For erection of classrooms, painting and renovating present chapel and schoolroom at the Welsh Baptist chapel, Cwmaman. Mr. T. Roderick, architect, Clifton Street, Aberdare.

**WALES.**—June 18.—For erection of a chapel at Ponkey, Rhos, near Ruabon. Messrs. Richard Owens & Son, architects, 3 Crosshall Street, Liverpool.

**WEST BROMWICH.**—June 23.—For erection of schools in Oak Lane and Lodge Road, West Bromwich, to accommodate 1,150 children. Mr. Alfred Long, architect, 21 New Street, West Bromwich.

**WEST CORNFORTH.**—June 13.—For erection of a club, hall and manager's house at West Cornforth, Durham. Mr. H. T. Gradon, architect, Market Place, Durham.

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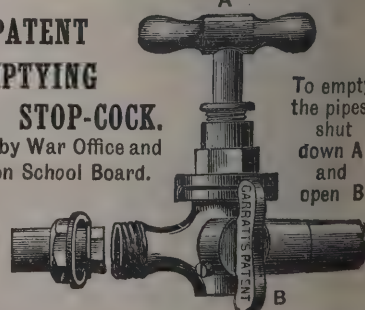
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WEST HAM.—June 10.—For erection of mortuary, Ordinance Road, Canning Town, E. Mr. Fred. E. Hilleary, town clerk, West Ham.

WEST HAM.—June 10.—For cleansing, repair and painting of eighteen schools during the summer vacation; for the West Ham School Board. Mr. William Jacques, architect, 2 Fen Court, E.C.

WESTHOUGHTON.—For erection of municipal buildings at Westhoughton, Lancs. Messrs. Bradshaw & Gass, architects, 19 Silverwell Street, Bolton.

WHITEHAVEN.—June 9.—For erection of two houses. Messrs. Pickering, Crompton & Son, architects, 11 Lowther Street, Whitehaven.

WORTHING.—June 16.—For erection of a circular brick chimney-shaft at the electric generating station, High Street, Worthing, 140 feet high from the ground level and 7 feet 6 inches inside diameter at the top. Mr. W. Verrall, town clerk, Municipal Offices, Worthing.

WYNDHAM ROW.—June 17.—For alterations and additions to the Board schools, Wyndham Row, Cumberland. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

COL. FREDERICK BAILEY, R.E., Edinburgh, held a public inquiry at Perth on the 24th ult. into a memorial presented by the Lord Provost, magistrates and Town Council of Perth to the Secretary for Scotland under Section II. of "The Perth Improvement Act, 1893." The memorial set forth that on June 21, 1898, the memorialists obtained an order from the Secretary for Scotland approving of the scheme submitted to him for the erection of one block of houses in South Street suitable for persons of the labouring class, in order to carry out the formation of a new street between the South Street and City Hall. After hearing statements, Col. Bailey said he had that day visited and inspected the site in company with the Lord Provost and certain members of the Council, and he had satisfied himself by personal inspection as to the suitability of the site the Town Council now proposed. He then asked whether or not any objections were raised to this site. There were none.

## TENDERS.

### AXBRIDGE.

For erection of an infirmary (about sixty beds) adjoining the workhouse, Axbridge, Somerset. Mr. A. POWELL, engineer, 3 Unity Street, College Green, Bristol.

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A. Wills & Sons	6,970	0	0
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Pollard	6,200	0	0
Walters	6,200	0	0
J. Ford & Sons	6,045	15	0
C. ADDICOTT, Weston-super-Mare (accepted)	5,720	0	0
C. Bryer	5,680	0	0
A. J. Colborne	5,568	8	0
G. Sprake	5,523	0	0

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M. Grantham	£5,976	0	0
J. Moran	5,011	0	0
J. Hadfield & Sons	4,935	0	0
G. Hall	4,572	0	0
J. HAGUE, Hoyland (accepted)	3,619	0	0

#### Contract No. 2.

M. Grantham	218	16	0
Asphaltic Limestone Co.	205	11	5
J. Moran	192	6	6
North of England Asphalte Co.	183	10	0
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Bridge (Clarkson & Co., agents, Rotherham) (accepted)	174	13	6
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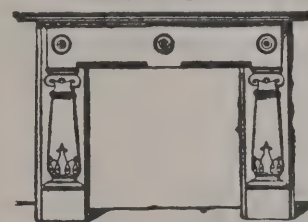
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For erection of a boundary wall and extensions to the Corporation tramways car-sheds, Lewes Road.

Sattin & Evershed . . . . .	£5,489	0	0
W. A. Field & Co. . . . .	5,211	0	0
J. LONGLEY & Co. (accepted) . . . . .	4,849	0	0

**CANNOCK.**

For reconstruction of the bridge over Mitton Brook, on the Penkridge Road. Mr HERBERT M. WHITEHEAD, surveyor, Penkridge, Stafford.

B. Stacey . . . . .	£142	0	0
F. Sprenger . . . . .	138	0	0

**CASTLEFORD.**

For laying a sewer in Lower Glebe Street. Mr. W. GREEN, surveyor.

J. L. RODGER, Castleford (accepted) . . . . .	£85	17	0
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**CHESTER.**

For supplying a centrifugal pump and motor at the Dee Mills. SANDYCROFT FOUNDRY CO. (accepted) . . . . .

	£254	10	0
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**CHESTERFIELD.**

For re-erection of the Cross Keys hotel and two shops at Bolsover. Mr. W. H. WAGSTAFF, architect, 57 Salter Gate, Chesterfield.

B. THORPE, Beighton, near Sheffield (accepted).

For erection of the Lords Arms hotel, Temple Normanton, near Chesterfield. Mr. W. H. WAGSTAFF, architect, 57 Saltergate, Chesterfield.

J. WRIGHT, Beetwell Street (accepted).

**CHURCH.**

For street works in Grimshaw Street West, King Street, Cemetery Road and Elmfield Street. Mr. W. E. WOOD, surveyor.

*Accepted tenders.*

G. Adams, Oswaldtwistle, for Cemetery Road and Elmfield Street.

Dewhirst & Hindle, Blackburn, for King Street and Back Grimshaw Street West.

**COVENTRY.**

For erection of a removable floor in the gentlemen's first-class swimming-bath at public baths, Priory Street. Mr. J. E. SWINDLEHURST, city surveyor.

T. P. Jackson . . . . .	£490	15	8
J. Worwood . . . . .	480	0	0
Hallam & Co. . . . .	325	0	0
Isaacs & Son . . . . .	318	8	6
Kelly & Son . . . . .	290	8	5
T. Lines . . . . .	272	11	0
C. CHAMBERLAIN, Coventry (accepted) . . . . .	249	10	0

**FOREST HILL.**

For street works in Montem Road (part 2), Forest Hill.

W. PEARCE, Manor Road, Forest Hill (accepted) £648 0 0

**FULHAM.**

For supply and erection of electric switchboard.

Mechan & Sons . . . . .	£605	0	0
R. Dawson & Co, Ltd. . . . .	529	0	0
Kelvin & J. White, Ltd . . . . .	525	0	0
Electric Construction Co, Ltd. . . . .	511	0	0
Kelvin & J. White, Ltd. . . . .	499	12	6
Siemens Bros. & Co., Ltd. . . . .	459	0	0
Siemens Bros. & Co., Ltd. . . . .	455	0	0
B. Thomas . . . . .	442	15	0
General Electric Co. (1900), Ltd. . . . .	424	0	0
General Electric Co. (1900), Ltd. . . . .	401	0	0
Johnson & Phillips . . . . .	385	0	0
Johnson & Phillips . . . . .	379	10	0
Johnson & Phillips . . . . .	377	0	0
Geipel & Lange . . . . .	373	14	0
J. WILLIAMSON, LTD., Northampton Grove, Canonbury, N. (accepted) . . . . .	344	9	0
Crompton & Co., Ltd. . . . .	338	0	0
Electric Co., Ltd. . . . .	316	15	0

**GRAVESEND.**

For supply and laying of about 7,000 yards super of Canadian spruce blocks. Mr. F. T. GRANT, borough surveyor.

IMPROVED WOOD PAVING CO., Queen Victoria Street (accepted) . . . . .

£5 11 4

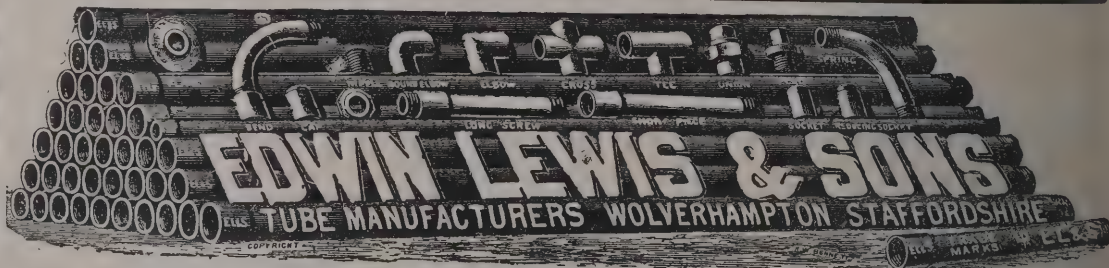
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**GREENWICH.**

For structural alterations and decorative repairs at the lecture hall, Royal Hill.

W. MILLS, St. George's Road, Westcombe Park, S.E. (accepted) . . . . . £1,807 0 0

**GUILDFORD.**

For sewerage and street works in the New Cross Road. Mr. JOHN ANSTEE, surveyor.

W. Norris . . . . . £898 16 0  
W. H. Wheeler . . . . . 786 6 6  
Streeters & Todhunter . . . . . 764 0 0  
G. A. FRANKS, Station Approach, Guildford (accepted) . . . . . 740 10 7

**HAMMERSMITH.**

For street works in portions of Blomfield Road and Redan Street. Mr. H. MAIR, borough surveyor.

*Blomfield Road.*

J. Ball . . . . . £599 10 0  
B. Nowell & Co. . . . . 578 0 0  
G. Wimpey & Co. . . . . 549 0 0  
H. J. Greenham . . . . . 545 0 0  
E. PARRY & CO., 3 Chesilton Road, Fulham, S.W. (accepted) . . . . . 512 0 0

*Redan Street.*

J. Ball . . . . . 332 15 2  
Parry & Co. . . . . 309 0 0  
B. Nowell & Co. . . . . 308 0 0  
H. J. Greenham . . . . . 295 0 0  
G. WIMPEY & CO. (accepted) . . . . . 277 0 0

**ILKESTON.**

For erection of car-shed, offices and transforming station, &c., for the tramways and electricity committee.

Shaw & Co. . . . . £8,360 0 0  
A. Earnshaw . . . . . 7,885 0 0  
Donnelly & Sons . . . . . 7,609 0 0  
W. V. Ireson . . . . . 7,590 0 0  
MOSS & SONS, Loughborough (accepted) . . . . . 6,950 0 0

**IRELAND.**

For erection of twenty-seven labourers' cottages in three contracts, in the town of Carlow.

P. J. Hussey . . . . . £5,982 0 0  
T. Somers & Son . . . . . 5,899 0 0  
J. W. MITCHELL, Carlow (accepted, exclusive of main sewer work) . . . . . 5,374 15 8  
M. Hickey, Carlow (for 11 cottages only) . . . . . 3,492 5 0

**LANCASTER.**

For taking-down and rebuilding the walls and railways in connection with the Westbourne Road widening. Mr. J. C. MOUNT, borough surveyor.

R. L. DILWORTH, Andrew's Lane (accepted).

**LEE.**

For street works in Lansdown Road (south side).

F. HOFFMAN, 6 St. Fillans Road, Catford (accepted) . . . . . £210 13 9

**LEISTON.**

For alterations and additions to premises at Leiston, Suffolk. Mr. H. J. WRIGHT, architect, 4 Museum Street, Ipswich.

F. C. Thurman . . . . . £1,555 0 0  
GIBBS & SON, Leiston (accepted) . . . . . 1,493 10 0

**LEWISHAM.**

For street works in Elthrua Road, Hither Green.

H. WOODHAM & SONS, Sangley Road, Catford (accepted) . . . . . £701 0 0

**LONDON.**

For repair of portion of road from discharge-room to the boiler-house at the North-Eastern hospital.

J. Mowlem & Co. . . . . £693 0 0  
C. Bloomfield . . . . . 630 0 0  
T. Adams . . . . . 597 0 0  
A. T. Catley . . . . . 547 0 0  
Wilson, Border & Co. . . . . 540 0 0  
G. Bell . . . . . 529 0 0  
Meston & Hale . . . . . 495 19 0  
Practical Landscape Gardening Co., Ltd. . . . . 375 0 0  
R. BALLARD, LTD, Child's Hill, N.W. (accepted) . . . . . 367 0 0

For painting, whitewashing, repairs, &c., at the casual wards in Macklin Street, Drury Lane.

H. G. BARTLETT & CO., 24 Mostyn Road, Brixton (accepted).

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## LONDON SCHOOL BOARD.

The work at the following schools will have to be done during the summer holidays, from July 25 to August 23. Where exterior as well as interior work has to be done, an additional week will be allowed for the former:—

## For painting exterior, Dreadnought Street.

T. H. Jackson	£198	0	0
W. Banks	195	0	0
Hayter & Sons	155	0	0
E. Proctor	134	0	0
W. J. HOWIE (accepted)	128	0	0

## For painting interior, Caledonian Road.

J. R. Sims	£459	0	0
C. & W. Hunnings	396	5	0
C. Dearing & Sons	390	0	0
T. Cruwys	376	0	0
G. Kirby	364	0	0
STEVENS BROS. (accepted)	348	0	0

## For painting interior, Regent Street.

Hayter & Sons	£375	0	0
W. J. Howie	353	0	0
H. Groves	270	0	0
S. MUSGROVE (accepted)	241	16	0

## For painting interior and exterior, Eleanor Road.

Barrett & Power	£564	0	0
Collis Willmott & Son	497	0	0
Stevens Bros.	496	0	0
W. Silk & Son	492	10	0
G. Wales	469	19	0
G. Barker	435	0	0
Marchant & Hirst	429	0	0
Chessum & Sons	385	11	0
W. HORNETT (accepted)	355	16	0

## For painting interior of main school and cleaning interior of I. M. school, I. B., Bromley Hall Road.

G. Wales	£639	10	0
D. Gibb & Co.	581	0	0
J. F. Holliday	570	0	0
Corfield & Co.	555	0	0
Vigor & Co.	514	10	0
T. H. Jackson	510	0	0
A. W. Derby	453	0	0
A. J. SHEFFIELD (accepted)	449	0	0

## LONDON SCHOOL BOARD—continued.

## For cleaning interior (S. M. and special) and painting exterior (J. M.), Mansford Street.

J. R. Sims	£850	0	0
Collis Willmott & Sons	569	15	0
T. Cruwys	561	0	0
G. Wales	547	10	0
G. Barker	539	0	0
HAYDON & SONS (accepted)	522	10	0

## For painting interior, Barrett Street.

M. Pearson	£255	0	0
F. T. Chinchin & Co.	249	0	0
W. Chappell	235	6	0
Bristow & Eatwell	223	10	0
Marchant & Hirst	219	0	0
T. CRUWYS (accepted)	185	0	0

## For painting interior, Netherwood Street.

Marchant & Hirst	£465	0	0
F. T. Chinchin & Co.	440	0	0
W. Chappell	398	10	0
Bristow & Eatwell	297	0	0
T. CRUWYS (accepted)	283	0	0

## For painting interior and exterior, Smallwood Road.

J. R. Sims	£761	0	0
J. Watkins	489	0	0
Lorden & Son	488	15	0
W. Johnson & Co., Ltd.	467	0	0
E. Triggs	459	0	0
GARRETT & SON (accepted)	449	0	0

## For pupil teachers' school, Alma.

Sayer & Son	£161	0	0
Johnson & Co.	139	0	0
H. J. Williams	135	0	0
Belcher & Co.	127	0	0
J. HARRIES (accepted)	90	0	0

## For painting interior and exterior, Cormont Road.

Lathey Bros.	£461	0	0
W. V. Goad	397	0	0
Holliday & Greenwood, Ltd.	394	0	0
Rice & Son	369	0	0
Maxwell Bros., Ltd.	328	16	0
E. TRIGGS (accepted)	327	0	0

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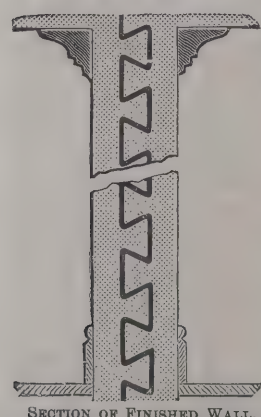
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**LONDON SCHOOL BOARD—continued.**

For painting interior (old and new portions), Midway Place.		
J. R. Sims . . . . .	£597	0 0
T. D. Leng . . . . .	484	0 0
Belcher & Co. . . . .	438	0 0
H. P. Williams . . . . .	397	10 0
W. Banks . . . . .	395	0 0
J. Harries . . . . .	390	0 0
Rice & Son . . . . .	367	0 0
H. GROVES (accepted) . . . . .	289	0 0

For painting interior (main school and I. B.'s), Crampton Street.		
J. Appleby . . . . .	£768	0 0
Martin, Wells & Co. . . . .	750	0 0
W. V. Goad . . . . .	694	0 0
Maxwell Bros., Ltd. . . . .	639	0 0
Sayer & Sons . . . . .	562	15 0
G. Kemp . . . . .	546	0 0
RICE & SON (accepted) . . . . .	515	0 0

For painting interior, Farrance Street.		
G. Barker . . . . .	£340	0 0
D. Gibb & Co. . . . .	299	0 0
Vigor & Co. . . . .	294	0 0
J. F. Holliday . . . . .	293	0 0
Corfield & Co. . . . .	285	0 0
A. W. DERBY (accepted) . . . . .	260	0 0

For painting exterior, Lyndhurst Grove.		
H. Line . . . . .	£222	0 0
A. Black & Son . . . . .	211	0 0
J. F. Ford . . . . .	206	0 0
Johnson & Co. . . . .	205	0 0
W. V. Goad . . . . .	196	0 0
W. HOOPER (accepted) . . . . .	180	0 0

**NEWARK.**

For painting the outside of the infirmary, vagrant wards and out-offices at Bowbridge Road.		
H. Bailey . . . . .	£26	0 0
W. Taylor . . . . .	24	15 0
J. & J. Harston . . . . .	24	12 6
T. PROCTOR, Newark (accepted) . . . . .	19	3 6

**MANSFIELD.**

For construction and erection of electric plant at the municipal electricity works.		
CROMPTON & CO, LTD., Salisbury House, London Wall, E.C. (accepted) . . . . .	£2,486	0 0

**PLYMOUTH.**

For street works in Bramley Road (flagging), Wycliffe Road, Courtfield Road and Princess Street Lane. Mr. JAMES PATON, borough surveyor.		
--	--	--

*Courtfield Road.*

B. Bennett . . . . .	£593	10 3
Jefford & Sons . . . . .	528	17 7
S. Doney . . . . .	521	17 9
Pearce Bros. . . . .	503	7 3
E. DUKE, Plymouth (accepted) . . . . .	472	1 5

*Wycliffe Road.*

W. E. Bennett . . . . .	182	0 0
T. Shaddock . . . . .	174	5 6
Jefford & Sons . . . . .	158	0 0
Pearce Bros. . . . .	146	8 8
E. DUKE (accepted) . . . . .	142	6 6

*Bramley Road (footway).*

T. Shaddock . . . . .	170	15 0
Pearce Bros. . . . .	153	4 8
Bennett . . . . .	150	10 0
E. DUKE (accepted) . . . . .	131	3 5

*Princess Street Lane.*

Jefford & Sons . . . . .	83	14 3
Pearce Bros. . . . .	79	9 6
E. DUKE (accepted) . . . . .	73	5 1

**ROCHDALE.**

For erection of two bridges, each about 23 feet span, carrying a road 15 yards wide, over the river Spodden.		
--	--	--

J. BENTLEY, 45 Grange Road, Bradford (accepted).

For construction of about 250 lineal yards of boundary and retaining walls in new street between Bury Road and Spotland Bridge. Mr. S. S. PLATT, borough surveyor.		
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T. ASHWORTH &amp; SON, Norden, near Rochdale (accepted).

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For sewage disposal works.

W. GIBSON (*accepted*) . . . . . £4,497 14 5

## SCOTLAND.

For heating apparatus for the new municipal buildings, Barrhead.

*Accepted tenders.*

H. Houston, mason . . . . . £2,069 14 4  
 W. H. Colquhoun, joiner . . . . . 1,634 15 10  
 W. Anderson, plumber . . . . . 344 14 10  
 Gray & Son, plasterer . . . . . 227 19 0  
 P. White & Co., slater . . . . . 169 0 0  
 J. Miller, painter . . . . . 101 10 6

For erection of a poorhouse at Oldmill, Aberdeen.

*Accepted tenders.*

Pringle & Slessor, mason . . . . . £40,329 0 0  
 Leslie & Hay, carpenter . . . . . 16,990 0 0  
 J. Bannochie & Sons, plasterer . . . . . 9,085 0 0  
 J. Dean, plumber . . . . . 6,840 0 0  
 J. Grant, ironwork . . . . . 2,777 0 0  
 J. & S. Fyfe, painter and glazier . . . . . 2,050 0 0

For erection of a dwelling-house and additions to and alterations on the farm offices at Bridgefoot, Tillery.

*Accepted tenders.*

J. Sim, Cultercullen, Udney station, Aberdeenshire, carpenter . . . . . £172 10 0  
 E. Gould, Ellon, Aberdeenshire, mason . . . . . 96 0 0  
 W. Gall & Son, Newburgh, Aberdeen, slater . . . . . 46 8 0  
 J. & R. Siewwright, West High Street, Inverurie, plasterer . . . . . 27 10 0

## SYDENHAM.

For street works in Holmshaw Road (part 2), Lower Sydenham.

W. PEARCE, Manor Road, Forest Hill (*accepted*) £314 0 0

## TARPORLEY.

For construction of about two miles of pipe sewers, with manholes, ventilators, flushing stations, &c., and laying-out of land and formation of carriers in connection with the sewerage and disposal of the sewage of Tarporley.

H. P. EMBREY & CO, Fenton, Stoke-on-Trent (*accepted*).

## SOUTH BRENT.

For sewerage works at South Brent, Devon. Mr. ANDREW WARREN, surveyor, Fore Street, Buckfastleigh.

W. B. Bennett . . . . . £194 10 0  
 G. B. Andrews . . . . . 192 0 0  
 M. Bridgman . . . . . 167 14 6  
 Hosking Bros. . . . . 149 0 0  
 R. T. Hortop . . . . . 148 0 0  
 G. Doney . . . . . 141 10 0  
 R. Damerell . . . . . 137 10 0  
 Cranch Bros. . . . . 136 0 0  
 R. VEAL & SONS, South Brent (*accepted*) . . . . . 126 12 4

## STOCKPORT.

For hurdles, seats, railings, gymnasia, shelters, &c., at Hollywood Park and Heaton Norris recreation-ground. Mr. JOHN ATKINSON, borough surveyor.

F. & O. BATESON (*accepted*) . . . . . £138 0 0

## WALES.

For erection of a drill hall for the 1st V.B. R.W.F., Wrexham. Mr. M. J. GUMMOW, architect, Egerton Street, Wrexham.

H. A. Jones . . . . . £3,350 10 6  
 J. Hughes . . . . . 3,288 0 0  
 Lewis Bros. . . . . 3,259 10 0  
 P. Edwards . . . . . 3,250 0 0  
 W. E. Samuels . . . . . 3,200 0 0  
 DAVIES BROS., 3, 4 and 5 Hill Street, Wrexham (*accepted*) . . . . . 3,118 10 0

For erection of a schoolroom, &c., at Abertwsswg. Mr. GEO. KENSHOLE, architect, Station Road, Bargoed.

Williams & Sons . . . . . £894 17 6  
 H. R. Paull . . . . . 851 10 0  
 S. J. Smith . . . . . 718 0 0  
 A. WARM, Abertwsswg, near New Tredegar (*accepted*) . . . . . 595 4 0

## WESTON-SUPER-MARE.

For structural alterations to Grove House, Grove Park. Mr. HUGH NETTLETON, surveyor.

H. Dyer . . . . . £258 10 0  
 G. Sprake . . . . . 214 10 0  
 C. & E. STRADLING, Weston-super-Mare (*accepted*) . . . . . 188 15 0

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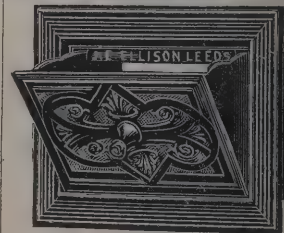
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S. Swann . . . . .	£2,258	18	0
G. J. Waterman . . . . .	2,244	0	0
Reed . . . . .	2,140	0	0
G. A. Judge . . . . .	2,100	0	0
Clark Bros. . . . .	2,075	0	0
Clifford & Gough . . . . .	2,069	0	0
W. King . . . . .	2,050	0	0
Tyler & White . . . . .	2,000	0	0
R. L. Tonge . . . . .	1,988	0	0
G. Wiggs . . . . .	1,960	0	0
H. B. Watkins . . . . .	1,949	0	0
C. BRIGHTMAN, Queen's Road, Watford (accepted) . . . . .	1,928	0	0

WHITEHAVEN.

For alterations to the auction mart, Preston Street. Mr. J. S. MOFFAT, architect, 53 Church Street, Whitehaven.			
H. KITCHEN, Whitehaven (accepted) . . . . .			

Received too late for Classification.

HULL.

For laying about 116 lineal yards and providing and laying about 372 lineal yards of 2-inch water-mains, with hydrants, &c, at Swanland. Messrs. WELLSTED & EASTON, engineers, Prince's Dock Chambers, Hull.			
N. Stephenson . . . . .	£116	0	0
G. E. Wray . . . . .	95	16	10
R. Swales . . . . .	94	14	0
H. Speck . . . . .	82	0	0
R. Fisher . . . . .	80	6	3
J. Kirby & Son . . . . .	76	0	0
W. L. Harrison . . . . .	68	7	0
T. BELL, Market Weighton (accepted) . . . . .	61	12	10

LONDON.

For alterations and additions to West Hill Lodge, Sydenham, S.E. Mr. J. RANDALL VINING, architect and surveyor, 89 Chancery Lane, W.C.			
A. Black & Son . . . . .	£521	0	0
J. Marsland & Son . . . . .	497	0	0
J. & C. Bowyer . . . . .	465	0	0

TRADE NOTES.

MESSRS. WM. POTTS & SONS, clock manufacturers, Guildford Street, Leeds, have received instructions to make a new turret clock and bell for the city authorities, Georgetown, Demerara, West Indies, they having previously supplied them with a clock twenty years ago, which has given the greatest satisfaction. They supplied a turret clock and bell for His Majesty's Government, and another for the trade in the West Indies some years ago. Messrs. Potts are also making a new turret clock for the Governors of Hipperholme Grammar School, Yorks.

THE report to be submitted by the directors of the Sun Insurance Office at the annual general meeting on Wednesday next sets forth that the premiums received, less reinsurances, amount to 1,165,346*l.* 12*s.* 6*d.*, being an increase of 94,789*l.* 19*s.* 4*d.* as compared with those of the preceding year, while the total of the sums insured during the year, after deduction of the amounts reinsured, exceeds 460,000,000*l.*, and that the losses paid and outstanding amount to 670,633*l.* 14*s.* 6*d.*, being at the rate of 57·55 per cent. on the premiums received. A dividend of 4*s.* 6*d.* per share is declared (an interim dividend of 4*s.* per share having been paid in January), leaving 102,731*l.* 7*s.* 1*d.* to be carried forward.

BUILDING AND BUILDERS.

PRINCE CHRISTIAN visited Walsall on the 29th ult. for the purpose of laying the foundation-stone of a new town hall, which is to cost about 100,000*l.*

THE foundation-stone was laid on the 29th ult. at Widnes of a new Sunday school in connection with Oakland Street Wesleyan chapel, the cost of which will be about 15,000*l.*

THE Basford District Council have approved the schemes prepared by Mr. J. R. Elliott, A.M.I.C.E., of Nottingham, for the sewerage of the parishes of Colwick, Gedling and Burton Joyce. The loans applied for are as follows:—Colwick 6,000*l.*, Gedling 6,500*l.* and Burton Joyce 6,400*l.*

THE parish church at Northorpe is to undergo thorough restoration. The Ecclesiastical Commissioners have undertaken to repair the chancel at the estimated cost of nearly 400*l.*, and Mr. Hodgson Fowler, architect, of Leeds, has pre-

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pared an estimate, placing the cost of restoring the rest of the church at 1,000/.

THE foundation-stone was laid on the 30th ult. of the new day schools in connection with St. Anne's Roman Catholic church, Stretford. The schools are estimated to cost 1,800/., and will provide accommodation for 200 children. The architects are Messrs. Sinnott & Howell, and the builder is Mr. Charles Walker, of Preston.

WHILST some men were engaged in cleaning the front of the Prudential Insurance buildings in Sunridge Road, Bradford, a ladder which they were using as a scaffold broke, and they fell a distance of 30 feet. Alf. Hemmingway, of Lower Thomas Street, and Robert Hall, of Whetley Hill, Bradford, were both rendered unconscious and taken to the infirmary, where they were detained.

THE congregation of St. Margaret's parish church, Arbroath, have resolved to erect new church halls on vacant ground adjoining the church in Keptie Road. The buildings are to consist of a hall to accommodate 250, a session-house, guild-room, cloak-room and lavatory accommodation. The hall will have a gable with a three-light window facing Keptie Road, and the general architecture is to be treated so as to harmonise with the church. It will be a question for the congregation to consider whether the tower should not be completed at the same time by the erection of a graceful spire.

THE experiment of staging Yiddish plays has turned out so well that the improvised theatre at Hackney is to be abandoned, and a new theatre, exclusively devoted to Yiddish drama, erected. Negotiations are already in progress for the acquisition of a site in Aldgate, for which 6,000/ has been offered. In addition, it is proposed to spend 24,000/ on the building itself, so that the Yiddish theatre will certainly cost as much as 30,000/., accommodation being provided for 3,000 people. In New York, by the way, there are four such theatres, but the city contains half a million Jews among its population.

A YEAR ago the master and operative masons of Crieff entered into an agreement for a year that the wages be 8/ per hour. The masters also accepted the by-laws held by the men as follows:—That they receive 3s. per week extra while working in the country; hot plates at dinner time; and that the agreement hold good for a year. The agreement expired on May 31, and the men asked the masters to renew the same. Two of the masters accepted the terms, but three others agreed to accept the rate of wage at 8/ per hour, but refused the by-laws.

The men of the latter accordingly came out on strike on Monday.

ON Saturday afternoon the foundation-stone was laid of new Board school which is to be erected at Hulme, Lancs., at a cost of 7,000/.. It will afford accommodation for 380 boys, and is in a sense the successor of the old Christ Church British school, which was carried on by the Gaskill trustees prior to being transferred to the School Board. For so long time an iron building has done duty as a school, the members of the Board thinking it best to see what shape the developments of trade and industry would take in the neighbourhood before committing themselves to the expense of a permanent building. That a good school is a necessity in such a district no one can doubt. The building is to be of brick, with terra-cotta dressings. It is being erected by Messrs W. A. Peters & Sons, of Rochdale, and it will take the old title of Christ Church school. There will be six large classrooms, two cloak-rooms and a fine central hall.

### VARIETIES.

THE Chancery Lane Safe Deposit Company have made special arrangements for the temporary safe keeping of court jewels and other valuables during the Coronation ceremonies.

MR. C. C. JOLLIFFE, who has been for thirty-five years in the service of the Leeds Corporation, has, owing to advancing years and impaired health, resigned the post of deputy town clerk. The salary attached to the office was 600/ a year.

MR. R. A. H. TOVEY, solicitor, out of sixteen candidates has been elected town clerk of Doncaster. Until lately Mr. Tovey was a member of the Town Council. He resigned to apply for the appointment, the salary of which is 500/., with 40/ as borough coroner.

THE new pulpit recently erected in the nave of Glasgow Cathedral was formally dedicated on the 1st inst. Dr. M'Adam Muir officiated. The pulpit is the gift of Mrs. Granger in memory of her husband, who was sometime assistant to the Rev. Dr. Burns in the cathedral. The pulpit is of oak, octagonal in shape, and is richly adorned with carving and many traceried panels. The design was prepared by Mr. Macgregor Chalmers, architect, and the work was executed by Mr. Grant and Mr. Crawford.

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## ILLUSTRATIONS.

WESTMINSTER CITY HALL.

CANTERBURY PARADE, WESTGATE-ON-SEA.

MAUSOLEUM ERECTED AT HAMPSTEAD CEMETERY.

CATHEDRAL SERIES.—RIPON: PORTION OF NORTH TRANSEPT, SHOWING OLD STONE PULPIT. THE SOUTH TRANSEPT.

HOTEL DE VILLE, LA ROCHELLE.

THE Court of Governors of Owens College, Manchester, at a meeting on Wednesday decided to apply for a charter for an independent university in Manchester, to be called the Victoria University of Manchester. The Court were of opinion that any powers and advantages possessed by the Victoria University and its graduates, including the use of the name Victoria, should be equally continued if they desire to the proposed universities in Leeds, Liverpool and Manchester and their graduates.

THE Derby Corporation on the 4th inst. made the final choice of a town clerk and Registrar of the Court of Record. There were twenty-eight candidates originally, but these were reduced to the following four gentlemen, who had previously appeared before the Council:—Mr. W. H. Andrew, aged forty, town clerk of York; Mr. G. Trevelyan Lee, aged thirty-six, town clerk of Dewsbury; Mr. F. C. Lloyd, aged forty-one, town clerk of Huddersfield, and Mr. H. Mansfield Robinson, town clerk of Shoreditch. Voting took place by ballot, and resulted in the appointment of Mr. Lee.

ARRANGEMENTS are being made by the Surveyors' Institution for holding a conversazione on Friday, July 4, between the hours of 9 and 12 P.M., at the Natural History Museum, Cromwell Road, South Kensington, by kind permission of the Trustees of the British Museum. A card of invitation will shortly be issued to every member of the Institution. The members and the ladies accompanying them will be received by the president of the Institution, Mr. Arthur Vernon, in the central hall of the Museum. The District Railway Company has been asked to open the subway from South Kensington Station to the grounds of the Museum.

AT Friday's meeting of the finance committee of the Leicester Corporation Mr. Hiley (deputy town clerk of Birmingham), Mr. Copnall (town clerk of Rotherham) and

Mr. Jarratt (town clerk of Southport) were selected out of eighteen applicants for the position of town clerk of Leicester at a salary of 1,000*l.* The names will be submitted to the Council for final selection. Mr. Sanders (solicitor to the Liverpool Corporation), Mr. Hughes (town clerk of Lancaster) and Mr. Lloyd (town clerk of Huddersfield) were among the unsuccessful candidates.

MESSRS. FOSTER & CRANFIELD announce the sale on the 18th inst., at the Mart, of Kylemore Castle, Connemara, an important and beautiful property, which is situated at the foot of the southern slope of the Doughruagh Mountain, and stands on a wide terrace at the north-west corner of Lough Pollacappul, the site commanding a grand prospect of Kylemore Pass, bounded by an amphitheatre of mountains, the acclivities forming the sides sloping to the water's edge. The sumptuous baronial castle and luxurious grounds are the result of Mr. Mitchell Henry's lavish expenditure, and the estate offers abundant sport of every description.

## ART AT LAMBETH.

MESSRS. DOULTON & CO. have just now on view in their handsome galleries at Lambeth a noteworthy collection of artistic specimens of their work in terra-cotta, faience, majolica and porcelain, all of which attain to a very high order of merit. This is, however, not surprising to anyone acquainted with the work ordinarily turned out by this celebrated firm.

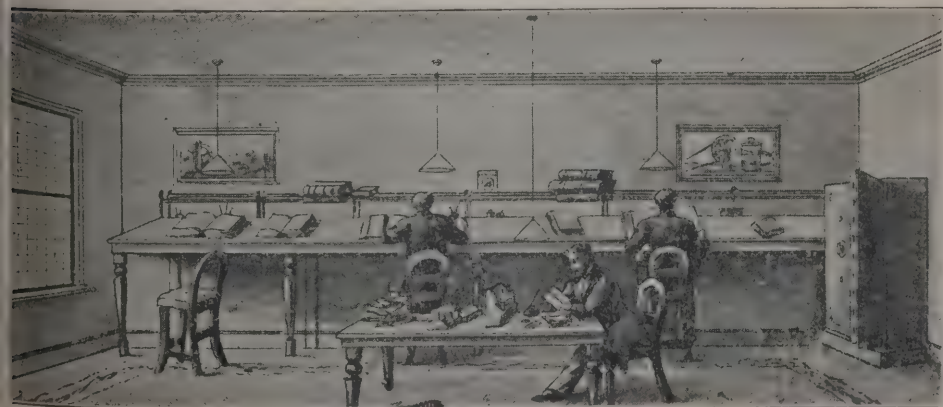
Among the works shown, the *place d'honneur* is rightly given to three large terra-cotta panels in high relief by Mr. George Tinworth. The subject of the largest of these is "The Entry of the Apostle Paul into Rome," and it is treated in a bold and masterly manner. The figures, of which there are a large number, are instinct with life and movement, the central group of the apostle chained by the arm to a slave being conveyed in a chariot into the city being full of dignity and grace.

Equally artistic treatment distinguishes the other two panels, which portray respectively "The Visit of the Shepherds" to the birthplace of the Saviour, and "The Visit of the Wise Men." These panels, which are somewhat smaller, have, we believe, been designed for Chinworth parish church. Among other works in terra-cotta are a fountain of pleasing form in "new art" style, garden seats, sundials, vases and flower-pots, all of exceedingly decorative and artistic design;

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some graceful pergola columns of graceful proportions and a Persian arch are also to be seen, while in glazed ceramic ware a monumental grill case in brilliantly coloured Mauresque style occupies a prominent place.

In numerous cases around the galleries are disposed exquisite examples of decorative and domestic porcelain, but the artistic productions of the Royal Potteries in this *genre* are too well known to require detailed description. In this department, however, are shown some specimens of the goblets to be presented to the participants in the King's dinner to the poor. These are of graceful form and perfect finish, and, bearing as they do excellent portraits of their Majesties and a suitable inscription, will serve as a valuable souvenir of an important historical event.

A very interesting feature of the exhibition is a group of potters at work fashioning on the wheel in the moist clay the graceful objects which, in a finished state, adorn the surrounding cases, and the interest is not lessened by the fact that the artists are pleased to impart information as to details of their art to visitors who may happen to be of an inquiring turn of mind.

MESSRS. EWART & SON, LTD., of Euston Road, have just introduced a new radiator which deserves the attention of our readers. It possesses the following excellent points:—Is complete in itself and requires merely a small gaspipe to be attached (a piece of rubber tube will serve), and to be filled up with water when first used. It requires no further attention and no cutting away for service-pipes. There are no boilers to get out of order and it is comparatively inexpensive.

BAILEY'S patent "Geyser" hot-water supply, which is being shown by Messrs Clark, Hunt & Co, Shoreditch, is a new system of obtaining a supply of hot water over a sink without the need of a feed cistern and hot-water tank. The cold-water supply pipe is in direct connection with the boiler and is controlled by a stopcock over the sink. The outflow pipe from the boiler terminates with a brass nozzle below the stopcock. When the stopcock is opened cold water flows into the boiler and causes a rapid discharge of hot water through the nozzle below the stopcock. When the stopcock is closed the discharge ceases, leaving the boiler full. The sink may be any reasonable distance from the range; the impetus of the discharge partly empties the outflow pipe, leaving but little "dead" water.

### ELECTRIC NOTES.

THE report by the lighting committee of the Motherwell Town Council of their first year's experience with electric light is most satisfactory. At a meeting of the Town Council Councillor Wilson, of Burngrange, stated that there had been an income of 3,036*l.*, and that the total cost of working had been 1,000*l.* They had produced for public and private purposes 189,000 units at a cost of 1*·*44*d.* per unit. This was most satisfactory, and the committee recommended that the charge for illuminating purposes be reduced from 5*d.* to 4*d.* per unit, and that for power the charge be reduced to 1½*d.* for over 50 units, and to consumers of under that quantity to 2*d.* per unit.

A CONSIDERABLE amount of rapid illumination work in celebration of the Peace Proclamation was placed in the hands of the Electric-Lighting Boards Company of 7 Pall Mall, on Monday, and this was a most suitable occasion to show how rapidly electricity can be applied on this system as compared with the installation of gas devices. Quite a number of the orders for illuminations did not reach the company until 4 P.M., but the illuminations were full alight by eight o'clock. Amongst the installations was a large display at the P. & O. offices in Northumberland Avenue, and at the United Service Club in Pall Mall, opposite the company's own office, where there was also a large display. A number of the royal warrant-holders similarly had displays in Regent Street and Bond Street, and among the restaurants illuminated was notably the Café Royal. A record fixing in the evening was that of 280 8 candle-power lights in 1 hour 20 minutes by two men and one boy, including six principal connections, which, taking into consideration the difficulty of working in view of a large and demonstrative crowd, comes very close to the company's French and American time records for rapid illuminations on the E.L.B. system.

### CITY AND GUILDS OF LONDON INSTITUTE.

THE report issued by the Council to the members of the Institute contains the following:—

#### CARPENTRY AND JOINERY.

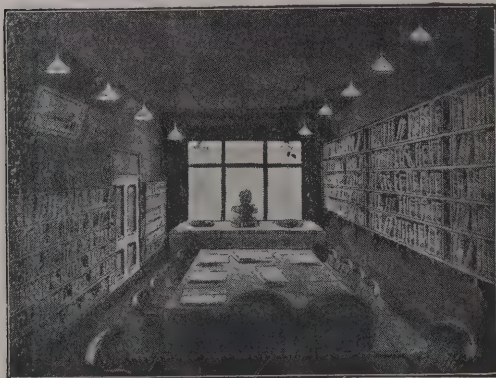
##### *Preliminary.*

The paper was easy, but, with a few exceptions, was nevertheless very badly answered.

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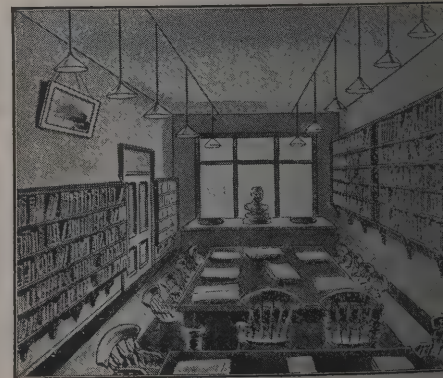
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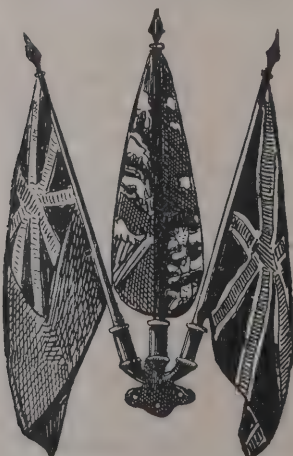
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 "Gives EVERY SATISFACTION."  
 "The Glass I am perfectly satisfied with; GREAT SUCCESS."  
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The knowledge of geometry and its application was generally very poor. The question in mechanics was largely ignored, and when attempted was generally ill answered. The arithmetic leaves much to be desired, and the draughtsmanship as a whole was indifferent. The examination was disappointing; there is nothing which the young carpenter should know more thoroughly than geometry, but this was the weakest feature of the candidates' work.

We have been unable to discover any general indication of sound teaching in any particular.

#### Ordinary Grade.

The paper was not exceptionally difficult, but was a fair test of a wide field of questions, of which little more than one-eighth (eight out of thirteen) was fixed as the maximum to be attempted.

Where the candidates failed they were very bad, but of the 10 per cent. who passed the majority passed well, and showed that they had been thoroughly taught. An examination of the answers of those who failed seems to show that the majority were very badly prepared. Their drawing was poor, and their knowledge of matters connected with carpentry was typified by the answers to question 1. Yellow deal, which is the timber most commonly used by carpenters, was indescribably confused with yellow pine, and astonishing ignorance was displayed of its market forms and source of supply.

Some want of intelligence was shown in answering question 12 (a trussed partition) even by those who gave good answers to question 7 (a mansard roof) and question 13 (a king-post roof). The questions could be answered by any one possessing a fair knowledge of the examples in an ordinary text-book, but the principles involved cannot have been realised. The ability of candidates to cram from a text-book while quite failing to apprehend the principles of construction is a constant difficulty.

Question 5 (forms of mouldings) was rather unaccountably badly answered. The forms required could have been found in text-books, but possibly the knowledge of geometry required was too much for many candidates.

#### HONOURS GRADE.

##### (Written.)

The work done by the candidates for honours was, generally speaking, neatly executed. In the great majority of cases the

drawings were well and clearly done, and showed a familiarity with the nature of working drawings and the mode of illustrating constructive carpentry and joinery by means of such drawings. The answers in writing were as a rule clear and suitable.

This examination, like others of the same class, requires, in order that a candidate may succeed, two distinct sorts of qualification, that of the practical craftsman and that of the draughtsman or clerk, and it has occurred in several instances that candidates who have shown considerable aptitude with the pencil have done but very indifferent practical work, while there have been others who have shown themselves good joiners when working at the bench, but who have been unable to obtain good marks for written answers and drawings. Those who are recommended to pass in honours are candidates who have done creditably in both parts of the examination. Those to whom medals have been awarded are candidates who have gained exceptionally high marks in each part.

The course of the examination has shown that even men well acquainted with the subjects of examination as taught in text-books, and perhaps as practised in the workshop, are not in many instances trained to use their judgment as well as their memory. In more than one of the questions there was a condition or a limitation such as constantly occurs in real work, and for which some provision had to be made in working out the problem. It unfortunately proved in a very considerable number of cases that the candidate either omitted all care for that provision, or else failed to read it in the right way, and this seems to show that there is considerable risk, especially in class tuition, that students who may acquire a good deal of knowledge are not being taught how to turn that knowledge to account in the actual work of life. To illustrate what is meant, we may take as an instance one of the problems set in the present examination. This was to draw the centreing for an elliptical arch, with the condition that such centreing must be supported from the piers from which the arch would spring, in other words, must be supported only at the ends. This question was tried by many candidates and successfully answered in not a few cases, but in too large a proportion of cases the centreing was so drawn that it would not have supported the load it had to carry unless supported in the middle as well as at the ends; in other words, the candidate had not had the intelligence to make such differences in the usual design of this simple piece of carpentry as would fit it to fulfil the conditions laid down. A similar condition

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existed in one of the questions about joinery, and was neglected by a large proportion of the candidates, with the result that one after another drew with great care and pains a piece of framing which was perfectly useless for the very simple purpose which it was meant to serve. If the candidates could learn to think about the work set them a little more intelligently we should not have to regret that good work is frequently disfigured by glaring mistakes of judgment such as we have had to point out in this report.

#### Practical Work.

The choice of specimens for examination was, on the whole, very satisfactory. There were very few tiny models of roofs and other large pieces of carpentry this year, and even these were generally accompanied by good-sized details of the essential parts. There was some very good craftsmanship shown, some of it as good as could be possibly obtained. The whole, both in selection and quality, was a remarkable improvement on the work of bygone years.

The practical test was by no means so uniformly well carried out as the specimens might have led one to hope. A large number gave very good indications of ability. Some were both very skilful and quick in the execution of the work. In many cases, however, it was only too apparent that men were not such good craftsmen as their specimens would appear to indicate.

#### BRICKWORK.

##### (Written Examination.)

In the ordinary grade papers we were glad to find some very intelligent answers, and, generally speaking, the results were quite up to the standard of past years. The honours papers, however, give us cause for serious complaint; we cannot think that candidates were as carefully and earnestly prepared as they should be for such an important subject, the drawing in many cases being far inferior to that of candidates in the ordinary grade, and in no instance was there a paper worthy of a prize. We notice a tendency on the part of the candidates to use language they do not understand; and that while the theoretical knowledge seems to be improving, the candidates do not appear to understand how to apply it in practice. This would possibly arise from the fact that the practical and theoretical teaching are not sufficiently united.

Greater attention should be paid to the instructions directing candidates to state where their experience has been ac-

quired. This information is of importance, as the character of the brickwork trade varies considerably in different parts of the country, and we are anxious to examine the papers according to local practice.

#### PAINTERS AND DECORATORS' WORK.

##### Ordinary Grade.

The papers are not up to the usual standard, although many of them indicate considerable promise. Some papers show entire want of knowledge of drawing and design. A knowledge is essential to success in the business of a decorator, it is suggested that teachers urge upon the students the advisability of attending a class of instruction in drawing.

##### Honours Grade.

The practical work this year falls considerably short of the standard reached in previous years, although there are on two excellent examples of grained work and a few creditable designs for wall decorators. The designs for panel decorations are mostly very poor. Many examples of graining in represent rosewood as if it were similar to walnut in appearance. The gilding is almost without exception carelessly done. In the designs many students have overlooked the importance of having a contrast between the field and dado.

The examiners recognise the fact that the practical work to be prepared in a limited time at a season when painters are very busy. They would, however, point out that every student has the right to send up examples of his work executed at any time during the year previous to the examination. The marks of this work are compared with the work sent in as answers to the questions, and due allowance is made for the necessary haste.

#### HOLBORN NEW BATH.

THE new bath which has been erected in Broad Street, Bloomsbury, by the Holborn Borough Council was opened Tuesday afternoon by the mayor, Mr. Alderman Phillips, the presence of a numerous assemblage of visitors. The appointments of the new building—which is an extension of the now somewhat antiquated baths in Endell Street, which, it is believed, were among the first to be erected in London and from 1852—are of the latest and most luxurious type. The

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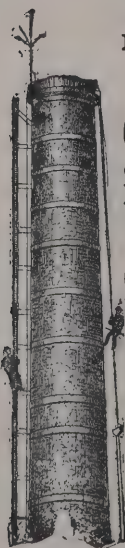
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contains the bath is 105 feet long by 44 feet in width. The floor of the bath is paved with Venetian mosaic finished in hard marble, with black lines for guidance in swimming under water. These lines, of which there are three or four about 6 inches apart, extend from one end of the bath to the other. The hall is lighted by a continuous line of upright windows. Skylights have been avoided because of the condensation of the atmosphere and the reverberation of sound which this mode of lighting has generally been found to cause. There are hand-club-rooms, and numerous dressing-rooms are provided, with nothing of luxuries for swimmers in the way of spring-baths, chutes, &c. Two large boilers heat the water, which is supplied by the New River Company through a special 6-inch pipe, and supply hot water for the laundries and second-class bath at the older premises in Endell Street.

### BORING FOR WATER IN JAPAN.

The *Indian and Eastern Engineer* is an article by Mr. F. J. Norman relating to what is known as the "Kazusa" system of well-boring, which is adopted in Japan, from which we take the following extracts:—

I should a farmer or householder, living in the neighbourhood where I am now stopping, feel desirous of sinking a well, will send for one of the local well-sinkers, and, after explaining to him for what purpose the water is required, get him to fix upon the spot where it will be best to have it sunk, so the price to be paid. The contract may be a verbal or written one, but it is invariably stipulated—no water, no cash. At this point it is just as well to say that the dowser or well-finder is not an unknown personage in Japan. As a rule the "boss" well-sinker, the owner of the outfit necessary for the work to be taken in hand. To arrive at a correct idea of the monetary value of such an outfit, I suggested to a local well-sinker that he should suppose his house had been burned to the ground, and that all his well-sinking apparatus had been consumed in the flames. I then asked him what sum of money he would require to replace it all. His answer was to the effect that, if he bought a complete and perfectly new outfit from another well-sinker, he would have to pay from 150 to 200 yen, but that this was never done, Japanese well-sinkers take a pride in being able to make everything required for the work, the carpenter tools, the steel crow-bar or rammer, and

the two iron tubes used for removing—one the debris and the other the superfluous water. He then went on to say that with a month to spare, and with a capital of from 50 to 70 yen, he would be able to easily set himself up again in business.

The contract for sinking the well having been made, the boss of the well-sinkers will then collect his gang of workmen, generally consisting of five men beside himself and a boy to run messages and hand things as required. In erecting the necessary scaffolding they use 6-inch timbers and lashings of rice straw rope. A smart gang will put up this scaffolding in about an hour's time; and when all is secure the reel or drum is mounted.

The sides of the reel are made of planks 14 feet long, 6 inches broad and about 1½ inches thick. Six to eight planks aside are required, and exactly in the centre of each is cut a circular hole about 1½ inches in diameter. Through this hole and tightly fitting in it passes an iron shaft, some 4½ feet in length. To prevent the opposite sides of the reel or drum from closing in upon each other, that portion of the shaft lying between them is run through a hollow and somewhat loosely fitting bamboo about 2½ feet in length. The projecting ends of the shaft rest upon strong posts, firmly braced to and supported by the scaffolding. They rest in hollows cut to receive them, and a U-shaped iron spike is driven in over them so as to minimise all danger of the shaft jumping its bed. The outside ends of the planks forming the sides of the reel are kept opposite to each other by pieces of wood about 3 feet long, 3 inches broad and 2 inches thick, let in crosswise. The side planks being spread out like the spokes of a wheel, two bands of bamboo strips are then passed around the reel and over the cross-bars, one to each side of the reel, and firmly tied to the cross-bars. This having been effected there is no danger of the reel collapsing.

The next thing done is to dig a shallow trench inside of the space covered by the scaffolding and immediately under the reel. And should the soil be very soft, it must be lined with matting and have an outlet channel to it to carry off to a lower level all the water and pulpy debris that will later on be removed from the bore-hole from time to time. This accomplished, the work of boring, or as it would perhaps at this stage be more correct to say, of digging, will then commence. A narrow spade, gouge-like in form, some 6 inches across, and with a long wooden handle, will be used at first. When a depth of from 8 to 12 feet is reached, a sufficiently long hollow bamboo or wooden cylinder, not less than 4 inches across the

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hollow, is inserted, great care being taken that it shall go down and rest plumb perpendicular. This is very necessary, and the reasons for it are so obvious as to need no explanation on my part. About a foot of the cylinder will remain above ground, and over it and surrounding it will be placed a bottomless tube or box, some 18 inches across. The boss of the well-sinkers then seats himself on a stool opposite this box and well over it, his feet on opposite sides, and facing the reel and scaffolding. From this position he issues his orders and directions, all the while keeping his hand on the topmost step of bamboo, one of the number forming the connecting rod or chain attached to the tools used for mashing up or removing the rods and soil down in the bore-hole. The jar conveyed to his arm upon impact with the bottom of the bore-holes tells him exactly the nature of the substance composing the strata then being worked upon. The method of working is for the gang men to arrange themselves in two or more tiers on the scaffolding, in such a manner as to enable them to handle the connecting rods to the best advantage. They handle this exactly as does the Indian coolie the common road rammer, lifting it up to about a foot to a foot and a half each time, and then letting it down by slackening their lifting muscles, the weight of the cutting or mashing tool and of the connecting rods being generally sufficient to make the required impression on the material of the strata at the bottom of the bore-hole, but should extra force be required the boss alone will give it by a strong downward push or blow. Such extra force is seldom necessary, and avoided as much as possible, for it is liable to cause the couplings connecting the sections of the connecting rods to loosen and perhaps part. This last is a very serious business for the well-sinker, as can easily be realised. While this jumping or ramming operation is in progress, the boy in attendance will every now and then pour a few buckets of water down the bore-hole. In sandy and porous soil this water should be of the consistency of thick pea-soup, made so by having had a quantity of clay dissolved in it. The water is used in order to somewhat soften the material of the rock, &c., down below and so help to reduce it to a pulp, the clay to form a waterproof coating for the sides of the bore-hole, and thus prevent surface and underground waters from draining into it.

The cutting or boring tools are of two kinds, one for soft rocks, clay, gravel, &c., and the other for hard rocks. The first is an iron or steel chisel let into a shaft of hard wood. The second is a two to three inch bar of steel—a crow-bar, in fact. Should it be found necessary to use this steel bar, it is

not attached direct to the bamboo connecting rods, which I describe later on, the reason being that the hardness of metal combined with the very distinct and direct jar conveyed upon impact with the hard rocks below is too much for bamboo, causing it to split in time, and so there is interposition between the two a connecting bar or link of hard wood. The wood most commonly used here for this purpose is what the Japanese call *keyaki*, and foreigners "Japanese teak," the scientific name is *Zelkova acuminata*.

The method of coupling the two is by iron rings or bamboo wedges driven in under them in order to tightly prevent them from slipping. This wooden connecting rod in its turn be coupled to the bamboo rods. The first or bottom bamboo rod has attached to it a short length of wood coupling, some fifteen or eighteen inches in length.

The next tool to be described is the pipe or tube used for removing the pulpy *débris* at the bottom of the bore-hole. It is a 3-inch iron tube, about 8 feet long. At its bottom end is screwed on a short length of another and larger piece of tubing expanding outwards bell-shape wise. Across it and slightly projecting downwards from it, is fitted a chisel or chopper, wherewith to separate and prevent the *débris* from balling, so that it may enter up the tube without difficulty when it is let down upon it in a succession of short ramming downward strokes. Immediately above the chisel is fixed a valve, opening upwards, so that while the *débris* can enter the tube, it cannot well fall out. When the boss well-sinker concludes enough *débris* has entered the tube, he gives the order to lift. The way this is done will be described later. Some 5 feet up the tube there is a square cut hole 3 inches and 1½ inches across. It serves the double purpose of allowing the air and water to escape, and upon the tube reaching the surface permits the workers to empty it with ease by simply turning it upside down. At the top end of the tube and referring to the aperture there is let in a bar or rod of wood; this is made fast to the tube by rivets, and the outward end of it is the coupling connection. From a common iron gas or water pipe can be made a very suitable tube.

Should an excess of water be collected in the bore-hole, removed by a tool similar in many respects to the tool just described. It can be made of lighter metal, boiler iron being good enough, and there is no necessity to have a chisel attached to it.

The bamboo cable, chain, links or connecting rods next to be described. I know not exactly what name to

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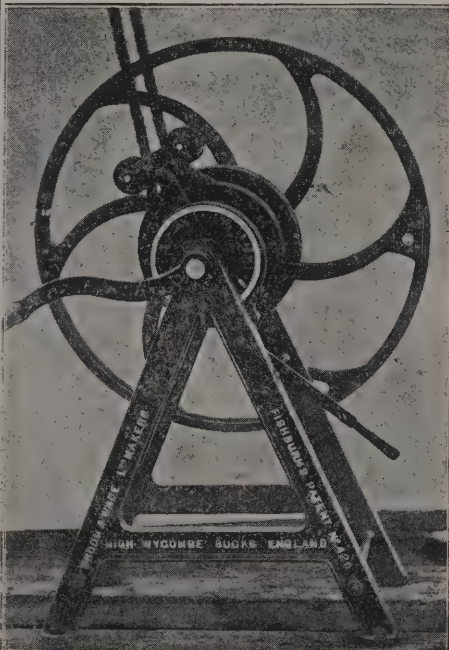
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but they are nothing more or less than long strips of bamboo from 10 to 20 or even more feet in length,  $1\frac{1}{2}$  inches and from  $\frac{1}{4}$  to  $\frac{1}{2}$  an inch thick. The method of joining them on to each other is simple in the extreme. The bamboo cable is extremely strong and supple, and yet sufficiently stiff to permit an effective downward pressure being given should the boss consider it necessary so to can also be easily wound around the reel or drum, for absolutely no danger of its kinking. The winding up on is as novel as it is effective. The way it is done is When the boss thinks it is time to lift out from the bore-rammer or emptying tube, he gives an order to the man above him to "hold on a bit." The ramming being done by one of the men then steps into the reel and commences winding it round and round with his feet by stepping from rung or cross-bar to cross-bar, using his hands on the spokes to both steady and help himself at his tread-mill. Should anyone of the bamboo connecting rods show weakening, it can easily be removed, without interfering with the couplings of others excepting only the two at each end and another one put in to take its place, not more than two to three minutes being required to complete the job, and so it is. The well-sinkers are very particular in examining the rod and joint when winding up, the boss first, and the workmen in the scaffolding above him, and the consequence of this is that accidents seldom happen. When the water-bearing strata is tapped and all the debris is cleared out of the bore-hole, the well-sinker then inserts a series of bamboos joined together, making thus a pipe of sufficient length to line the entire depth of the bore-hole. The bamboos, and most likely so, this bamboo piping would not be very firm in very firm or rocky soil, but it is used here (in London) because little or no rock is met with even when bored to a depth of 720 feet or more. It is much more lasting than I could have believed possible, thirty years being a fair average life for it, or rather of the wells. With the pain and trouble a party of well-sinkers in my presence experienced for me from an old well, and from a depth of about 720 feet a piece of bamboo piping. The term "vegetable" has no longer have been applied to it, for it was nothing more than stone. Now I have no idea to what depths underground white ants will carry their depredations, or if they could not attack a somewhat leaky bamboo pipe with a stream of water flowing through it. Perhaps they perhaps they could not. In the first case it would be

easy enough to circumvent them by having the top joint or two of iron. The bamboos to be used for this purpose must be freshly cut, *i.e.* green, and of not less than four years' growth. They must all be as nearly as possible of the same size, those most commonly used here being from 2 to 4 inches in diameter—inside measurement. The method of joining the various sections of the bamboo piping on to each other is wonderfully simple, efficacious, and expeditious. That is to say, when one has learnt how to do it, and yet it is rather difficult to describe. The first thing to be done, however, is to so arrange the bamboo that the ends to be joined shall be as near as possible of the same size.

Perhaps, and though the water bearing strata may have been tapped, the water will not come to the surface. Should this happen, then a tube will be used. Light boiler iron or zinc sheeting and even stout tin plating are the materials most commonly used for making such tubes. Translated into English these tubes are called "water callers" or "water decoyers," and as their names signify they are used for coaxing the water to the surface. This operation is a remarkably pretty one, requiring great delicacy of touch on the part of the operator, and is conducted as follows:—After the piping down the bore-hole has been cleared of all debris, the "water caller" attached to the bamboo connecting rods in the usual way is inserted carefully and slowly, and upon reaching the water it is pushed down a little way into it and then lifted a little. If this pumping-like operation is done correctly and kept up a sufficient length of time, the water will be gradually and slowly coaxed to the surface.

This having been accomplished, the scaffolding, &c., will be taken down, and should the water be required for drinking and household purposes and the like, two troughs or basins will be built around the head of the well, the one inside of the other and higher.

On the other hand, should the water be only required for irrigation purposes, a trough or tank may or may not be built around the head of the well, but usually only a box, not unlike a dwarfed postal pillar box, will be put over the projecting end of the bamboo piping, the water escaping thence through holes cut under the roof or lid, and spreading itself gradually all over the paddy-field. Should the water, however, be required, to be carried some little distance, this is done in a very similar manner to that in vogue in India. But at times a bamboo piping is used for this purpose, especially if the distance be somewhat great.

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### INSTITUTION OF ELECTRICAL ENGINEERS.

THE Dublin branch of the Institution of Electrical Engineers held their annual meeting in the Royal College of Science, Stephen's Green, on Monday evening. Professor Barrett, F.R.S., occupied the chair, and there was a good attendance.

The sessional report, which stated that the membership had been increased from fifty-eight to sixty-seven, was adopted on the motion of Professor Barrett, seconded by Mr. G. F. Pilditch.

Professor Barrett announced the names of the new committee, and introduced the new chairman, Mr. J. W. Towle.

A vote of thanks was passed to the Council of the Royal College of Science for allowing the meetings of the Institution to be held on their premises.

An interesting paper on "The Lighting and Driving of Textile Mills by Electricity" was read by Mr. Marshall Osborne.

Mr. Osborne, after discussing the electric lighting of textile mills, said the application of electric power to the operation of textile machinery had not made much progress in this country. The most important advantage of the electric drive was the fact that with it it was possible to concentrate the whole of the power required for operating an extensive mill or collection of mills scattered over a wide area into one central power plant. By that system great economy in working cost, maintenance and staff was obtained. In the case of a single mill very material advantages could be demonstrated in favour of the electric drive, as a large amount of shafting and belting could be dispensed with. In the electric system, also, the necessity of power-wasting devices, such as extra belts, cross-belts, bevel-wheels and gears for the application of power where it was exactly required was entirely obviated. Some of the principal advantages of electric driving, briefly stated, were subdivision of the various points of application of the power, thus reducing the liability to breakdown and stoppage; subdivision of the various floors and sections, so that any floor, section or group of machines could be operated independent of any other floor, section or group for overtime or nightwork; short lengths of shafting, insuring perfect alignment, and thus saving in friction losses; improvement in the general lighting by the removal of a large percentage of belting; saving in first cost of the equipment of the mill both in the cost of buildings and shafting; extreme flexibility of the system, enabling a mill to be erected in any position relatively to the

power operating it, thus insuring that the mill was erected in the most suitable position from the production standpoint. The electrical system not introducing any limiting factor would probably be the case with the mechanically operated mill; any extensions or alterations required could be made without interfering with production; the depreciation maintenance charges were very much less in the electrical system than in the mechanical.

A discussion having taken place on the paper, the meeting ended.

### DO SKYSCRAPERS PAY?

THE economic aspect of the unrestricted construction of skyscrapers, says the *Architectural Record* (New York), is a matter which has ever received very serious attention.

It has been generally assumed that, however they may mar the appearance of a city, they are undoubtedly a great business convenience, and a fertile source of real estate values. Henry James somewhere calls them the "triumph of commerce and the despair of art," or words to that effect. But in the light of certain recent developments of skyscraper economics in New York and elsewhere, we are justified in putting a question mark against this commonly received opinion. The "skyscrapers" undoubtedly pay their owners, just as property pays the protected manufacturers; but, quite apart from the effect upon the looks of a city, or even upon public health, there is a very doubtful matter whether their practically unrestricted construction, so far as height is concerned, has been of general economic benefit to New York city.

From the point of view of the majority of the property owners, it can be conclusively shown to be a drawback rather than a benefit. The erection of tall office buildings makes the concentration of business in small specially-favoured localities, such as that within a radius of 400 yards of the Stock Exchange. A limitation on the height of such buildings on the other hand, would make for the distribution of business over a larger area, and the consequent distribution of the real estate value created among a larger number of property owners. The effect of the distribution of business would be to diminish the cost of real estate on certain streets, such as Broadway, Wall Street and Broad Street, and to increase the value of other streets a little further away. Assuming that the

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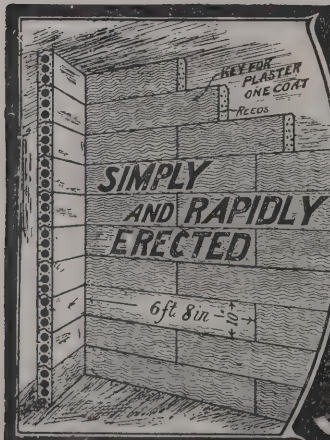
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of business would be transacted under a regulated as an unregulated system, this business would require, of a larger number of smaller buildings, and the augmented demand for space all over the city, caused by the use of sites for a larger number of buildings, would bring pretty general increase of values. Moreover, it would increase the amount of rentable space within the city advantageous localities as much as may be supposed because the owners of eighteen and twenty storey buildings have found it necessary in a great many cases to use adjoining property in order to protect their light and this is true in the case of the Mutual Life, the Washington Park Row, the Commercial Cable, the Atlantic the Singer and many other buildings in New York and the result is that many very well situated parcels of land are withheld from improvement, which in case there is a limitation of the height of buildings to eight or nine storeys would have been most assuredly improved. The value of property so withheld varies in different streets, but on the whole, it would amount to as much as a fifth of the space occupied by the tall buildings.

On the point of view of business interests involved, it is perhaps, so easy to make out a good case for regulation. The advantages of wider distribution of office buildings in some cases make no difference at all; and in all cases would be partly neutralised by the constant use of the telephone, and an efficient system of surface transit. It is probable that a legal restriction as to height would increase the rents in buildings very favourably situated in the Wall Street district of New York, because the business men, bankers, their lawyers and their clients needs a transaction a good deal of running about, both by car and clerks, and an office which reduced the amount of travelling to a minimum would naturally possess increased value. It may be doubted, however, whether increased rents would occur in any except the Wall Street district, and in any case a deduction should be made on the account of the enormous bills for electric lighting which the "skyscrapers" cause the tenants of the lower floors on the streets downtown. On the whole it is questionable whether, after all allowances are made, business in Wall Street anywhere could not be conducted as economically and as profitably in eight as in eighteen-storey buildings.

In view of all these considerations which make the economic advantages of "skyscrapers" at least extremely doubtful,

except to the owners of very advantageously situated property, why is it that there has been no more persistent and successful attempt to bring about such regulation? For if their economic advantages are doubtful their æsthetic and sanitary disadvantages are manifest and serious, so much so that abroad there is no question about keeping the height of all buildings down to such a level that they will not deprive the street of too much sunlight or be too much out of scale with its width. The explanation in general seems to be that in America private and special interests always have more energetic and insistent advocates than the wider public interests. Even Chicago, where a limitation of height to ten storeys has prevailed for a good many years, could not stick to its guns, but has recently given the favoured property owners their own way. It is not easy for a common council to resist men who declare that in case restrictions are removed they are prepared immediately to spend 20,000,000 dol. in new buildings. As for New York, in spite of its claims to metropolitan eminence, it has always been as clay in the hands of the real estate owner and speculator, and the consequences of this let-alone policy, which in another direction has cost the city so much in the way of alienated franchises, are in this matter both irremediable and disastrous. They are irremediable, because to establish a limitation at the present time, after so many "skyscrapers" have been erected, would be an unfair discrimination against other unimproved property in the favoured neighbourhoods, and they are disastrous, because the cost of curing the congestion which these "skyscrapers" will eventually cause is incalculable. This is an aspect of the matter which is too frequently overlooked. If during the next twenty-five years there are continued to be erected an unlimited number of from twelve to twenty-storey buildings on the narrow streets and infrequent avenues of a city, badly planned as they are for the distribution of traffic, the outcome will be a congestion of street traffic and transit of which the Brooklyn Bridge at present gives some inkling, and when this time comes the remedy for this congestion will be as expensive as its perpetuation will be intolerable. It stands to reason that if very tall buildings are erected in large quantities upon streets that were laid out only for very small ones, and if steps are not early taken to adjust this street system to the increasing demands which are being put upon it, this combination of energetic private building, with negligent public administration, will do more to damage the business interests of the city than any amount of restrictive regulation.

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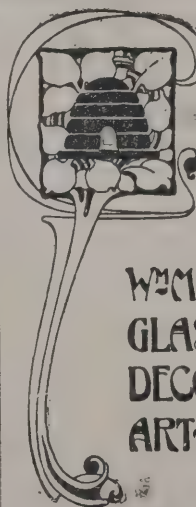
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## AN INDIAN CANAL.\*

THE Chenab Canal was originally constructed as an inundation canal, to irrigate a portion of the area now commanded. Very shortly after it was opened, it became apparent that however successful an inundation canal may be for riverain lands in which wells can be worked to mature the crops after the river falls and closes the canal, it is quite unsuited to the needs of the high lands which form the Rechna Doab. The canal silted heavily in the flood season, and as there was no means of forcing the water over the deposit, or of scouring it out, the water ceased to flow before the *khari* or rains crop was matured, and before watering had been given to allow of the ploughing necessary to sow the cold-weather crop. The responsible engineers at once agitated for a weir across the river, so as to raise the low water-level and make the canal perennial. This was sanctioned in 1888, and as it was obvious that the full value of that work would not be obtained unless the whole of the high land was brought under irrigation, an estimate was sanctioned in 1892 for extending the original canal as now shown on the general plan. The enlarging of the canal was an engineering work of no small magnitude. The construction of the new branches and distributaries was no more difficult than the original canal, but the main canal had to be widened from a channel 109 feet wide, carrying 7.6 feet of water, to one 250 feet wide, and carrying, as has been said, 10.8 feet depth. All the bridges had to be rebuilt, the channel itself regraded with falls introduced, and all this had to be done while the canal was still flowing and irrigation was developing. The funds and labour available were concentrated as much as possible; thus one division was employed in widening the main canal, while another constructed the Jhang Branch Upper. As it and its distributaries were completed, it was opened for irrigation, and work was commenced on the Bhawana branch and Jhang Branch Lower. When these were ready colonisation operations began on them, while the engineering staff was transferred to the Gugera Branch Upper and subsequently to the Gugera Lower and Burala Branches. Thus, as soon as any section of the canal was ready, it was opened, and began after the first year of remissions to earn revenue. The project estimate con-

\* From the paper on "Recent Developments in Punjab Irrigation," read by Mr. Sidney Preston, C.I.E., at a meeting of the Indian Section of the Society of Arts.

templated that the full capital would be expended by the year 1899-1900, and that the irrigated area increase from 39,300 acres in 1889-90 to 528,500 acres in 1899-1900, to 993,000 acres in 1909-10, and that the mate development of 1,100,000 acres would not be until 1914-15. What have been the actual results of the weir was completed in the spring of 1892, and at once served by it, with the result that in the year 1892-93 157,197 acres were matured. The subsequent development was as follows:—

Years.	Acres.
1893-4	270,400
1894-5	269,300
1895-6	369,900
1896-7	520,200
1897-8	810,000
1898-9	957,700
1899-1900	1,353,200
1900-01	1,828,800

while in the current year the irrigation to the end of had amounted to 1,920,240 acres.

Up to March 31, 1901, a total area of 1,466,125 Crown land had been allotted, while the census taken in the month showed that close on 800,000 souls had been introduced into it. Several towns of considerable size have been founded, Lyallpur, so called to commemorate its foundation by the Lieutenant-Governorship of Sir James Lyall, now from 8,000 to 10,000 inhabitants, while Sangla, Gojra and other towns are progressing rapidly, and are large markets for the export of the produce. The villages have been laid out on a uniform and sanitary plan, and are rapidly springing into existence all over the whole tract. It may, I believe, be prophesied that this canal will in time irrigate as much as 2,500,000 acres in the year, raising crops which may be valued at 5,000,000 sterling. You may be interested in hearing that this scheme has cost, and the return Government is to obtain from it. The original estimate amounted to 256,800 for a canal to discharge 8,333 cubic feet per second, which it was estimated would ultimately irrigate 1,828,800 acres in the year. To the end of 1900-1 the total cost of 252,63,656 rs. had been spent on a canal which carried 10,800 cubic feet per second, and in that year 1,828,800 acres of crop, and is still undeveloped. It has already stated, be said to be certainly able to irrigate 2,500,000 acres when possibly another 20,00,000 or 30,00,000

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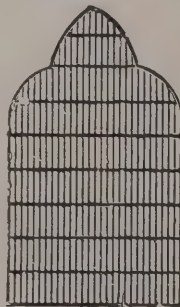
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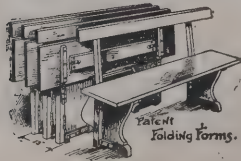
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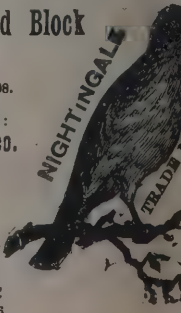
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on it. In 1900-1 the net revenue assessed gave a return of 18.18 per cent. on the capital, but this is allowing for remissions already mentioned, and it has been calculated that if the area actually matured had been assessed at the same rates (which are by degrees coming into force), the revenue, after deducting working expenses, would have yielded a return of 24.58 per cent., and as the Indian Government can, I believe, borrow money at  $3\frac{1}{4}$  or  $3\frac{1}{2}$  per cent., it is an eminently satisfactory investment. It must not, however, be thought that this high return is obtained by over-irrigation or grinding the cultivator. The crops matured in the canal in 1900-1 are estimated to have been worth 9 rs. Of this Government only took between one-eighth and one-ninth, leaving the large balance of 447,16,325 rs. for the cultivators. If further evidence of the fairness of the assessment is required, it will be found in the crowds of people flocking to the land which surround every officer during his tour of the Punjab, although the amounts of the assessments are well known.

There is one other point to which I should refer before I conclude my remarks with regard to the Chenab Canal. You may perhaps wonder how the distribution of the water is so arranged as to insure its reaching the millions of fields into which the vast area is divided. When the supply in the river is sufficient for the full supply of the canal, this is a comparatively easy matter. If the demand warrants it, the canal is run full, which, in turn, gives full supplies to all the distributaries. The difficulty really begins when the supply falls below the requirements, and it is then that the skill and intelligence of the canal staff are taxed to insure an equitable distribution, and to mature as large an area as possible. Of course, this is more difficult in the cold weather. Still, taking the case of the Chenab Canal, the river usually remains fairly full from the middle or end of October; this gives ample supply for winter sowings. Should the cold weather rains fail, the supply will be entirely dependent on the canal, while the discharge of the river will probably not exceed 100 cubic feet per second. If the water were available it is probable that the canal would be run full more or less steadily, but in the present state of things, the whole volume of water is passed into the canal and distributed to the various branches in rotation. Some years ago the system was to distribute the supply between all the branches, each steadily with the share of the supply available. It is obvious that with this system the distributaries

could not run full; with the result that lands which were high did not receive water, the depth in the channel not being sufficient to flow on to these high lands; the water was drawn off by outlets serving low lands in the middle reaches of the distributaries, and little or none reached the tails, with the result that there was heavy failure of crops in the tail villages. This has now been altered, and the reduction necessary is made in time instead of in volume. Thus every distributary when opened at all is run full, so that all the outlets on it work fairly and as designed, and the tail villages now obtain as good a supply as those at the head.

When any given distributary has received its allotted time of full supply it is entirely closed and the water passes into others. The art of good administration lies in correctly fixing the periods for which each distributary is opened so as to utilise to the best advantage the supply available, and to take advantage of any freshets which may come down the river owing to rainfall in the catchment area of the river above the weir. Thus the system must be so designed that if to-day 4,000 cubic feet are being received, we can to-morrow distribute 8,000 or even 10,000 cubic feet if that volume reaches the canal head. To do this it has been found necessary to have a private telegraph line extending all over the system, so that every officer and subordinate may be at once informed what volume is available and which channels are to be opened. The new system has also the enormous advantage of economising water, as the shortest length of channel is kept wet, and consequently the loss by absorption and evaporation is reduced to a minimum.

I have only one more remark to make before I leave the Chenab Canal. Very early in its history it became evident that a railway to remove the produce was absolutely necessary, and the canal and revenue officers agitated for its immediate construction. This requisition came on the railway branch of the Public Works Department unexpectedly; such a line had not been contemplated in the programme then in operation, and it was some time before funds could be made available, and the line from Wazirabad to Multan, passing through the length of the colony, constructed. It is not too much to say that the colonisation scheme was within an ace of proving a failure from the impossibility of the colonists getting rid of the enormous quantity of produce, and raising cash to pay the Government demand. This had now been so fully realised that, in the case of the more recent Jhelum Canal, a similar railway is now being laid down in the centre of the

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Jech Doab, and a considerable portion of it will probably be finished and open for traffic before any settlers are brought in at all, or new lands opened out.

### DEATH OF MR. JOSEPH TANGYE.

THE death is announced as having taken place on the 28th ult. of Mr. Joseph Tangye, late of the firm of Tangyes, Ltd. For the following particulars of a notable man's career we are indebted to the *Birmingham Post* :—

When the Crown lands at Bewdley came under the hammer, about thirty-three years ago, Mr. Joseph Tangye, of Birmingham, became the purchaser of the once royal abode at Ticknell. From that time he has been a resident in the ancient borough and interested himself in its fortunes. He eventually left Ticknell (which he had restored) for the residence he built for himself known as Hern's Nest, and here he passed away at the ripe age of seventy-five years. Mr. Tangye's career has been a very remarkable one, and the way in which he came to the rescue when Brunel's *Great Eastern* stuck in the mud in the Thames lifted him and the firm with which he was identified to a pinnacle of fame in the engineering world. Most Birmingham people know that the Tangyes are of Cornish origin. Mr. Joseph Tangye and his brothers, however, though born in Cornwall, all in the end found their way to Birmingham, where they breasted their way to the position which Tangyes, Ltd., now holds. We are informed that Mr. Joseph Tangye had not the advantages of much education as a boy—it was not the days for this—but he applied with zeal as a youth to the acquisition of technical and mechanical knowledge, and even in his early years was able to render service with that knowledge. It was about fifty years ago that he came to Birmingham and started with a single lathe in a little upstairs room near to where Messrs. Elkington's establishment now is. His brothers also came to Birmingham and started in business, and eventually they all joined together. Brunel, when in difficulties from the failure to get the huge *Great Eastern* afloat, heard of the Tangyes as men likely to be of service, and sent a representative down to Birmingham to see them. This gentleman thought the modest works he saw could not be those of the engineers calculated to help Brunel, and it is said that he went elsewhere to make inquiries for the Tangyes. In the end he

came back to their place, though altogether doubtful as to the possibility of rendering service. When Mr. Joseph had the matter explained to him and knew what he wanted he said it could be done and should be. Hydraulic power was supplied in sufficient quantity to get the *Great Eastern* at last into the water. The achievement gave the Tangyes a name among the engineering firms of the world which they know, and their reputation was recognised everywhere. At that time the works of the firm have grown till they employ between 2,000 and 3,000 workpeople. Mr. Tangye, when he settled down at Bewdley, took his engineering with him, and had a fitting shop at his successive residences there, where he spent much of his time in engineering and was often devising something new. He took a considerable interest in the locality where the later years of his life had been spent, and was ever ready to give of his benefit of his mechanical genius and advice. He left a widow and several sons and daughters.

At the monthly meeting of the Liverpool City Alderman Salvidge drew attention to a report from the Mayor relating to a stoppage of work in which some of the Corporation contracts were affected. In the epitome it was mentioned as a stonemasons' strike. He wished to say that this was a strike but a lock-out. He understood there was a great deal of work going on at present with reference to the Corporation, and a large number of men had been employed to carry out the work. He also understood that the master masons had given the men certain alterations as to the conditions of work, but was not believed, did not affect the question of pay at all. As the lock-out brought about by the masters themselves he maintained that it was a matter for inquiry, and the legal question ought to be placed before the Council and some attempt ought to be made to get the master masons proceed with the work. Corporation contracts or come to some arrangements with the men on the matter. He was told the men were prepared to submit the whole of the matters in dispute to arbitration, and was resolved that the matter be inquired into by the committee.

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# The Architect.

## THE WEEK.

WHEN Queen Victoria Street was constructed it was generally believed that the houses in it would exemplify the most advanced type of safe building. The terrible tragedy which was enacted in so important a thoroughfare on Monday afternoon on that account has excited unusual horror. It seems incredible that in the centre of the City of London, close to the Mansion House and the principal fire-station, in broad daylight, eight human beings should be consumed almost before the eyes of thousands of spectators. It was only, however, another instance of the inefficiency of our public and social organisation when put to the test. A witness at the inquiry into the latest of the Barbican fires expressed the opinion that the Metropolitan Building Act is extremely lenient to builders. It would have been more correct to have said building speculators. It is possible to erect buildings which, if not irresistible to a continuous fire, can at least withstand the power of the flames during a time which will be sufficient to enable the best fire brigade to arrive on the scene. But in Queen Victoria Street we find that not only the contents of the shops were destroyed, but the floors and the stairs also, in an amazingly short time. What is equally remarkable is that no less than five houses appear to have been almost simultaneously more or less affected. It must therefore be readily admitted that the construction was at fault, for it seems to have been as flimsy as in any jerry-built terrace in the suburbs of London. A circular wooden staircase, it is said, merely as a funnel.

ALTHOUGH the fire commenced when all parts of the building were occupied, it is incomprehensible that not one of the occupants of the offices or representatives of the employers brought information to the firemen in the neighbouring Watling Street. In such a crisis every second was important, and yet, at least ten minutes were allowed to elapse before notice was sent to the station. Queen Victoria Street is never without policemen, and it would not be an excess of duty for one of them to have given the alarm. The firemen turned out as quickly as was to be expected from a station that to all appearances was not planned to deal with emergencies to be met. They might, however, with almost as much advantage have remained in Watling Street. Harmony does not exist between the Common Council and the County Council, and one effect of it is seen in the surrounding fact that no fire escape is provided which corresponds with the height to which modern buildings in the City are now commonly built. Fifty-foot escapes are almost obsolete unless it can be guaranteed that no fire can arise in the upper storeys of City buildings. It was necessary to send to Southwark for a long ladder, and by the time it was set up the tragedy was all but completed. On such occasions it is commonly assumed that policemen on the spot who are competent to devise an impromptu system, but it appears that if it were not for the accidental presence of a provincial and amateur fireman the utilising of tarpaulin would have been neglected, and the death list would have been increased. The municipal organisation of London has, in a word, flagrantly displayed its weakness on the occasion.

UNHAPPILY responsibility has to be shared by others. There is no doubt the building was used as a factory, whether legitimately or not has yet to be revealed. By the County Council the excuse was made that the house was a new workshop. Granted; but where was the provision for escape on all the storeys above the ground floor? Notice in writing specifying the means of escape that were necessary and ordering them to be provided served on the owner or owners of the factory, or was there any provision to have the works required carried out by the London County Council? All these are demanded by the respective clauses of the Factory and Workshop Act of 1891. To say that no particular attention had been called to the building is an excuse unworthy of the County Council, with all its deficiencies. We have several times pointed out the danger of buildings which pass for fac-

tories, and as many have thought expressed ourselves with too much severity on the supineness of the authorities in regard to them. But the loss of life on Monday in the heart of the City should demonstrate to all that a long course of *laissez-faire* policy is likely to be followed by similar scenes in the Metropolis unless more energetic action is determined upon by the County Council. The misfortune is that when a fire breaks out individuals will only trust some elected authority. In the majority of cases means can be provided by house owners which are more efficient than any aid which can be rendered by authorities. It should, in fact, be recognised that all that can be done by corporations, whether public or private, can only be supplementary to the precautions which people should adopt who have to consider the lives of others. Factory owners and employers in general, as well as the proprietors of schools and of buildings in which people assemble, should regard it as a duty to make themselves independent of such assistance as failed to be of any service in Queen Victoria Street on Monday. Fireproof construction ought to be far more frequently employed than it is at present. Of late years it is true that some gentlemen who have assumed the office of judge have cast doubts upon the efficiency of some of the arrangements in use. By all means let improvements be introduced, but it is unquestionable that if the house in which the fire broke out on Monday exemplified any of the established systems of fireproof construction the loss of life could not have occurred. Walls and partitions as well as floors can now be made sufficiently safe. There are also many aids and appliances which serve for extinguishing a fire before it has assumed great force. They should be compulsory in buildings which are occupied as offices or workshops. There are, too, means of escape which are extremely serviceable, and which are not difficult to employ. In fact, any self-reliant man who will make inquiries can easily find out a great number of inventions which are obtainable at a moderate expense, and which are adequate to safeguard life unless under extraordinary circumstances. But so long as people will confide solely on the arrangements which are supposed to be made by authorities, and about which they can have no certainty, tragedies like Monday's cannot be avoided. According to all reports, there was not the least preventative existing in the fatal building, and not one inmate appears to have rendered the slightest service. So far as is known, the unfortunate girls were allowed to meet their death without the smallest exertion on the part of any of the occupants, for the male assistants precipitately escaped from the building at the first rumour of danger.

FROM the decision which was given by the Court of Appeal in *DUNHAM v. CLARE*, it would appear that an accident which only indirectly or remotely was the cause of death, is, under the Workmen's Compensation Act, to be regarded as if it were a direct cause. In last September a man when carrying a pipe slipped and injured one of his toes. A fortnight after the accident erysipelas set in, and in the course of twelve days he died. His medical attendant ascribed the death to blood poisoning caused by erysipelas of an uncommon form. Medical evidence was given to the effect that erysipelas was a very unusual consequence of such a wound. The County Court judge decided that as death was not the result of an accident the widow was not entitled to compensation. In the Court of Appeal the Master of the Rolls relied on the first section of the Act, viz.:—"If in any employment to which this Act applies personal injury by accident arising out of and in the course of the employment is caused to a workman, his employer shall, subject as in hereinafter mentioned, be liable to pay compensation in accordance with the First Schedule to this Act." His Lordship held that to inquire whether death was the natural or probable consequence of the accident was to apply a wrong standard. The question was, did death result from the accident or was the chain of causation broken by a *novus actus interveniens*, which gave a new origin to the after consequences? In the case before the Court death was the result of the accident, unless some new cause had intervened, and nothing had intervened to substitute a new cause. The appeal was accordingly allowed, and compensation will have to be paid.



## MEMORIALS OF VICTORY.

WE referred last week to the indifference commonly evinced in this country about architectural or sculptured memorials of the successful wars in which Great Britain was engaged. To some extent the absence of those signs of national glorification is warranted by ancient precedents. The Greeks, for example, were proud of their victories in war, and they were not averse to slaying or converting their foes into slaves. They also knew how painful could be the sight of enduring reminders of defeat, especially when the people who were one time enemies afterwards became allies. There was accordingly a compromise between states on the subject, which denoted primitive courtesy. The erection of a memorial or trophy of a battle was allowed, but in order that it might decay quickly timber alone was to be used instead of stone or metal, and all repairs were prohibited. It could in that way have only temporary importance. As a consequence the memorials of victories among the Greeks were always limited in number. The Greeks were not alone in preferring historical or poetic records to constructive works as a means of informing posterity about their contests. The circumstance that no great monument was to be seen which recalled the triumphs of ALEXANDER THE GREAT, suggests that in states which were less civilised than Greece no ostentatious elation was taken in the triumphs of war. Then as now fortune was known to be fickle, and the sight of a pompous monument, it was believed, might act as an incentive to fresh wars in the hope of attaining a reversal of the former issue. Although the world has advanced in many ways, people continue to be sensitive about the existence of anything which brings back to the memory a failure. All the philosophy of the Germans did not prevent them in 1870 from having a strong desire to destroy the Bridge of Jena and other structures in Paris, which signalled defeats by the French army under NAPOLEON and subsequent brutalities by the victors. They were only imitating their ancestors, for TACITUS relates how the Germans of his time appeared to be more mortified by the erection of a Roman trophy than by the loss of many of their bravest tribesmen, and they seized the earliest opportunity to overthrow every stone which recalled their loss of liberty.

When great artists arose in Greece all occasions which offered themselves were employed to display their talents. The old indifference to trophies was overcome. The beautiful statue of VICTORY which is in the Louvre would not be so perfect if several sculptors had not made experiments in the creation of similar figures. The Dorians were peculiarly callous about the feelings of their adversaries, and as far as can be ascertained they contrived to have memorials which were not always of perishable components. In the time of PAUSANIAS many of them must have continued to exist, although at present no remnant of them is to be traced. From what is said by the topographer it is evident there was some apprehension about the danger of indulging in the pride of success, for the memorials were often dedicated to deities. The Romans had more of the Doric than of the Attic spirit, but at first they avoided the setting up of trophies. Then as they grew in power they made no scruple about displaying memorials of victories not only in Rome, but in the neighbourhood of the battle-fields. They believed that such monuments would have a deterring effect on the people who were subjugated, besides serving as historic records. With all their greatness the Romans never cared about concealing their worth. Their houses were adorned with arms which were won in battle, and out of the superfluity the public buildings were decorated. Then it was found that sculptured representations were as serviceable as breastplates, swords and bucklers. The memorials assumed many forms. One erected by POMPEY in Spain was considered to be among the wonders of the world. At La Turbie, in Monaco, there are still the remains of the trophy which was constructed after the battle of Actium, and of which a colossal statue of AUGUSTUS formed a part. The ruins of the tower show that it was 100 hundred feet in diameter and was approached by a flight of steps from a square platform measuring 130 feet.

The last work is evidence of a change in spirit. It was no longer Rome which was glorified, but an individual. Afterwards a surprising number of arches and columns

came into existence which were devoted to the preservation of the renown of the Emperors. Among others may be mentioned the arch of CONSTANTINE in Rome, which was inscribed to him as "the founder of peace and the deliverer of the city." The fronts of the arch became a field for the representation of events of which the Emperor was the hero. In the arch of TITUS the reliefs displayed not only his prowess on earth but his ascension towards the heavens. The arch of SEPTIMIUS SEVERUS also represented the Emperor's conquests, although the subjects cannot now be clearly understood. The columns of TRAJAN and MARC AURELIUS were also conceived in a like spirit, which was the exultation of Imperial power. In the provinces similar works were constructed. The arch of TRAJAN at Benevento must have been equal as a work of architecture and sculpture to any of those at Rome. Another arch, which some critics believe to be the finest example in the world, is at Ancona. The arch of AUGUSTUS at Rimini is also a notable work, but it recalls Peace rather than War, for it was dedicated to the Emperor as the chief road-maker in Europe.

Although VICTORY as a personification was known to the Greeks, for they imparted human attributes to many things, it received more of the honour due to a goddess from the Romans. It seems, however, to have been difficult to decide the proportion of the honour paid to VICTORY as a goddess and to the Emperor she guarded. That great respect was long offered is evident when it is found that St. AUGUSTINE mentions VICTORY as the queen of the gods and the representative of JUPITER. VICTORY was often employed on the reverse of coins, and continued to be utilised down to a comparatively late period. In that way Roman pride was domesticated in all lands then known.

Warlike memorials were identified as productions of the Romans beyond any other people. When Roman power was at an end wars did not cease, but it is remarkable that however victorious, other races never followed the Roman manner of celebrating the infliction of defeat. Mass buildings equal to the old triumphal arches were sometimes made to flank the entrances to cities in Mediæval times, but they were intended as defences or as toll-houses. Even Venice was satisfied with recording its triumphs on land and sea by means of paintings. The old tradition was taken up until the seventeenth century, and by the people who claimed to be allied to the antique Romans. In 1608 the Porte Saint-Denis in Paris was constructed from the designs of FRANÇOIS BLONDEL. It was to commemorate the victories of LOUIS XIV. in Flanders; the sculptured upon it has consequently a military character. Twenty years afterwards the Porte Saint-Martin was erected according to the plans of BULLET, one of BLONDEL's pupils. Neither work can be considered as more than a weak imitation of Roman examples which were devoted to individual rulers rather than to an army. NAPOLEON when his turn arrived, was too politic to ignore the fact which brought him to power. In the triumphal arch at the Place du Carrousel, constructed from FONTAINE's plans, which were inspired by the arch of SEPTIMIUS SEVERUS in Rome, reliefs were introduced in which no doubt the Emperor was the chief actor. But when the eight figures of types of the French army in 1805 were set up at a late time, it was understood that the Emperor's original idea was realised. That is no doubt a disputed point, but there is no question that when by his decree he ordered the construction of the Arc de l'Etoile, he was thinking of the whole history of the revolutionary army. The names of about four hundred generals are inscribed on the stones, and the great reliefs are not all illustrative of NAPOLEON's victories. In magnitude it surpasses any Roman example, and although the summit of it is still without a crown, a masterpiece of sculpture, the structure is a worthy memorial of the events which took place in the twenty years which followed the Revolution.

We suppose the triumphal arch which used to stand opposite Apsley House and supported the wonderful equestrian statue of WELLINGTON has a claim to be regarded as having some connection with the Duke's campaigns. But no stranger who now sees it could credit it was ever a warlike character. DECIMUS BURTON's arch at the entrance to Hyde Park, with its equestrian figures derived from the Elgin Marbles, and the Marble Arch at the o-



extremity of the Park, which was transplanted from Buckingham Palace, are both so simple they must at once be identified as expressing the peaceable intention of the designers.

If judged merely as records of battle scenes or *Denkmäler*, it is doubtful whether any Roman or French works are equal to the compositions by Assyrian sculptors and Egyptian painters. They show the incidents of a campaign, and although there may be exaggeration and the fighting power on one side is unduly magnified, yet they are more significant than most of the work on the faces of the *Arc de l'Etoile*. RUDE's great relief no doubt is suggestive of the enthusiasm of the Republican soldiers, but it would serve equally well as a representation of a Gallic or Germanic tribe rushing to an attack on the Roman armies eighteen hundred years before the "*Marseillaise*" was chanted.

It is never likely that in England a war memorial will be raised which can compare with one of those in Rome or Paris. We are utilitarians, and if triumphs must be commemorated in stone or brick, it will be in a simple rather than in a heroic form. There is consequently much to be said for the project of erecting memorials of the African contests in the shape of cottage homes for old soldiers throughout the country. It is not creditable to be constantly hearing of the death in the workhouse of brave men who have borne the brunt of more than one campaign and have taken a part in famous struggles. A fairly comfortable building that would accommodate a couple of families could be built for 700*l.* or 800*l.*, and if local rates and taxes must be levied, the interest on 300*l.* would pay for them as well as for ordinary repairs. Triumphal arches, needless in timber and canvas, obelisks and tall columns are out of place in the British Isles, and with regiments which have local designations it seems absurd to testify to their ravery and endurance by one big memorial to be placed somewhere in London. The rank and file of the Army would have some special acknowledgment, and it cannot be a more acceptable configuration than houses which would shelter some of those who have loyally served the country in emergencies.

## DECORATIVE ILLUMINATIONS.

By F. J. WARDEN-STEVENS, A.M.I.M.E., A.M.I.E.E.

THE question of decorations and illuminations has taken an important place on occasions of rejoicing, and especially during the last few years. It is to be expected that all over the country the decorative illuminations for the Coronation festivities will surpass anything that has been seen, the workmen being now busy with the fixing of the more substantial portion of the effects on large buildings.

I propose herein to briefly refer to the considerations affecting the question of decorative illuminations for temporary purposes and the different arrangements that have been or are being adopted.

We may have illuminations the design and fittings of which are far from decorative if viewed in the daytime, but the aim should be to so arrange that effect is not only obtained when illuminated, but that a pleasing decoration is available even when not in use. This may be obtained to some extent by flags, bunting and artificial flowers being intermingled with suitably arranged electric lamps, so that when one is not visible or decorative the other is, and *vice versa*. Such an arrangement is, of course, not possible with gas or fairy lamps, but only with electricity, on account of the danger from fire.

The arrangements required being only of a temporary nature, it is most frequently necessary for the expense to be the first consideration, and I am afraid there have been occasions when the cost has been so curtailed that the arrangements and mode of carrying out the work have been such that the result has been an absolute failure.

The simplest and least costly form of decorative illuminations fulfilling the requirement of effect by day as well as by night is no doubt the coloured-paper Chinese lantern enclosing a candle, but this is of too temporary a

nature—a little rain, a puff of wind, and all is over. There is also the danger from fire, not only to itself, but to its surroundings, and the attendance necessary renders the Chinese lantern a very troublesome and oftentimes, when awkwardly situated, an impossible form of illumination.

The fairy light, in its coloured glass or china bowl, offers a simple and effective arrangement if adopted in sufficient numbers, but otherwise it is insignificant. It also possesses to some extent the defects of the Chinese lantern, for it requires considerable attention and is affected by rain and wind.

Gas is used to a very large extent as being a convenient form of illumination, and many devices are possible to give a decorative effect by night; the sight by day is, however, far from pleasing generally. Plain piping with holes or small burners as outlets for the gas can hardly be called decorative, even when forming such devices as letters, stars, crowns or flowers, and is even less so when simply utilised to outline windows of buildings. It can be improved upon in this direction if coloured globes are utilised to enclose the gas jet.

I have not so far alluded to crystal or transparent devices, which offer a better effect with gas, as the plain piping is obscured from view; these arrangements also offer a form of decoration in the daytime. The great disadvantage with the use of gas, however, for decorative illuminations is the fact that the result is much impaired by wind. The gas torch or flare for illuminations is acceptable but cannot be called decorative.

Electricity certainly offers the greatest possibility of effect both for decorations and illuminations, and I propose to describe the different arrangements for carrying out the work.

A simple form of planning the work is to utilise a twin insulated cable, stapled to the walls as and where required, to give devices or outline windows. To this at equal distances are fixed the lampholders, either coloured lamps being used, coloured globes, or shades; but in order that the effect may be satisfactory by day, it is necessary that the lamps are close together. A special lampholder is necessary to insure water tightness between the lampholder and wire and between the lamp and holder. Such a system as this has been introduced on the present occasion, which is known as the "*Fairyland*" system, and the cable and fittings are made up already for use and sold by the yard, with lampholders in position at distances generally of 12 inches apart, the shades of about 9 inches diameter, of ornamental stamped metal japanned in various art colours, and fixed over the lampholders.

Another novelty consists in a new insulator suitable for fixing insulated wires, the wiring being fixed and strained to insulators at comparatively long distances apart. The insulators are in halves, and the two wires are fixed to galvanised iron clips which slip on the insulator, the top being placed in position, and the whole is fixed by an ordinary coach screw to a plug in the wall. This system is specially advantageous where it is desired to keep the material for future use, as once the wiring is done and the plugs are fixed on the wall the decorations may be carried out on future occasions with little expense and no outlay for material.

A simple system is to use bare copper or galvanised iron wires fixed to insulators, special insulators being available of a simple nature, the lamps being fixed directly to the wires by spring clips. This system is inexpensive and easily fixed, but it does not have the advantage of water tightness possessed by the previously mentioned systems.

A system which has a great future before it for decorative effects is that known as "*Electric-Lighting Boards*." The special advantages of this system are simplicity and variety of design. With regard to the last-named, mottoes may be changed and devices entirely altered without what may be called structural alterations, by simply altering the lamps. Electric-lighting boards appear to be boards covered with easily pierced decorative material, the lamps being affixed by simply being stuck in where desired; no lampholders are required, the cap or base of the lamp having two pin projections. Contact is made under the outer covering with the special conducting material; this material is also made up in the form of flexible strips as well as boards.



There are many simple forms of batten-holders suitable for arranging any device to a board with rapidity, the chief feature being conveniently arranged side clips fixed to lamp-holders, by which they may be fastened by a screw or pin before the wiring is carried out. This method has much to recommend it for use in forming letters or designs of a more or less elaborate nature, and if a board is in the first instance pierced by holes for the wires at regular and close intervals the lampholders may be fixed to form any required design and of course changed with ease at any future time to suit the occasion.

Devices may be cheaply and strongly constructed with "Simplex" tube in a similar way to the method of construction for gas, only there is no screwing, sockets being used. Almost any design may be made by means of the standard bends, tees, &c., and at each lamp a T socket is inserted to carry the holder.

The General Electric Company have many standard designs prepared for this occasion, and it may be said of them that they are very artistic and most effective. They make a specialty of a bright metal background, on which the lamps are placed, and this serves the double purpose of an effective day and night display, and certainly allows of a brilliant night effect with few lamps.

Amongst the special illumination devices, mottoes, festoons, crowns and monograms may, of course, be expected to be most numerous.

Transparent portraits of the King and Queen, with the lamps enclosed behind in a metal box, are obtainable, which are likely to be popular, as also is ornamental scrollwork of metal studded with lamps.

The rose, shamrock and thistle in the natural colours on the Electric-Lighting Boards system should be considerably adopted.

A point worthy of mention is that recently there have been introduced special waterproof elastic varnishes into which lamps may be dipped, and which give any colour or shade desired. This may be removed afterwards by dipping in a spirit, and the lamps put into ordinary use.

Some electric-lamp makers are making a specialty of lamps with portraits of celebrities etched on the glass, and these are very effective in use.

Coming to the question of the supply of the illuminant, the additional demand on the gas companies is met by additional storage and manufacture. With electricity supply the question is somewhat different, as storage is not available to any considerable extent. It therefore means that the companies or supply authorities will only be able to supply a certain demand at one time, depending upon the available plant. Unless spare plant is available or additional temporary plant is brought into requisition, a considerable extra demand cannot be supplied. Of course if the season is one when the ordinary demand is a minimum this is of assistance, and again as shops and business premises will be closed this will also counterbalance the additional demand, or nearly so, in many cases.

Another point is the question of connection. As is known, ordinary electric wiring has to be carried out in accordance with the rules of the supply authority. Now, it can be readily understood that for temporary purposes the same standard of material cannot be insisted upon, and some of these rules must be overlooked also, on account of the extra work which would devolve upon the staff; but, on the other hand, there is unfortunately a possibility of very inferior work being carried out, which to the supply authorities might mean damage to their mains or stoppage of the supply to other of their consumers, caused by formation of a short circuit or "earth" which might also result in fire on the premises.

With this in view, there was recently a meeting of some of the London supply authorities to discuss the alterations in their rules, and the arrangements that were necessary in the case of temporary connections to their mains. Amongst the arrangements agreed to were a fee of 10s. 6d. to be charged for the connection if a service already existed in the building, otherwise the actual cost to be charged, which will be refunded if a general supply is adopted within three months; the charge for electricity to be 1d. per 8 candle-power lamp per night, payable in advance; applications may be refused after a safe limit to plant and mains has been reached; it is also urged that the liability of fire

should be particularly considered with temporary arrangements.

Inquiries were sent to the engineers of electric supply works all over England recently, by the *Electric Review*, as to the special facilities to be offered regarding the supply of electricity for the Coronation illumination, and in the cases of Blackburn, Darwen and Farnworth, it is to be noted there is to be no charge for the electricity for such purposes, while in many cases the ordinary charge may be made.

## NEW BOOKS.

WE cannot in England compete with American Germans or Frenchmen in the production of books on technical subjects. This is owing to an absurd notion which is peculiar to our countrymen. Some among us suppose that the possession of books relating to the profession, art or business implies a want of originality on their part. Strange to say, solicitors exhibit this weakness in a stronger degree than barristers. There may be men like the late Lord RUSSELL OF KILLOWEN who are not strong in cases, but they wish to possess an ample collection of special treatises to refer to whenever an occasion arises. Architects and engineers conceal their want of acquaintance with books by affirming that the pages are not practical. But it is now too evident that the prestige of English construction does not stand so high as it did in the old days when rule of thumb science was thought to be equal to all requirements. It is not gratifying to perceive that the best books of reference on applied science are those of German experimenters, and that many Germans of ability prefer to seek a home in the United States because they know their conclusions on particular subjects will be more appreciated there than in this country. Investigation of the strength of materials is one instance. There was time when belief in the empiric skill of Englishmen was general, but it is now becoming more plain that they must be respected, and to some extent it has been scorned in England.

It is therefore encouraging when we find a book in which theory and practice are combined, like "The Design of Structures: a Practical Treatise on the Building of Bridges, Roofs, &c.," by Mr. S. ANGLIN, C.E., published by CHARLES GRIFFIN & Co., Ltd., has reached a third edition. Knowing the shortcomings of English education the author has been careful to make his explanation capable of comprehension by those who have no more than an elementary knowledge of mathematics. The graphic method is also utilised for their benefit. The new edition has undergone thorough revision. A chapter has been added on the foundations of buildings. One of the cases referred to in it is a failure which arose from imperfect bedding under a large cast-iron column, bringing injury to the structure. A celebrated engineer was called in, and he discovered that "the top surface of the stone instead of being tooled to a level surface, was hollow towards the centre, and the whole pressure was transmitted to three or four points towards the edges, which sufficiently accounted for the failure." The mason and superintendent probably relied on one of those wise saws so dear to so-called practical men, and the owners had to pay for their temerity. There has been some alarm about the safety of the Nelson column in Trafalgar Square; the load on the clay amounts to no less than 4,665 tons, but that is only equivalent to 1.3 ton per square foot. We are told that "in preparing this foundation an excavation 60 feet square and 12 feet deep was made and filled with concrete to a depth of 6 feet; on this base a frustum of a pyramid 13 feet high was built in brickwork, on which the superstructure was erected." The allusions throughout the pages to executed works are among the features of the treatise, and there is no doubt it will long retain its merited reputation among students of construction.

Another addition to GRIFFIN'S Scientific Text Books is "Sanitary Engineering: a Practical Manual of Town Drainage and Sewage and Refuse Disposal," by J. FRANCIS WOOD, borough surveyor of Fulham. The first part contains chapters on hydraulics, formulae, earth pressure and retaining walls, electric and hydraulic power. The following subjects are then treated



house drainage, land drainage, sewers, separate system, sewage pumping, sewer ventilation, drainage areas, manholes, lamp-holes, &c., trade refuse and river pollution, sewage disposal, bacteriolysis, sludge disposal, construction, material and cleansing of sewers, refuse disposal, chimneys and foundations. As there are 180 woodcuts, it is easy to realise that a wide range of topics is dealt with, and that they are also made as evident as illustrations of apparatus, plans and sections will allow. It would be difficult to find a volume of its size which is so comprehensive. The improvements which have been accomplished are suggested by the modern treatment of refuse. Up to 1894, at Bradford 1,000*l.* a year was expended on the disposal of clinker, while a revenue is now derived from the material amounting to 500*l.* per annum. At Liverpool, Birmingham, Bristol, Bradford and other places flags are made from broken clinker and Portland cement at a cost of about 1*s.* 9*d.*, and they are sold at the rate of 3*s.* 2*d.* a yard. The Corporation of Darwen have up to the present not required any coal in the electric-light station; the heat is generated entirely from the destructors. Concrete bricks and ornamental tiles are also obtained from clinker. In Bradford a new destructor will soon be in use, by which refuse will be destroyed at 5½*d.* a ton instead of 9*d.* As to the purification of sewerage, Mr. WOOD says that at a subsequent time it will be either by electrolysis or chemical agencies; "both seek the same end, but the working of the one is entirely opposite to that of the other; the one aims at the complete destruction of the micro-organisms and the other encourages their growth. Those in favour of electrolysis claim one great advantage—that the spread of disease is an impossibility owing to the removal of the primary cause. If it can be done—and it is possible—the sewage or the sewer air may in the future be treated by this process or some other on similar lines, which would render the air innocuous and inodorous." The chapter on house drainage epitomises the latest conclusions on that important subject.

"Lighting by Acetylene: A Treatise for the Practical Lighting Engineer," by Mr. FREDERICK DYE, M.R.I. London: E. & F. N. SPON, describes one of the most interesting of modern industries. When in 1836 Sir HUMPHRY DAVY's brother discovered acetylene gas and stated it would serve for artificial light, no notice was taken of his words because he was looked upon as no more than a lecturer, and therefore his science was "mere prattle without practice." There was a prejudice against men of this class, and it was left to Germans and Frenchmen years afterwards to draw general attention to DAVY's gas, and an American, T. L. WILLSON, was the first to set up the manufacture of calcium carbide on an adequate scale. The industry has suffered by the apprehensions of its danger, which experience has proved to be unfounded. As a most effective illuminant, which is easily and cheaply produced, proper generators are employed, acetylene gas appears to be admirably adapted for lighting, especially on a restricted scale, and there are conditions under which it can be utilised in preference to other gases. The process is simply and amply described by Mr. DYE. For the lighting of single residences he is of opinion that it can compete with coal-gas and gasoline. If compared with paraffin oil acetylene costs about 20 per cent. more, but it furnishes superior illumination. He says that some people consider that a generator-house should be brick, built with the doors lined with felt and protected with a good-sized box of fresh horse manure, and Mr. DYE thinks the plan sounds feasible. The German insurance companies have formulated a rule that generators and gas-holders must not be placed in sheds or other buildings unless the spaces used are completely isolated from the adjacent spaces by walls of non-inflammable materials without any openings whatsoever." Architects are likely to be often called upon to make arrangements for lighting by means of the gas, and they will find in Mr. DYE's volume information which can be turned to account on such occasions.

Another of the *Builder Student Series* manuals has appeared, entitled "Gas and Gas-fittings: a Handbook of information relating to Coal-gas, Water-gas, Power-gas and Acetylene," by Mr. H. F. HILLS, F.C.S. London: FOURDRINIER. It comprises all varieties of gas illumination, including acetylene. It is mainly adapted for

those who use gas, although the process of manufacture is set forth at sufficient length. Details of burners, shades, globes, reflectors are not ignored. There are also chapters on water-heaters, geysers, boilers, &c. Peebles's Governor is singled out for its effectiveness, for it is said that the saving effected by carefully governing the supply may be considerable. Mr. HILLS's book is a very acceptable addition to the series.

The first of four volumes on "Electrical Installations of Electric Light, Power, Traction and Industrial Electrical Machinery," by RANKIN KENNEDY, C.E., and published by the Caxton Publishing Co., is ready. The work is addressed to practical engineers, and describes what has to be found in workshops rather than in laboratories. All the instructions are given in simple language, and in the first volume, at least, mathematical formulæ are almost entirely eschewed. The illustrations are of a bold character and without any regard for pictorial effects. The majority of the works on the subject recall the lecture-room, but in this publication the construction of appliances is kept steadily in view, and the work when complete will serve the purposes of engineers who utilise electricity for lighting or motor force.

A translation of KEIM's book, "The Prevention of Dampness in Buildings, with Remarks on the Causes, Nature and Effects of Saline Efflorescences and Dry Rot," by Mr. M. J. SALTER, has been brought out by Messrs. SCOTT, GREENWOOD & Co. The author is a patentee of a preparation for walls which are superficially damp, but on which painted decoration is to be executed, as well as the preparations known as "Isolirmastix" and "Troockenputz," which have an allied purpose. This will show that he is no mere speculator or compiler, but has made a serious study of dampness. In most cases he believes that dampness of walls arises from a wet soil. It is also due to salts in building materials, which absorb moisture in the atmosphere, and various other causes. The recommendations of a great many German authorities are introduced. The following is the method of LEO VON KLENZE, the Munich architect, for avoiding ground moisture:—"As soon as the foundation walls have reached a level a few inches below the ground level, the entire area of the walls is to be covered with tar-mortar to a thickness of about half an inch. This tar mortar is prepared by mixing hot tar or pitch with fine quartzose sand to the consistence of ordinary mortar. When the work has been thus tarred, sheets of lead foil are laid on the surface, taking care that where the plates meet they should overlap at least an inch, and that they stand out 1-2 inches from the surface of the wall, so that their ends can be bent downwards. The sheet lead is first painted on both sides with caoutchouc varnish to protect the lead from oxidation. Upon these sheets of lead a course of tiles is laid in the same tar-mortar, and above this the brickwork is carried up with ordinary mortar." A numerous collection of similar suggestions or recipes for remedies will be found in the little book.

From the same publishers we also have a treatise on "The Art of Glass Painting," by Mr. ERNEST R. SUFFLING. The subject is dealt with for the benefit of beginners who wish to have all stages of the process clearly explained. Many students who are able to draw have not had opportunities of observing the course which has to be gone through from the preparation of a design to the final banding. Mr. SUFFLING is a painstaking guide, and we have no doubt that many will be glad to avail themselves of his teaching.

The treatise on "Decorative Brushwork and Elementary Design," by Mr. HENRY CADNESS, of the Municipal School of Art and the Municipal School of Technology, Manchester, published by B. T. BATSFORD, is a genuine students' manual. The author believes that time is money, and his instructions are conveyed in the fewest words. But anyone who will conscientiously study the different chapters will find that he has acquired a larger amount of knowledge than would seem to be possible from so small a volume. Some of the illustrations are reproductions of old and modern drawings, but most of them have been prepared by the author, and are evidence that he is a master of what he is writing about. Decoration in a large sense is aimed at, and it extends from lettering



to architectural forms. The author defines designing as meaning "the planning or creating of something for a definite purpose, in which all the parts employed produce a perfect and useful whole, even apart from any especial consideration of its ornamentation, such as a house, a cabinet, a vase, &c. In another sense, it may mean the devising and disposing of beautiful forms for ornamenting the useful object." The pages show to what extent artists have realised the words, for the book has reference to the past as well as to the present, and to the works of other countries besides those of England.

The late Professor BANISTER FLETCHER was a familiar figure in law courts whenever light and air actions were tried. In his volume on "Light and Air" he gave the benefit of his experience to other practitioners. There never was a time in which there was more discussion of the subject than now, and the Professor's sons have brought out a fourth edition of their father's work, with cases introduced down to 1900. The publisher is Mr. BATSFORD. The editors are not convinced of the advantages of some recent suggestions for the amendment of the law, for they say:—"We are inclined to think that the present methods are the best, with the exception that a professional assessor or assessors might sit with the judge, in a similar manner as is customary in the Admiralty Division."

### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fifteenth general meeting (business) of the session 1901-2 was held on Monday, June 9, Mr. Wm. Emerson, president, in the chair.

The minutes of the general meeting (ordinary) held on Monday, May 26, were read and confirmed.

The decease was announced of Mr. Coutts Stone, elected Fellow in 1857.

The report of the scrutineers appointed by the annual general meeting to direct the election of the council, standing committees, &c., for the year of office 1902-3 was read, and the following declared elected:—

*President*.—Mr. A. Webb, A.R.A., F.S.A., past vice-president.

*Vice-Presidents*.—Mr. J. Belcher, A.R.A., vice-president; Mr. T. E. Colcutt, vice-president; Mr. A. Darbyshire, F.S.A., president Manchester Society; Mr. J. Slater, B.A.Lond., vice-president.

*Members of Council*.—Mr. F. T. Baggallay, Mr. G. F. Bodley, R.A., F.S.A., Mr. J. J. Burnet, A.R.S.A. (Glasgow), Mr. W. D. Caröe, M.A.Cantab., F.S.A., Mr. W. M. Fawcett, M.A.Cantab., F.S.A., past vice-president (Cambridge), Mr. E. George, past vice-president; Mr. J. S. Gibson, Mr. J. A. Gotch, F.S.A. (Kettering), Mr. G. E. Grayson (Liverpool), Mr. E. A. Gruning, past vice-president; Mr. E. T. Hall, Mr. E. W. Mountford, Professor Beresford Pite, Mr. G. H. F. Prynne, Mr. W. H. Seth-Smith, Mr. R. P. Spiers, F.S.A., Mr. L. Stokes, Mr. P. Waterhouse, M.A.Oxon.

*Honorary Secretary*.—Mr. A. Graham, F.S.A.

*Associate-Members of Council*.—Mr. R. S. Balfour, Mr. H. V. Lanchester, Mr. W. J. N. Millard, Mr. E. W. Wimperis.

*Representatives of Allied Societies*.—Mr. G. C. Ashlin, R.H.A. (Royal Institute of the Architects of Ireland), Mr. H. K. Bromhead (Glasgow Institute of Architects), Mr. F. Caws (Northern Architectural Association), Mr. C. H. Channon (York Architectural Society), Mr. E. W. M. Corbett (Cardiff, S. Wales and Monmouthshire Society), Mr. A. Harrison (Birmingham Architectural Association), Mr. H. G. Luff (Devon and Exeter Architectural Society), Mr. A. Wakerley (Leicester and Leicestershire Society of Architects), Mr. B. Wilson (Leeds and Yorkshire Architectural Society).

*Representative of the Architectural Association (London)*.—Mr. H. T. Hare, Fellow.

*Auditors 1902-3*.—Mr. L. Ambler, Fellow; Mr. H. S. East, Associate.

*Elected as Fellows*.—Mr. H. B. Fletcher, London; Mr. C. W. Methven, Durban, Natal; Mr. F. W. Simon, Edinburgh.

Certain amendments and additions to the Institute paper, "Suggestions for the Conduct of Architectural Competitions," proposed by the Council, were discussed and agreed to as follows:—

The following paragraph to be inserted in Clause 1:—The selection of an assessor should be made with the greatest possible care, as the successful result of the competition will depend very largely upon his experience and ability.

Clause 4 to be amended so as to read as follows:—The number, scale and method of finishing of the required drawings should be distinctly set forth, and they should not be more in number, or to a larger scale than necessary to clearly explain

the design. If the assessor advises that perspective drawing are desirable it should be so stated; and such drawings should be uniform in size, number, mode of colouring or mounting.

The following to be added to Clause 12:—It is important that the award of the assessor should be adhered to unless there is some valid objection to the employment of the author of the selected design to carry out the work, as to which the assessor is satisfied. The setting aside of the assessor's award for any other reason constitutes a breach of faith on the part of the promoters.

### Standing Committees, 1902-3.

*Art Standing Committee*.—*Fellows*.—Mr. J. M. Anderson, F.R.S.E., Mr. J. J. Burnet, A.R.S.A., Mr. W. D. Caröe, M.A.Cantab., F.S.A., Mr. T. E. Colcutt, Mr. J. S. Gibson, Mr. H. Hare, Mr. E. W. Mountford, Mr. A. N. Prentice, Mr. G. H. Prynne, Mr. J. W. Simpson. *Associates*.—Mr. R. S. Balfour, Mr. A. T. Bolton, Mr. S. K. Greenslade, Mr. J. J. Joass, Mr. H. V. Lanchester, Mr. E. W. Wimperis.

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### THE ROMAN FORUM.

THE scientific exploration of the Forum has been proceeding steadily during the past year under the admirable management of Commendatore Boni, but the results, though both interesting and important, writes a Rome correspondent of the *Manchester Guardian*, cannot be said to possess anything of that startling character by which those of three or four years ago arrested the attention of the educated world. For the present no more light has been thrown upon the Blashfield Stone or the archaic inscription which was found beneath it, and the controversy connected with these objects has gradually died down. The houses which occupy part of the site of the Basilica Aemilia have still to be purchased, and the church of St. Adriano, with its adjacent buildings, has to be expropriated before we are able to tread—as we may hope to do—the floor of the ancient Senate House. Meanwhile much good work of a modest kind has been done. A number of competent workmen are engaged in piecing together, where possible, the architectural fragments which strew the site of the Forum—a process which will bring a sort of order out of chaos, and make the appearance of the buildings to which the fragments belonged more intelligible. More striking is the rehabilitation of the church of St. Maria Antiqua, so far as necessary for the safety of the structure and the preservation of the wall-paintings. The vaulted roofs have been restored, the windows have been filled with glass, the pavement is now being relaid, and we may hope that this unique Roman-Byzantine monument is secured from further deterioration. Another work in progress connected with the general arrangements of the Forum is the preparation of the convent building behind St. Francesca Romana as a museum for the objects discovered in the district. Apart from its contents, this will form a delightful addition to the sights of Rome, with its charming Early Renaissance cloister, from which one passes to the interior of the Temple of Venus and Rome, where the fragments of Hadrian's magnificent porphyry columns are scattered on the ground.

In the new work of actual discovery and excavation the points claim special notice. For some time past on the slope leading up to St. Francesca Romana, the pavement of the Via Sacra of the Augustan age—the very stones one may well suppose which Horace trod in his daily walk—has been uncovered, but now that the excavations have reached the summit of the ridge one can see how the line of the road passed under the platform of the Temple of Venus and Rome and well to the left of the Arch of Titus, the "Arcus in Summa Sacra Via."



Flavian times. Even more interesting in its possibilities is the part of the road leading up to the Palatine, which is now being revealed to the right of the arch with much of its pavement and milestones intact. This, the chief approach to the Palatine in every age, may have much to tell us both of early and of Imperial Rome as its exploration proceeds. Lower down the hill results of great interest are being obtained in the House of the Vestals, where, at the end nearest to the Temple of Vesta, substantial remains of the house of pre-Imperial times are being brought to light. The rooms, with their mosaic pavements, are orientated, like almost every structure older than Augustus in the Forum, obliquely to the lines of the later buildings, and roughly north and south. In fact, it is clear that one of the most important results of the present series of excavations will be the possibility of reconstituting the plan of the Forum generally, with its original orientation, as it existed before the radical change in its architectural setting made by the founder of the empire.

Historically perhaps more important than any of these discoveries was the find early in April, close to the front of the temple of Antoninus, of a prehistoric burial urn. The remains, which were in situ about 12 feet below the surface, consisted of a black jar containing the ashes, and several smaller vessels, the only ornament of which was a kind of raised reticulation, imitating no doubt the cords or wickerwork by which primitive vessels were supported or carried. Pots of exactly similar character have been found in the prehistoric cemeteries on the Alban Hills, but there the receptacle for the ashes generally takes the form known as a "hut urn"—that is, an oval box of black earthenware, with a ridged and overhanging top and a door, the whole imitating as nearly as possible the abode in which the dead person had lived. Now the remarkable thing about the urn found in the Forum is that it is covered by a lid exactly like the roof of a "hut urn," and this suggests that we have before us the last development of the "hut urn," when all that was left of its traditional appearance was the lid or roof. It will be interesting to see whether further search reveals the remains of a regular cemetery; at present only one urn has been discovered, and it is the merest accident that it has not been destroyed by the foundations of the buildings of every age which come within a few feet of it on every side. In any case, here is evidence that the primitive dwellers on, no doubt, the Palatine, allied by race and custom with the Latin inhabitants of the Alban Hills, used to bury their dead in the valley below them at a time when what we know as the Forum was unoccupied ground. It may have been in the ninth, it may have been in the eighth century before Christ, but it is sufficient to mention these facts to show how completely they accord with the traditional accounts of the origin of Rome.

### "HUSTLING" IN AMERICA.

NOT long ago a speaker at one of the English architectural meetings, says Mr. Langton in the *Canadian Architect*, spoke in a congratulatory way of the time being past when a leader of the profession (the allusion was evidently to Sir Gilbert Scott) would go about with a portfolio of churches under his arm to call on building committees. On the other hand, we hear that in the United States nobody dare wait for a job to come to him; that Michel Angelo himself if he lived in Chicago or New York would have to hustle for work. Which of these two tendencies is in the direction of progress? What is all this hustling about? What is there about hustling that should recommend it to clients? The hustler is not hustling for his client's interest, but for his own. A scholarly designer like Sir Gilbert Scott must have been a very high-class hustler. His kind of work implied personal attention to it. Yet there is a story of his going to a church opening, and as he was being driven up to the church turning pale and whispering to his confidential clerk who was with him, "They have got the wrong church."

The typical hustler works *for* work not *at* it, and what the client wants is some one who will work *at* his work.

Of course the hustler works at his client's work in the sense of getting it through. He must have a good staff. That is partly what he is hustling about. It almost seems sometimes as if there is a point of view from which it is the staff which may be said to have a hustler, who spends his time upon the street to find work enough to pay them. Staff work, in fact, is the result of this system.

There is a certain medium class of commercial work for which staff work does well enough, and a certain class of client to whom it is a satisfaction to feel that his work is being handled in what he would call a business-like manner, *i.e.* put through without fuss in the shortest possible time, and looking when done like other new buildings of its kind. As a matter of fact, the work is done in a business-like manner. Let us give the style of practice all the credit that is due to it

in the best examples. The architect runs a plan factory. It has factory merits and factory defects. The merits are certainly a comfort to a client whose interest in his building is commercial, and the defects do not matter much from his point of view. But how about delivering over the whole field of architecture to this system? It is bound to result in staff architecture—that is to say, in factory architecture—and factory architecture is not good enough for good work. Anybody who knows what real planning is like will know that the case of Sir Gilbert Scott will be often repeated in a metaphorical sense. The right problem may be under consideration but the wrong plan will be produced. It is true that H. H. Richardson did not draw himself, but his mind was on design all the time; he was devoted entirely to his work. It is true, on the other hand, that Mr. Ernest George (as he stated when receiving his R.I.B.A. gold medal) does nothing else but draw. He represents, that is to say, the possibility of a first-class man taking care of the design, while some one else gets the work and attends to the business connected with it. But Mr. George is as exceptional in his way as Richardson was. Under ordinary circumstances, if work has to be worked for, the big man of the concern will be devoted to that, as indeed he is now, and the architectural level must fall. That is bad for architecture, but what we are concerned with just now is that it is bad for the owner of architecture—the client. If this estimate of the consequences of hustling is sound, clients have no cause to smile upon the practice.

How about the architects themselves? The profession professedly abhors the practice, and at the end of the tariffs of fees there is a clause defining professional etiquette in a way that practically excludes work-hunting. But there commonly is a jocular way of speaking about the practice that implies uncertainty of purpose. At the bottom of this is uncertainty about the moral basis, a feeling that perhaps the new is the true, and that old-fashioned scruples are perhaps old-fashioned for cause, like horsecars and the old, old systems of fifteen years ago. Morals, however, do not change. A gentleman is the same now as he was in the days of "the grand old gardener and his wife," and as he will be when he walks the golden street of the new Jerusalem. It is this permanent quality of honour that attracts the regard of the architectural profession. The superficial points in professional etiquette may change; ideas of professional dignity may change; ideas of remuneration may change; the basis of these is not too deep for joking, but the matter of getting work is.

The truth seems to be that there is only one way of getting work that is right, and that is that an architect should always do his best work, put his best goods upon the market, that is to say, and let them speak for him.

It is a hard condition, for growth from small to large work may be slow. People who employ an architect for important work like to see something that he has done of the same kind. "We judge ourselves by what we think we can do, but others judge us by what we have done," is a maxim which exactly fits the case of the young architect and states his difficulty. Competition (a question by itself) is accepted as a means of making a rapid step between small work and large. But competitions or not, the step is sure to come in time to the really able, and usually before long, so that though, like all other right conduct, some patience and faith and self-government are implied, the condition, though severe, is not more than a man should accept.

Why is this the condition of honourable practice? Because the moment a man reaches out for work he is reaching out for somebody else's work. If the work would not naturally come to him, it would naturally go to someone else. He reaches out for it, uses a "pull," asks, persuades, or merely works the magnetism of his personal presence—highly magnetised for the occasion—and the deed is done; he has knifed a neighbour.

This is the bottom fact that makes the profession uneasy about going about to get work. It is the disregard of others that is the dividing line between honourable and dishonourable practice. When another architect is already engaged, it is easy to recognise that he has rights, and the better members of the profession are strict about not interfering there. It is a more uncertain state of affairs when work is in the air, and seems to be only waiting to be grasped. It is agony not to grasp it, but there is always a sense of shame before other members of the profession in doing so—and is not this the cause, that it has to be taken from some other member of the profession? If it is ours we may wait for it; if it is not ours, whose is it? Somebody else's. Then for "taken from some other member of the profession," we may read "stolen from some other member of the profession." It seems strange that men should think their duty to their wife and family obliges them to steal from some other man's wife and family. And this in a Christian land. Surely before we adopt the (reputed) American practice we should pause to think where we are going.



## NOTES AND COMMENTS.

Two important cases relating to scaffolding have been decided by the Court of Appeal. In *MARSHALL v. RUDEFORTH* the decision in *WOOD v. WALSH* and *HODDINOTT v. NEWTON, CHAMBERS & Co., LTD.*, that a scaffold cannot be a single article such as a ladder was confirmed. Workmen were engaged in repairing a roof, and the plaintiff was carrying slates for their use. While on the ladder it slipped, and he was injured by his fall. The judge of the Scarborough County Court held that a ladder was not a scaffolding within the Act. The plaintiff appealed, and counsel contended that a ladder was not a single structure, but was constructed of two uprights and crosspieces, and it made no difference whether a builder carried such a combination with him or formed a scaffolding as occasion required. The Master of the Rolls said he was unable to define scaffolding in terms which would exclude a ladder, but that did not mean that scaffolding in law included a ladder. The County Court judge affirmed a ladder was not a scaffolding, and it was to be supposed he was correct. Lord Justice MATHEW and Lord Justice COZENS-HARDY agreed that a ladder could not be treated as scaffolding. The appeal was therefore dismissed. The second case was an appeal by the representative of a workman who was killed while fixing ornamental work to a verandah. He had to climb a ladder across the top of which a piece of board was nailed. There was also a piece of timber stretched across three stays of the verandah from which the men worked, and the question was whether or not scaffolding was being used at the time of the accident. The County Court judge held that scaffolding was being used. The defendant appealed, and it was contended that the judge found that the ladder alone constituted scaffolding, a decision which it was argued could not be supported. The Master of the Rolls said the appeal was brought under a misconception. There was no doubt from the evidence that the judge in holding that scaffolding was being used had in his mind the piece of timber stretched across the supports of the verandah. The appeal was therefore dismissed. It will be observed that the distinction between the two cases is very slight; in both a ladder was used, but in the latter case it was placed against wooden stays, whilst in the former it rested against the parapet of the house. The divergence was, however, sufficient to produce entirely different decisions, although in a builder's eyes the circumstances were identical.

VARIOUS claims are made in local districts about the possession of the earliest memorial brass in England. But when the Sussex Archæological Society visited Trotton, or Tratton, on Tuesday, Mr. P. M. JOHNSTON, architect, said that the brass of Lady MARGARET CHAMOYS was the first known instance of a lady's effigy in England. The present building dates from about 1250, and it is presumed Lady MARGARET was connected with the work. There is another fine brass on an altar tomb in the church which is a memorial of Baron CHAMOYS, who fought at Agincourt, and of his wife, who was the widow of HARRY HOTSPUR. The church is dedicated to St. GEORGE, who was a favourite patron in Sussex, and a Saxon church stood on the site of which the font is a survival. The church has another interesting association, for THOMAS OTWAY, the dramatist, was born in Trotton in 1651, and was the son of the rector of the parish. His "Venice Preserved" was long a favourite tragedy.

OFFICIAL as well as non-official judges would approve of the erection of workmen's cottages by ordinary employers. In country districts especially labourers experience a difficulty in finding accommodation for themselves; but whatever may be the rule in the case of an individual, it does not apply to municipal owners. The Cuckfield Rural Council wished to build cottages for their workmen in Lindfield, but the Local Government Board declined to give the necessary sanction to the project. The following was the circumlocutory answer received in reply to an application:—"The Board are advised that the District Council have no general power of providing dwelling accommodation for their workmen, and this being the case the Board would not be prepared to consider the application for sanction of a loan for the provision of houses for

workmen employed on roads. As regards the proposal to provide dwellings near the sewage farm for workmen employed there, it would not accord with the Board's practice to entertain the application for sanction to borrow under the Public Health Act, 1875, for such a purpose unless the District Council could show that the provision of the dwellings is reasonably necessary for the management of the farm." When we recall the large scale on which municipal trading is conducted throughout the country it seems incredible that so important an experiment is prohibited. If possible the subject is to be brought under the notice of the House of Commons, but at the present time it is not likely to receive much attention.

THE occupation of the Pavillon de Flore by the French Minister of the Colonies has excited alarm, for if a fire broke out amidst the official documents some of the treasures of the Louvre might be jeopardised. The obstacles in the way of finding a site have, however, delayed the removal. There is at length a possibility that the danger will be overcome. M. DEGLANE, the designer of the Grand Palais of the Exhibition of 1900, has received instructions to prepare plans for new offices. The site selected will be somewhat remote, being in the Avenue Rapp, which is close to the Eiffel Tower, but it would be hard, unless by a large outlay, to obtain a more suitable position. The French Government Offices are farther apart than those in London.

## ILLUSTRATIONS.

GRINDLAY &amp; CO'S BANK, PARLIAMENT STREET, S.W.

VIEWS IN THREE GERMAN CITIES.

WHEN an English architect has a fortnight, or less, for a holiday, it seems hardly wise for him to choose the Rhine for the scene of his recreations. Yet a tour in this direction can be done, and with profit. It is not unmixed pleasure, however, for many pangs must be endured in necessarily skipping some of the most alluring spots.

To begin with—Köln would perforce be reached with barely a halt by the way. Here, after the cathedral and other fine buildings had been duly admired, the sketching tourist would probably find himself more or less busy among the streets of ancient houses in the neighbourhood of the river (see Illustration). These old streets are rapidly disappearing in the face of modern improvements.

Travelling being resumed, the difficulty of finding time to visit the fascinating towns and villages on the Rhine banks, with their black and white buildings facing the river is positively galling. One must needs steam on to Coblenz. This reached, much of interest reveals itself in the way of quaint German architecture, the buildings bordering the river being in some respects the most attractive.

A brief stay at Coblenz, then more steaming up the Rhine, more pleasure as wonderful landscape, threatening castle, nestling town or village come into view, more pang as each bit of loveliness is, after one glimpse, left behind.

However, Mainz is a stopping-place, and this is well. There is very much in this city to make one stay. After many spots of interest have been located and rushed, it is probable that the cathedral and its surroundings will have the effect of temporarily rooting the sketcher (see Illustration). There is no time for more, and the touring architect re-tours to his native country, wiser, happier and cooling by degrees.

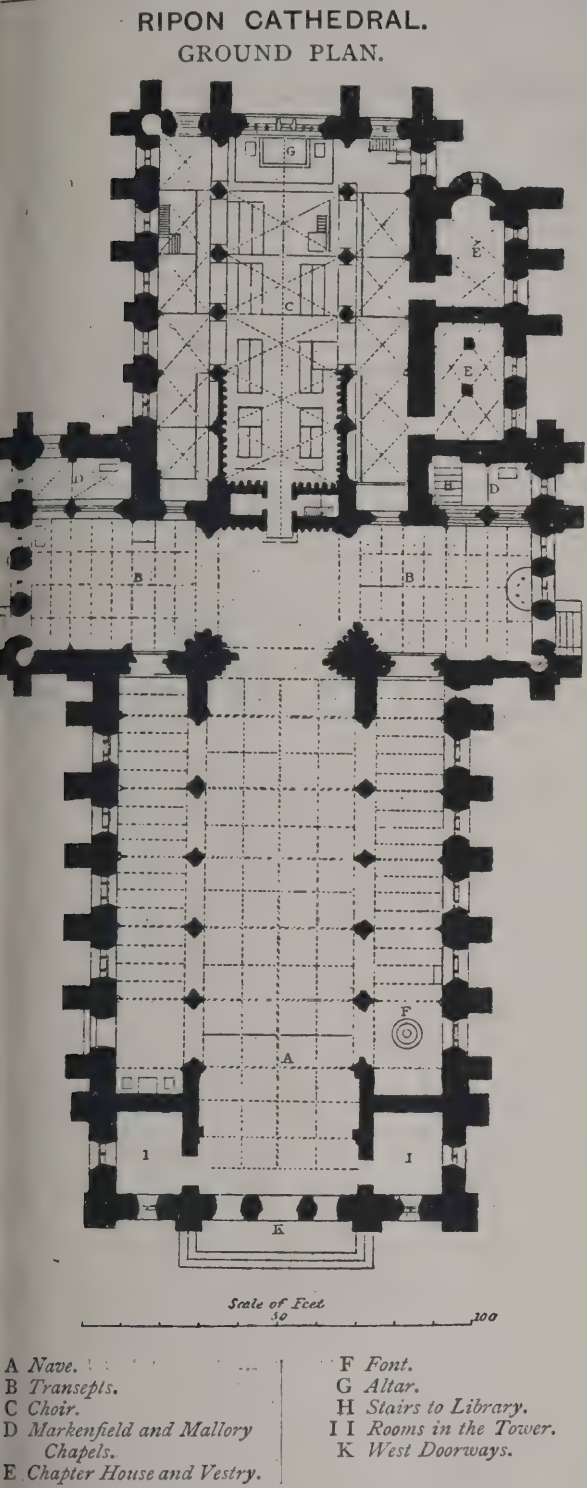
HOUSE AT KOKINE, RANGOON.

THE favourite residential suburb of Rangoon, Burma is Kokine. The residence of Captain A. J. WINDYBANK is built on rising ground, and overlooks the famous Shun Yagou Pagoda. It is built of teak wood throughout and rests on concrete in patent iron shoes. All window fittings are made of brass. Verandah runs all round the house. The architect and builder is Mr. J. ROBINSON Camp Road, Rangoon.

UPTON COTTAGE, SLOUGH: SOUTH-WEST AND NORTH-EAST VIEW

CATHEDRAL SERIES.—RIPON: THE WEST FRONT. THE WEST ENTRANCE.





THE ENGINEER OF THE TWENTIETH CENTURY.\*

Our last annual convention my predecessor addressed you upon engineering in the nineteenth century, and at meeting our secretary has given you a sketch of the history of our own Society during its first fifty years, which have closed before our next annual reunion. It seemed to me, therefore, not inappropriate that to-day I should take a glance towards the future and say something concerning the outlook for engineering and for our Society in the new century upon which we have just entered. It is true that in doing this we must to some extent leave the solid ground of accomplished fact, which is the special province of the engineer, and enter upon the insecure and dimly lighted field of possibility and prediction in which the most wary may easily be led astray. On the other hand, it is entirely safe and legitimate to predict the fruit from the seed, and all wise action in the present must be based upon correct views of the results which they will produce. In every field of

\* The presidential address of Mr. Robert Moore before the American Society of Civil Engineers' Convention at Washington, and printed from the *Engineering Record*.

activity the successful doer is the clear and successful seer. What, in fact, is the whole life of the engineer but an effort to conceive plans and execute works by which the future shall be made to surpass the present? So that as engineers we may claim the future as part of our field no less than the present or the past.

What kind of a man, then, will the engineer of the new century be, and what the scope of his work as compared with the engineer and his work in the century which has just closed?

Before proceeding to consider this question, let me say that in speaking of the engineer I shall use the word in the comprehensive sense of Thomas Tredgold's well-known phrase, as one who directs "the great sources of power in nature for the use and convenience of man," a sense which includes every subdivision of this work. Carlyle has rightly said that man is pre-eminently a tool-using animal, one who converts the materials and forces of the external world into instruments of service, thus making nature his slave instead of his master. The engineer is one who devotes his life to the designing and making of tools.

With this understanding of the word, what shall we say of the engineer of the new century as compared with the engineer of the century which has just closed? In answer we may with perfect assurance say that he will be a man of more comprehensive and thorough training, a better equipped and therefore more serviceable man than his predecessor of the last century.

Until very recent years the engineer as a man of learning, even in his own profession, has not been the peer of the clergyman, the teacher, the lawyer or the physician. In fact, speaking broadly, engineering has not been one of the learned professions. And for this the reasons are not far to seek. As a distinct profession that of the engineer is much younger than those just mentioned, and, what is even more to the point, the sciences which set forth the laws that govern the materials and forces of nature and underlie engineering works are all of recent development.

Historically, as we all know, the oldest profession is that of the priesthood. How to ward off evil spirits and propitiate the invisible powers has been one of the earliest studies of every people, and they who knew, or were believed to know best, how these ends might be accomplished, were differentiated into a separate class who became the custodians of all the learning then attained by men. The priests were the scholars, the learned men of their time. As such, they were the medicine-men, or physicians, the healing art being at first almost wholly a matter of incantation. As conservators of tradition they became the arbiters in disputed matters, and thus the lawyers and judges. As the only learned men they were, of course, the first teachers or instructors in letters. In important structural works, the first of which were largely temples, they were the natural leaders and as such the first architects. And their early activity in the field of engineering may be seen in the fact that amongst the Romans, the most practical of nations, the high priests were styled pontiffs or bridge-makers, and the high priest was pontifex maximus or the chief bridge-builder. The oldest engineering society was, no doubt, that of the Fratres Pontifici, or the bridge-building brotherhood of Benedictine monks, who, during the Middle Ages, chose as their special work the building and repair of bridges. How well much of this early work was done, many an old cathedral and many an ancient bridge bear abundant witness.

In process of time, however, each of these subordinate fields of knowledge and practice became so extensive and so exacting of time as to be beyond the compass of any one man or class of men, and each gradually became the special field of a distinct profession. In the order of time the physician, the lawyer and the teacher, the professor *par excellence*, came first. Then followed the architect as the skilled designer of houses, and last of all, the engineer or the millwright and the skilled maker of roads and bridges.

But the structures which the first engineers were called upon to build, whilst they demanded skill and courage and judgment, called for little of the learning found in books. Some practical skill in arithmetic and geometry, and possibly trigonometry, was the limit of the scientific knowledge required. Engineering was an art and not a science, and the engineer was but little more than a highly skilled workman. And, as in all the arts, the standard method of instruction was that of apprenticeship in which by word and by example the master slowly transmitted to his pupil the art and mystery of his craft. James Brindley, builder of the first important English canal, was a cotter's son and served seven years as a wheelwright's apprentice. George Stephenson, builder of the first successful locomotive and railway, was eighteen years of age before he learned to read. Thomas Telford, builder of roads and bridges, and first president of the Institution of Civil Engineers, was the orphaned son of a shepherd and served a seven years' apprenticeship as a stonemason. Smeaton and Watt were



mathematical instrument makers, and both men of considerable training, but as engineers were almost wholly self-taught.

In like manner in our own country the engineers, who, in the first half of the nineteenth century built our first canals and railroads, such men as James Geddes, Benjamin Wright, Canvass White, Loammi Baldwin, Nathan Roberts and Jonathan Knight, were all men with no learning beyond that of the elementary schools and whose professional training was gained in the school of experience. Though men of judgment, skill and courage, men of force and of brains, they were not men of science.

Beyond mathematics, the higher developments of which were known only to a very few, the sciences which underlie the engineer's work had not yet taken form. Structural mechanics, thermodynamics, chemistry and electricity as organised sciences did not yet exist. But since Carnot, Davy, Faraday, Joule, Rankine, Maxwell, Clausius and others like them have done their work, all this is changed, and he who would now enter the field as an engineer with the slightest hope of success must have mastered the sciences which the labours of these men have developed. The knowledge which had to suffice for his predecessors is no longer enough.

Out of this new need, and as the shortest road to such mastery, has grown the engineering school in which these new sciences are specially taught, a growth which has been characteristic of the last half century, and which during the last few years has been phenomenal. As introductory to the engineering school, and as the foundation upon which its work must be laid, there is, of course, needed a thorough grounding in the general principles of the sciences of matter and motion: to wit, elementary mechanics, physics and, above all, mathematics or the science of number and measurement. But, in addition to this training in the elements of the mathematical and physical sciences, there is also needed for the proper equipment of the engineer a broad elementary training in the other departments of human knowledge which are by contrast metaphysical and as yet unmathematical.

We cannot know anything correctly except as we know its limits and its place in the general system of things. Even the place where we stand on the earth cannot be accurately located except by its co-ordinates of latitude and longitude which define its position with reference to the whole globe. Every well-trained professional man, therefore, must have, as part of his equipment, the broad outlines of general knowledge. He must know something of language and literature, of political science and of history, something of what the world's workers have done and of what its thinkers have taught, in order that he may correctly understand and evaluate the knowledge peculiar to his own calling. To know everything about something, which is his business as a professional man, he must also know something about everything.

A broad basis of general knowledge such as shall put the man in touch with all times and with all men must, therefore, precede the special knowledge of the technical school. Otherwise there may be much mastery of detail, a microscopic thoroughness, but not the firm grasp and clear insight which he broader training gives. In fact, if a choice must be made, is better to shorten, or even to omit the training of the technical school, leaving the man to supply this deficiency for himself, rather than to sacrifice the broader outlook and the wider sympathy which is given by the more diversified training in the outlines of general knowledge.

It is safe to say therefore that in the new century he who aims at the highest success as an engineer must be a more learned man than his predecessor of the last century. He must be master of the strictly engineering sciences, and as a basis and introduction to these, he must have the wider training of the preparatory school and the college.

All this, however, is but the beginning. For, in addition to the training which is to be gained in schools and from books, he must have the training which is to be gained only in the post-graduate school of actual life and work, in which alone the final degree of engineer in fact can ever be attained.

For it must never be forgotten that for real success in any calling, be it that of the professional man or the man in political or commercial life, there is needed something which neither books nor schools alone can teach, something which is partly the result of inherited qualities and partly the result of our daily contact with men and things, something which is the resultant of the reaction of our inheritance upon our environment, and which we sum up in the word character. Before there can be real power in any walk in life there must, in addition to technical training, be energy, veracity, self-respect, courage and address. That is to say, before we can have the able engineer or the worthy exemplar of any profession we must, first of all, and more than all, have a strong and worthy man.

And for the development of these manly qualities what better school can there be than is found in the daily life of the working engineer? For, first of all, in so far as he is an engineer he must be an open-minded and essentially truth-

loving man. As the prime condition of his control over forces of nature he must see things and their relative value not as he wishes them nor as he already thinks them to be, but exactly as they are in fact. With the facts before him he must have the skill to rightly interpret them, and to this he must have the courage to make his actions conform to his conviction. He must be a man of invention and resource, one who can promptly as well as see clearly.

At his own peril he must not deceive himself. Otherwise his works will fail and he fail with them. And with equal emphasis is he warned against all attempts to deceive others for in no calling are such attempts so quickly detected and certainly futile. A false theory in medicine, in law, or in theology may live, as many have lived, undetected for thousand years, but a false theory in engineering is disproved by the first attempt to put it in practice. If its embodiment be an engine it refuses to go; if it be a structure it falls in pieces. The pretender, the quack and the charlatan have no abiding-place amongst engineers. They are so quickly unmasked that they speedily disappear. No one, in fact, is sure to be known at his true value as is the engineer, and one can so well afford to discard all artificial aids to recognition. What he does is in the sight of all men, and speaks for him.

Work of his hand  
He nor commends nor grieves;  
Pleads for itself the fact,  
As unrepenting nature leaves  
Her every act.

And if it be a question of motive, to whom is the duty and dignity of a life of service brought more closely home than him whose lifework is found in directing the sources of power in nature for the use and convenience of man? And what greater pleasure and satisfaction can there be than a life devoted to solving the riddles which nature everywhere propounds, knowing as we do that every new solution means a fresh source of power and benefit to mankind? In fact, the whole tendency of the engineer's life and work is to clarify and quicken his intellect, to train his will, and to strengthen every good impulse. How many shining examples and proofs of this are found in the roll of members, living as well as dead, of our own Society; how many have we ourselves known, strong, alert, kindly, clear-headed men, men quick to respond to every call of duty and who could be trusted to the uttermost in every relation of life?

If to a character such as this we add a grasp of the broad outlines of general knowledge and a command of the new sciences which the labours of the last two generations have bequeathed to us, we have the man who will be the typical engineer of the new century. He will be not unlike the engineer of the last century, but will, in fact, be his true successor and considering his greater opportunities, be no more to be commended. Yet as a man of wider knowledge and ample intellectual resources he cannot help being a man of greater power. Great as have been the men and great as has been the work of the engineers of the last hundred and fifty years during which the steam-engine, the railroad, the telegraph, the telephone, the power press and the myriad other improvements have revolutionised the conditions of human life, making it not only longer but richer and better worth the living, there is reason to believe that even greater work is in store for our successors. Certain it is that as knowledge grows the field of its application to the uses of daily life must also grow. Even now almost every process of manufacture and transportation as well as all the machinery of war, both on land and on sea, are the work of the engineer. And in the future, even more than in the present, will the secrets of power be in his keeping and more and more will he be a leader and a benefactor to men. That his place in the esteem of his fellows and of the world will keep pace with his growing capacity and widening achievement is as certain as that effect will follow cause.

In this higher development of the engineer and his work this Society, as the leading organisation of its kind in the country where engineers have accomplished most, is certain to bear an important part. This it will do in part by the intellectual stimulus of its papers and discussions. Even our Transactions are an essential part of the library of every working engineer and of every engineering school.

But more important than the intellectual stimulus of our Transactions will be the moral stimulus of the personal contact and acquaintance made possible by our meetings. It is, in fact, hard to over-estimate the value of such meetings in quickening the interest and raising the standards of those who take part in them. Nothing is so vitalising as the meeting of those of like sympathies and common pursuits. Scattered, the members may die out; in contact they burst into flame.

But animated by the inspiration of example, personal contact and friendship, hardly any limit can be placed upon the effect of an organisation such as ours in lifting our profession to the highest plane of real service and honour well deserved.



## THE WASHINGTON NATIONAL MONUMENT.

**DESCRIPTION** of the immense memorial of George Washington in the capital of the United States was read by Mr. Bernard R. Green at the Convention of the American Society of Civil Engineers. It is purely a masonry structure on the bed of the foundation to the peak of the pyramidion. The interior iron columns, stairway, landings and the observation deck at the top of the shaft proper form no essential part of the monument itself. Designed as an Egyptian obelisk, the effect was a monolithic effect, and this is practically obtained at a moderate distance, where the fine joints and slightly varying shades of the individual stones are not apparent. At 150 feet above the base, however, there is a distinct change of appearance, especially in wet weather, between the old and new portions of the work.

The dimensions of the monument are:—Total height, 55 feet 5½ inches; shaft proper, 500 feet 5½ inches; base, 34 feet 1½ inches; top, 34 feet 5½ inches; pyramidion, 55 feet 5½ inches; interior well, 25 feet square up to 150 feet, splaying out to 31 feet 5½ inches at 160 feet, and thus continuing to top of shaft; batter of exterior, ¼ inch to 1 foot; thickness of walls at base, 15 feet, at top 1 foot 6 inches; foundation, 126 feet 6 inches square and 36 feet 10 inches deep.

As the original foundation was built 15 feet 8 inches above the then natural surface and subsequently buried by artificially raising the mound about the monument, the total height of the structure actually built is 571 feet 1½ inches, but the present visible obelisk alone is still the highest masonry structure built by man by some 20 feet.

It was built in two parts. The first by the Washington National Monument Society, a private organisation, which raised some 300,000 dols. by popular subscription. Excavation for the foundation, 80 feet square and only 7 feet 8 inches deep in an ordinary sandy clay alluvium, was begun in 1848, and the corner-stone laid on the bed on July 4 of that year. A solid rubble masonry footing, 80 feet square, stepped up to a height of 23 feet 4 inches and a width of 58 feet 6 inches square at the top, was built of blue gneiss rock from the Potomac shores near the city, in derrick sizes and smaller, in lime mortar. Barring the mortar, which naturally never hardened beyond the reach of atmospheric influence, the rubblework was good. On the top of this footing the monument shaft was started with a white marble facing in 2-foot courses, with beds of 15 to 18 inches and a few headers, backed up with rubble masonry like that in the footing. In 1854 this had reached a height of 154 feet and 6 feet in 1856, when, owing to lack of funds and other unfavourable conditions, the work came to an end and so remained, actually abandoned, until the Government assumed it by an act of Congress on August 2, 1876, the Centennial year.

The work had been prosecuted on a plan of obelisk which would be 600 feet high, involving a total weight of some 1,000 tons that would impose a load of 10·6 tons per square foot on the ordinary kind of soil described. At this time the shaft had reached about 35,000 tons, and the load was ready 5½ tons per foot. Whatever original bench-mark may have existed was lost, and the amount of settlement that must have occurred was unknown. Doubts of stability naturally arose as time went on, and the law therefore conditioned the continuation of the shaft upon proper assurance of the efficiency of the foundation. A board of engineers then made thorough investigation and reported that the soil was already added to the limit of prudence, if not of safety.

Then, on June 25, 1878, the work was placed in charge of Lieutenant-Colonel (later Brigadier-General) Thomas Lincoln Casey, of the corps of Engineers, who was required to prepare a plan for properly strengthening the foundation. This was done within a month and the work accomplished during 1879-80 as follows:—

A much firmer stratum of gravel, sand and small boulders existed at 13 feet 6 inches below the old foundation, which was underpinned with Portland cement concrete blocks 4 feet 6 inches high, 13 feet 6 inches deep, 41 feet 3 inches long, 18 feet of which extended underneath. These were put in singly or in pairs, one on each opposite side, as the tendency of the monument to lean towards the respective cuts appeared, and this was constant until a number of the blocks had been inserted. Frequent level observations were kept up on brass pins at the four corners of the shaft, which showed an extreme sensitiveness to the least disturbance of the earth underneath the old foundation. Finally, the underpinning was completed, leaving, as will be noted, a block of untouched earth 44 feet square in the centre. Jack-screws were used solely to retain the side-pressures of the earth in the trenches, and the concrete was forced up under the old footing masonry with a swinging horizontal battering-ram timber. Then the old rubblework was quarried out around the sides in sections about 10 feet wide, and concrete buttresses were inserted about 3 feet under the edge of the shaft, and extending well out to the projecting underpinning. When all were in they formed a continuous buttress all round. In this way 70 per cent. of the original earth-bed was cut away and replaced by

the concrete underpinning, 51 per cent. of the rubble footing was torn out, and 48 per cent. of the bed area of the shaft itself undermined and filled with concrete.

During this operation the total settlement of the structure was 2½ inches, the greatest difference between any two corners being ½ inch, which nearly corrected an original inclination of about 1½ inches in the old shaft at 156 feet height.

This accomplished, the continuation of the shaft was resumed on August 7, 1880, and the capstone set on December 6, 1884. The facing is white marble in 2-foot courses of 2-foot bed in alternate headers and stretchers, backed up with cut granite, all laid in Portland cement mortar.

The top of the shaft being but 18 inches thick and 34 feet 5½ inches square, a unique design for a marble pyramidion was necessary, and was executed as follows:—

Thirty feet below the top of shaft three steep arch ribs 12 inches thick start out on each of the four inside walls and extend up, so that at the top the middle one projects 7 feet and the others 5 feet inward. Above this level the ribs continue with 12-foot slabs on edge about 4 feet 6 inches high, the middle ones meeting at a common keystone and the others in pairs on the hip corners of the pyramidion. The latter consists of 7-inch slabs 4 feet 6 inches high and 7 feet or less in length, jointed like slightly overlapping tiles, independently carried by peculiar hook joints on the respective slab voussoirs of the arches, on which they rest crosswise. Above the keystone these covering slabs box around and rest on each other, terminating in a single pyramidal capstone about 5 feet in height.

The total weight of the monument, including the foundation and interior ironwork, is 90,854 tons, loading the foundation not over 10 tons per foot in the centre, nor less than 3½ tons at the outer edges of the foundation. The construction of the shaft produced a further settlement of the foundation, making a total of about 4½ inches, but no material change has occurred since. Wind has no appreciable influence on the monument.

## ILLUSTRATED BOOKS.\*

**T**HE treatment accorded to the making-ready or preparation for the printing of woodcut blocks and of those made by process is quite different, especially for those by the half-tone method. Formerly the degrees of light and shade were obtained from the woodcut by lowering the block in certain places where light effects were desired, and the solids were left standing in the original height. We have the precedent of Papillon, the French authority of the eighteenth century, for this. With the introduction of engraved wood blocks, another method had to be employed in order to secure the different degrees of tone, and these gradations were brought out by overlaying with various layers of very thin paper cut to the required size and shape. This was first assisted, where necessary, by underlaying the block itself. This having been done, the overlays are made from, say, three pulls taken on a fairly hard paper; the light or high tints being cut out in the first case, and in the second and third pulls the medium tones and solids would be also cut out, and such pieces then affixed respectively to the first one. By these means the full results of light and shade are obtained when this overlay is put into the exact position. It is, of course, necessary that the workman should have some artistic appreciation before a good result is obtained.

With half-tone illustrations quite another method must be employed. It is absolutely necessary that the block be very truly underlaid, in order to bring it up to the exact type level—some prefer a trifle higher—and also that it be equally level at the four corners, without any rocking on its base of wood or metal. This having been done satisfactorily, little or no overlay is required for the proper printing of these illustrations. Given the proper ink and paper, with a hard and sharp impression, this is all that is necessary. Any drag or slur on the impact of the printing surface with the impression cylinder of the machine is most detrimental to the finished print.

I have referred to the beauty and depth of "colour" of the black ink used by some of the old masters. The printer formerly made his own ink, and he was a wise man in his own generation. Nowadays the modern printer buys all his ink, and as a rule the secret of what was called "the art and mystery" of printing lies very largely in the ink. In these days of chemicals one hardly knows how inks are made, because they have to be adapted to the modern requirements of shining paper and process blocks, and what are considered full or good effects are only arrived at by the use of some stimulant, usually a chemical or mineral, and then one never knows the ultimate result. I have seen, by the use of improper inks, some very alarming results.

\* From a paper by Mr. C. T. Jacobi, read before the applied art section of the Society of Arts.



For good paper, whether handmade or otherwise, it is essential that a fine carbon ink be used. Any so-called bloom or sheen is usually obtained by the use of a metallic or other substance which is sure sooner or later to develop some chemical action. For plain type printing a perfectly pure pigment must be used, but, unfortunately, for the satisfactory working of half-tone blocks the ink has to be very considerably doctored for fast-running machines. A comparison of the bulk of impressions with the engraver's proof is not always a fair one, because an ink giving good results for single proofs would be quite unworkable on a machine that may only be running at an average rate.

A good deal has been written and said about the "sixties" in the annals of illustration. In some respects I think the glamour connected with this period is not always deserved. True there were many capable artists and many came to the front. Much of the work was well designed, but it was not always well engraved—at least, that is my opinion—and some of it would have been better if it could have been processed, which of course was not possible at that date. Having ventured this opinion, I will go further and say that very many of the books of that period were anything but the "fine art books" they profess to be. I say this to the detriment of my own craft, for I cannot help thinking that with proper consideration the general get-up of many of these volumes could have been better designed, and what is more, better printed.

In surveying the English illustrated book of the first half of the nineteenth century—that is, from the time of Bewick up to the sixties—I find that a great many books of representative character emanated from the Chiswick Press. These books are both of pictorial and decorative character, and many were done in conjunction with William Pickering, the publisher, who died in 1854. The shape and form of these books was only arrived at after a great deal of deliberation and experiments. This the late Henry Stevens tells us in his little brochure, which I would advise all to read, for it will be to their advantage. In this little work he respectively applied the lash to the author, publisher, printer and binder, and much of his trenchant criticism was deserved.

To render full justice to the new school of engraving it was necessary to employ special methods in printing, and it is a tradition of the Chiswick Press that overlays, the use of which has already been explained, were first used in that establishment, though I have read of a French claim to that innovation. At any rate, Mr. Whittingham was one of the first to practise overlaying and to bring it to perfection, so much so, that it is said that Bewick was fairly delighted with his treatment of wood engravings in printing. Mr. Whittingham's tombstone in Chiswick Church records that he "attained considerable eminence in his art, particularly in the printing of wood engraving."

We must all regret the decline of wood engraving, for, in connection with type printing, it was the true method of illustration. It was capable of giving much decorative expression that can scarcely be hoped for in any mechanical process. It is, however, some consolation to know that methods of reproduction have improved so much that it is possible, with a due regard to the altered circumstances, to obtain good substitutes for hand-engraved work. In some cases facsimile line-work may be even better rendered by process. If we wish to see how far process has succeeded, we have only to refer to the reproductions of the work of two such very different artists as Mr. Hugh Thomson and the late Aubrey Beardsley. Here are the two extremes of method in drawing.

In dealing with process work I propose only to consider such blocks as can be printed with type, and not the other methods which require quite a distinct and separate treatment in printing—such processes falling under the heads of photography, lithography, or those using gelatinous films.

The closing years of the nineteenth century saw the rise of process work, which created the almost universal demand for illustrated literature that could be both expeditiously and cheaply produced by the various methods in vogue. Photography does not lie, though it may distort, therefore I consider that there is no degradation in the reproduction by mechanical means of drawings in line.

When we consider this advantage, and the fact that any block for printing purposes can be produced quickly and at a nominal expense, it is easy to account for the great demand for blocks mechanically produced.

In former times the artist was somewhat at the mercy of the engraver, for whether the original picture was drawn on the wood direct or photographed thereon, as was the custom in the latter part of the century just closed, everything depended on the engraver—for it was he who gave the expression or interpretation to the artist's work.

It is true that artists were sometimes engravers too, but such cases were rare. Naturally, some of the very best examples of wood engraving extant are those which were both drawn and engraved by the same individual.

With regard to the blocks executed by the half-tone method,

which reproduce surfaces rather than thin lines, either direct from nature—that is, from a photograph taken direct from object—or from drawings made in wash, there is room for difference of opinion. Without doubt there is not the artistic merit in these productions that may be found in the original process, but I think we shall all agree that this method has greatly improved during the past few years, and that the high-water mark of excellence has been very nearly reached. The results, so far, are mechanically very ingenious and marvellous, even if we do not think the general effect artistic.

Such blocks are very much improved if afterwards engraved on by hand, as in the case of many of the illustrations appearing in some of the American magazines, but this requires much practice and considerable feeling if it is attempted, otherwise the labour is in vain. Vignetting of half-tone work is something that our cousins seem to have brought to greater perfection than we have.

It is necessary, in considering picture-books, to discriminate between those illustrated from a pictorial or graphic point of view, and those of a purely decorative character. Sometimes we have books where a combination of the two motives is attempted, but often without much success. Some works, owing to the nature of the subject, require illustration, but pure decoration is aimed at, it should be either thoroughly worked done or left alone. In a plainly printed letterpress book there is scope for intelligent work, and it does not always require embellishment to make it what might be considered an artistic production.

Much of the work offered as decorative is overdone, and is always in accord with the typographical setting of the page. Ornament should be sparingly used and subordinated to the text, and not made to swamp the letterpress. In decorative designs occasionally forget that the object is to fill a blank space, not to create one; and, on the other hand, pictorial graphic art is usually secondary to letterpress, because it serves to elucidate or illustrate the text. Some will go out of the way to improvise an opening for their extravagant fancies. If one of two facing pages is short, it obviously requires something to preserve the balance, and here is the opportunity for the artist.

Absolute harmony does not exist between type and illustration, but it is quite possible to reconcile the two with some degree of success, provided due care be exercised.

Truly decorated books are those executed throughout by the same hand, such as William Blake's, the illustration and lettering being woven as it were into one design, but commercial considerations will not allow of this, therefore the artist and printer must help each other. Type letters, as a rule, are conventional in form, so the selection of a proper fount, and one of a suitable size, requires some amount of judgment.

Again, many of the typographical flower ornaments employed by the seventeenth and eighteenth-century printers were in keeping with prevailing types of those periods, if consistently used. Gothic ornament should go with black-letter type, and designs of a linear character with Roman type. I propose to show you on the screen some slides which will demonstrate these simple facts.

It would be out of place for a printer to criticise artistic work, but I venture to say that the draughtsman may often do much to produce a good effect by adapting his line, as far as possible, to the strength of the letterpress.

In printing any work with mechanical reproductions, we are limited to two kinds of blocks in relief, viz. line and half-tone. These can both be used as textual cuts or as full-page illustrations, either separately or backed with type. Separate plates are not, however, limited to these two kinds, but photography, lithography, or the various gelatine processes, such as collotype, may be employed. It is this mixture of the processes that I object to, and it should be generally deprecated.

The adoption of many processes in any one volume sometimes made worse by the use of a different paper for each kind of picture, with the result that the volume appears to be a mere sample book of papers and processes.

One other thing to be avoided, if possible, is the interspersing of plates on smooth paper with text on a rough paper. This may sometimes be prevented by relegating the plates to the end of the volume, thus dividing into two sections of (a) letterpress, and (b) illustrations.

Referring to those smaller blocks which fall in the letterpress page, designated as textual cuts to distinguish them from those occupying full pages, from a decorative point of view rectangular blocks are better than those of an irregular vignetted shape. It is not satisfactory to see half-tone blocks made so that they run into the text in any shape, stepped in and out in fantastic forms, with the letterpress straggling all over the page, so that it is confusing to read. The illustrations should be kept within bounds if possible; that is, within the limits of the type area. For the sake of symmetry full-page blocks should be of the same size as the letterpress page. If a medium size block, let it be the precise width if possible. If a small one



is best to corner it or place it at the side rather than to let it in the centre of the type measure or width; this will facilitate the matter being set in short lines on either side of the block. To have the letterpress broken up into so many all lines is very distracting to the reader, and it creates that sore of wide or bad spacing.

One other thing to be avoided is the encroachment of literary illustrations on the margin, because this destroys the symmetry of the page and the proper balance of the two open facing pages. This does not, however, apply to systematic decoration, because anything in the way of a border may enhance the beauty of the page.

The placing of illustrations in bookwork is a very important matter—this being rendered more difficult if the volume is of small size. It is necessary that some consideration be made of the nature and size of the type employed. All this has an effect on the proportion of space between block and matter, and the position has been determined. If we take a dozen serious books of illustrated or decorative character we shall probably find as many varieties in treatment. No definite rules can be laid down; much must be left to the judgment of the printer, if not dictated by the editor or author.

One other point is the treatment of the necessary lettering of titles to those pictures. These vary a great deal, and one rule will not apply to all. If possible they should be dispensed with, but if they must be tolerated let these under-lines be dealt with in some intelligent way. If consisting of a short line of one line only they can be thrown into the white space of the margin, but if occupying more than one line they must be treated as part of the picture and allowed for, considering the space at command. Whether these letterings should be placed in the centre under the block or range at the side of the block is only a detail. A definite reason rather than rule of thumb should prevail.

One reason for the inharmonious appearance of books is that they are frequently put into hand before one has any notion of what is to come in the nature of MS., or the extent of the same. If it happens to be a volume that is to be illustrated no very defined notions are arrived at, but the MS. is flung to the printer with instructions to proceed in such and such a manner. The style of illustration may not be settled, or even the method of producing the same, and chaos is the result.

### BERKS ARCHÆOLOGICAL SOCIETY.

THE annual report of the Berks Archæological Society states that His Majesty the King had graciously consented to become patron of the Society, and the Bishop of Oxford had allowed his name to be associated with the Society as one of its vice-patrons. Funds having at length been provided by the careful and skilful finance of the hon. treasurer, the Society had been able this year to carry out to the full its undertaking with the Corporation. The basement room on the right of the Abbey Gateway, under the superintendence of Mr. Ernest Ravenscroft, had been adapted to the purposes required, and with the concurrence of the museum committee the librarian had been able to arrange there some objects of considerable interest. The year had been a fairly busy one in connection with the Society's operations. Five meetings had been held at Reading, when well-attended lectures were delivered. Two excursions took place, and gave much satisfaction to the members and friends who attended them. Detailed references were made to the various meetings and excursions, and to the visit of the Birmingham Archæological Society to Reading and Aldermaston, and to the discovery of urns at Sunningdale. The committee recommended that three guineas should be again voted to the Society of Antiquaries Exploration Fund, in connection with the Silchester Exploration. It was suggested that excursions be made during the summer to the following places:—(1) Westbury, Eddington and neighbourhood; (2) Hungerford, Littlecote, &c.; (3) St. Albans. It was hoped that a paper on "Excavations at Little Marlow Nunnery" would be read during the session by Mr. A. Vaughan Williams.

The following officers have been elected:—President, Mr. C. E. Keyser, M.A., F.S.A.; vice-presidents, the Very Rev. the Dean of Windsor, Lord Saye and Sele, the Ven. Archdeacon of Berks, Mr. Charles Smith, Mr. F. W. Albury, Mr. H. B. Blandy, Mr. James Parker, Mr. J. Okey Taylor, Mr. G. W. Mount, M.P., Mr. W. Berkeley Monck; committee, Mr. R. E. Golden, the Rev. A. Cheales, Mr. G. W. Webb, the Rev. Morris Williams, Mr. Challenor Smith, Mr. W. Ravenscroft, Mr. Theo. H. White and Mr. A. Ogilvie; hon. sec., the Rev. P. H. Ditchfield; hon. treasurer, Mr. W. Ravenscroft; librarian, the Rev. Alan Cheales.

The General Meeting of supporters of the Royal Architectural Museum and Westminster School of Art will be held on Thursday next at 4.30 P.M. Mr. W. Emerson will preside.

### TESSERÆ.

#### Minor Transepts.

THE chief peculiarity of general form in the English Gothic—viz. the eastern minor transept, so finely developed at Salisbury—has been called a useless excrescence; but it certainly, by the principles of contrast and multitude, adds to the apparent extent, and externally conduces not a little to variety and beauty of outline. We may account for its origin, however, thus:—In cruciform churches there were two modes of placing the choir and its furniture; either in the eastern limb, which was most common, or in the centre of the cross, as at Winchester, Canterbury, Westminster, &c. This place was especially proper when there was a lofty lantern over it, as in the Italian duomo and English cathedrals, but not in the French, in which accordingly there seems to be only one example of this arrangement, viz. at Rheims. This plan had the advantage of placing the choir in the most imposing spot, where alone the whole building displayed itself in five grand perspectives (the fifth being the tower, which was in all these cases originally open as a lantern); but it had the defect of shutting out the view of the transept arms from the nave and from each other, which latter was always the finest proportioned vista in the building, because not too lengthy for its other dimensions. But the builders of Salisbury seem to have aimed at combining the separate excellences of all other models, for it combines in its varied plan every kind of cross, the whole clerestory east of the tower forming even a Greek cross of perfect symmetry; and, notwithstanding the fine open view of the principal transept, on entering the choir we find it crossed by another transept, producing by its lateral views the same effect as in those choirs which are central. The hint was followed more or less completely at Worcester, York, &c.

#### Nicolas Poussin.

Poussin was of all painters the most poetical. He was the painter of ideas. No one ever told a story half as well nor so well knew what was capable of being told by the pencil. He seized on and struck off with grace and precision just that point of view which would be likely to catch the spectators' fancy. There is a significance, a consciousness in whatever he does (sometimes a vice, but oftener a virtue) beyond any other painter. His giants sitting on the tops of craggy mountains as huge as themselves, and playing idly on their Pan's-pipes, seem to have been seated there these 3,000 years, and to know the beginning and the end of their own story. An infant Bacchus or Jupiter is big with his future destiny. Even inanimate and dumb things speak a language of their own. His snakes, the messengers of fate, are inspired with human intellect. His trees grow and expand their leaves in the air, glad of the rain, proud of the sun, awake to the winds of heaven. In his *Plague of Athens* the very buildings seem stiff with horror. His picture of the *Deluge* is perhaps the finest historical landscape in the world. You see a waste of waters, wide, interminable; the sun is labouring, wan and weary, up the sky; the clouds, dull and leaden, lie like a load upon the eye, and heaven and earth seem commingling into one confused mass. His human figures are sometimes "o'er-informed" with this kind of feeling. Their actions have too much gesticulation, and the set expression of the features borders too much on the mechanical and caricatured style. In this respect they form a contrast to Raphael's, whose figures never appear to be sitting for their picture, or to be conscious of a spectator, or to have come from the painter's brush. In Nicolas Poussin, on the contrary, everything seems to have a distinct understanding with the artist; the very stones prate of their whereabouts; each object has its part and place assigned, and is in a sort of compact with the rest of the picture. It is this conscious keeping and, as it were, internal design that gives their peculiar character to the works of this artist.

#### Urn in Christian Churches.

About fifty years since in St. Olave's Church, Chichester, two Roman urns, of plain character, were found embedded in the wall above the arch of the east window. They were placed on their sides, with their mouths facing inwards towards the church, and there was some appearance of their having originally been open. For what purpose, or under what feeling, these urns were placed in this singular position it is difficult to conjecture. The fact would seem to tally well with the supposition that this was an ancient ecclesiastical site. The ashes or relics of martyrs might have been enclosed in these receptacles in early times, and the vessels preserved when, at a later period, the wall was raised and a new window inserted. Though, indeed, it is well deserving of consideration whether this curious discovery does not indicate a still more primitive origin than has been claimed for the singular arch which occurs in the lower part of this wall. It has been conjectured, by more than one able antiquary, that the aperture in question might be no other than part of one of the



ancient Roman columbaria. These were sepulchral buildings, having small apertures like pigeon-holes for the reception of urns. Such a one was discovered in the Appian Way, anno 1726, supposed to be that of Livia, the wife of Augustus. At what time or under what idea this sepulchral building, with its incurned remains, was adopted as part of the foundation of a Christian church must be mere conjecture. It is also conceivable that the remains may have been those of martyrs—martyrs of the days of St. Alban (about A.D. 303) perhaps, and fellow-sufferers of his in the days when Britain was still Roman.

#### Greek and Gothic.

The distinction between the two styles of architecture recognised in modern Europe is marked with sufficient clearness. The one soars to a great height and abounds in lofty vertical lines; the other attains but an inferior altitude, and abounds in prolonged horizontal lines. The one loves the complexity and combination of dissimilar parts, the other simplicity, symmetry and unity of outline. The one exhibits itself by deep shadows, the other by strong lights. It is not here meant to be denied that the Greeks produced effects by alternations of light and shadow, but their alternations were not nearly so great or so frequent as those of the Christian architects. They have no projecting transepts with dark angles, no huge buttresses—their mouldings and the capitals of their columns are convex, and never have the deeply cut recesses of our own styles. Their alternations of light and shadow are not abrupt, they avoid rapid transitions, sudden contrasts, bold projections and salient angles; the shadows melt away into light by softened and delicate shading. Respecting the characteristic distinctions of mouldings, vertical mouldings are almost (perhaps entirely) unknown in true Grecian architecture, whereas in Gothic they greatly predominate, and the horizontal, where they occur, take their character and form from the vertical. The one is essentially picturesque (in the artistic sense of the word), the other is statuesque. The one is the offspring of a wild and fertile fancy, the other is the production of disciplined and scholarlike art. The one is imaginative, the other intellectual; the uncontrolled sweetness of Shakespeare's versification and the studied perfection of Milton's metre do not differ more than do the modes of expression in Christian and Classic architecture. In all these characteristics (and the professional reader will suggest many more) the spirits of the two styles are widely different; but they are something more than different—they are antithetical—directly opposed to each other. The Pointed architecture is the exact antithesis of the Grecian.

#### Cruciform Churches.

Most churches present in their ground plan a cross of one or other of the following four varieties:—The cross without the summit, the cross with summit and but one transverse bar, the cross with summit and two transverse bars, and, lastly, the cross with summit and three transverse bars. The different forms of crosses with four limbs resolve themselves into two principal types—the Greek cross of the East and the Latin cross of the West—which types are again subdivided into many varieties. These types were originally common in both Greek and Latin churches, but eventually that which is known as the Greek cross prevailed in the East and the Latin in the West, and this applies in every sort of decoration where the cross is used, as well as in the forms of churches. In the earlier centuries of the Middle Ages the choir in the churches of the West was short, while the nave was proportionately long. After the thirteenth century the choir becomes longer, and there are even some churches in which the transept is nearer to the porch than to the apse. In some of the English churches the longitudinal nave is divided by two transepts—one in the centre, the choir being again divided into two equal parts by a second transept—shorter, however, than the first—the upper division forming the sanctuary, and the part between the two transepts forming the choir. In the decorative arts the varieties of crosses were yet more numerous than in architecture, and often present extraordinary peculiarities, some of which especially mark hierarchical distinction.

#### The Society of Dilettanti.

With the antiquities of Athens, the name of the Society of Dilettanti has been for the last century most intimately associated. Instituted in the year 1734, "by some gentlemen who had travelled in Italy, and were desirous of encouraging at home a taste for those objects which had contributed so much to their entertainment abroad," the first work it publicly produced, in 1769, was that which is well known under the title of "Ionian Antiquities," being a minute and scientific account of certain ruins in Greece, the remains of the Temple of Bacchus, at Teos, and others, under the superintendence of Chandler and Revett, assisted by the artist Pars. In the introduction to the "Ionian Antiquities," the following passage, explanatory of the principles of the Society, and in some measure serving as its introduction to the public, occurs:—"As this narrative

professes the strictest regard to truth, it would be disingenuous to insinuate that a serious plan for the promotion of the was the only motive for forming this Society. Friendly social intercourse was undoubtedly the first great object in view; but while in this respect no set of men ever kept more religiously to their original institution, they have not abandoned the cause of virtue, in which they are also engaged, or forfeited their pretensions to that character which is implied in the name they have assumed." To its valuable assistance, the Society was mainly indebted for the publication of the works of Athens which have made his name famous, and which, having guided and instructed the taste of our architects in the last century, are still the substratum of all modern knowledge in theory on the buildings of Greece. The issue of these important volumes took place at intervals from 1762 to 1816. Addressed to the Society in 1798 by James Barry, R.A., the high estimation which he entertained at that period of the influence over the taste of the public in matters of art. In the years 1809 and 1835 two volumes of another work by the Society appeared, entitled "Specimens of Ancient Sculpture," prepared after the example of the "Museo Pio-Clementino," by Visconti, in Italy, and in the same style as the concluding volume of the splendid Musée Française under Napoleon, with figures and descriptions of various pieces of antique sculpture in England, many of which were in the then Townley collection, but the majority in the cabinet of Mr. Richard Payne Knight. They were accompanied by an essay from the pen of the latter gentleman, "On the Symbolical Language of Greek Art;" and it was in connection with him, though not with one of his productions, that the Society was attacked by a malignant writer of the "Pursuits of Literature," in the notes to that poem; but Mr. R. P. Knight's personal quarrel was only part of the lampoon that survived its first publication, and that only in a few words of reply in the preface to his "Progress of Civil Society," 1796. In 1817 appeared "The Unedified Antiquities of Attica," under the auspices of the Society, chiefly relating to the temples at Eleusis, near Athens, containing not only the "bird's-eye views" of Sir William Gell, with the fact of which every reader of the "Childe Harold" is acquainted, but very elaborate and valuable measurements of the Propylæum of the temple at Eleusis, especially worthy of study, as having been formed on the model of the similar structure at Athens. The Society also published the important work by Mr. F. Penrose, M.A., entitled, "An Investigation of the Principles of Athenian Architecture; or, the Results of a Recent Survey conducted chiefly with reference to the Optical Refinement exhibited in the Construction of the Ancient Buildings at Athens."

#### English Staircases.

It was not till about the time of Elizabeth that staircases began to be planned more commodiously in this country, and made a decorative feature in the interior of a mansion. Even though they were greatly improved, the flights being made wider and the steps parallel to each other, with intermediate landings or resting-places between the several flights, and although considerable decoration was bestowed upon them, the walls being panelled and the parapet of the stairs formed either by richly carved balusters or open fretwork, frequently with heraldic figures of animals on the pedestals at the angles of the different flights, the staircase itself was usually enclosed within a comparatively small area, so as to admit of no general view of the whole of it, there being very little open space, well, as it is termed, sometimes none at all. The staircases at Aldermaston, Berks, Crewe Hall, Cheshire, and Knowlton, Kent, may be taken as examples of the kind. At a later period staircases in mansions of a superior class were made disproportionately spacious, being upon a scale as to size which the apartments themselves were not at all in keeping.

#### Pompeii.

What always surprises the visitor is the small scale of everything at Pompeii. The streets are very narrow, but have a high raised foot-pavement and two or three large stepping-stones at the crossings to enable the passenger to pass over dry-shod during rains. The shops and ordinary dwellings are of the most minute dimensions—literally too small "to swing a cat in"—and one is puzzled how the inhabitants could have stowed themselves away. Even the dwellings of the wealthier inhabitants are on a very limited scale; but then it is surprising how elegantly that small space is disposed. As in eastern countries there is generally an open court, with a fountain and a shaded portico around it, which was probably the general place of resort for the family, besides one or two inner chambers—the bedrooms being mere nooks and niches. The floors are everywhere inlaid with beautiful mosaic, at once cool and ornamental, the walls adorned with frescoes, which display both the love of art and the corruption of morals with which society was pervaded. A striking scene is the Forum, the heart of the city, and the great lounging-place of the inhabitants; extensive and



like the streets, very open, with an area surrounded by shady porticoes. The principal temples and the tribunal of justice rested upon it. If we climb an angle of one of these buildings and look down upon all this as upon a ground plan—these temples and porticoes being all roofless, though the pillars are standing—it is not difficult to repeople this vast and vacant space with all the mingled population of the city—patricians, plebeians, priests, senators, loungers, who were wont to congregate in the shade of its pillared corridors. Still more impressive is the great amphitheatre, where it is generally supposed the people were assembled at the very moment of the eruption. It is an immense oval, capable of accommodating many thousand spectators, and is still in a very good state of preservation. From the topmost bench there is a wide view over the bay and its shores, while Vesuvius looms up black and threatening in the background. Hence the catastrophe comes vividly home to the imagination; the mountain belching forth the torrents of lava that engulfed Herculaneum, the air black with the ashes that buried Pompeii, the horror and consternation of the inhabitants hurrying down amidst the suffocating mist to the shore of the bay to seek for safety in flight, at the same time that Pliny, crossing over from the distant shore of Sicily, perishes among the obscure crowd of fugitives; it is impossible to stand here and not to realise the terrible drama, the scene of which is so clearly unrolled around. But nowhere does it come home more painfully to the mind than in the dark underground vaults of the Villa of Diomedes, where the very press of the bodies of those who, taking shelter from the raining shower, as the hot dust penetrated deeper and deeper to its recesses, were there blocked up and suffocated, may still be seen upon the ash-encrusted wall.

#### Persian Gardens.

The prevailing plan of Persian gardens is that of long parallel walks, shaded by even rows of tall umbrageous planes, interspersed with a variety of fruit trees, and every kind of flowering shrub. Canals flow down the avenues in the same deviating lines, and generally terminate in some large ornamental basins of square or octagon shapes, containing sparkling fountains. Formal as this may seem, and therefore the reverse of picturesque, the effect was amazingly grand. The number of avenues and canals formed so extended a level scene that, when viewed from any point, it appeared as if a vast wood, with thousands of brilliant rills gliding amongst thickets. It should be observed that the Persians are not content with one fountain in a canal or basin, but often have many small low jets to keep the whole surface of the water in agitation and to heighten the sparkling effects through the foliage.

#### The Cone in Ancient Art.

In Assyrian sculpture cone-bearing figures are often found. They adorn, as deities, the entrance to peculiar chambers; within they appear in the more humble guise of ministers to the king's necessities, attendants upon the cup-bearer, as a drink purveyor and drink bearers, as also in the Xanthian fables and as guardians of the sacred tree. The cone by itself decorates the dresses worn by some subjects. Most of the cone-bearing figures have horned caps, or caps with horns, like the followers of Bacchus. Tradition attributes to the Median Bacchus the thyrsus, borne by the thyrsigers, or cone-bearers of Rome. All the cone-bearers carry a square vessel, which, from being sometimes decorated as a basket, has been very often looked upon, but erroneously, as such. Layard says it was often made of metal. With respect to the sacred tree upon which the cone-bearing figures are attendant, or from which they obtained their cones, in most countries the cedar or the cypress, it was in Assyria a pine, for the cone in the hands of Nimrod—the patriarch Asshur deified, according to Rawlinson—cannot for a moment be compared with the fruit of the cedar or the cypress, the connection between which and the worship of Venus in the systems of the East has been shown by M. Lajard, of the French Institute. On one cylinder, Darius, the "vivifier of mankind," is handing over a son and heir to a king in front of the sacred tree. What, then, was the connection between the pine tree and the pine cone, and the ceremonies of certain chambers, the "vivifier of mankind;" the worship of the Assyrian Venus, the tree of life, the sacred beverage of royalty, and the art of cookery? The answer is to be sought for in the uses to which the ancients applied certain products of the pine. Horace, in accordance with the popular opinion, attributed to it the power of insuring long life. The peculiar action of the essential oils derived from the different kinds of coniferæ or pinaceæ, including the pines, firs, spruces, cedars, cypresses, junipers, savins, &c., are well known to medical men. The celebrated Bishop Berkeley, in his well-known treatise on the virtue of tar-water, associated this vivifying or fecundating principle of tar with elemental fire held latent in the pine tree. Tar-water was, according to Plato, the second of the "ignited juices." Layard says, that the worship of the Assyrian Venus existed among the Assyrians

can scarcely be doubted. In later Assyrian times the attributes of the Egyptian goddess Isis got mixed up with those of the Assyrian Ashtaroth; and the lotus partly usurped the place in decoration of the cone, which appears to have been succeeded in the East by the fire cones of the disciples of Zerdusht or Zoroaster. In Asia Minor, Greece and Rome the cone became a mere ornament, except in the festivals of Bacchus, and the pine torch (*tada pinea*) was still carried at wedding festivals in the times of Catullus and Pliny.

#### Samuel Prout.

Born at Plymouth about the year 1784, like his fellow townsmen who have distinguished themselves in art, Prout owed little to the patronage of his native town, unless their share in the praises which he ultimately commanded may be counted to them as encouragement. In the Metropolis his first patron was Mr. Palser, the printseller, who at that time lived in the Westminster Bridge Road, who used to take all his water-colour drawings at low prices, and had a ready sale for them. When Mr. Palser removed afterwards to the corner of Water Lane, Fleet Street, and Mr. Prout had arrived at distinction, the latter never omitted grateful mention of the advantages he had derived from the acquaintance and transactions of the time. He early gained the notice of Mr. Ackermann, and the many drawing-books for learners, and other prints which he undertook for that gentleman soon gave currency to his name. His transcripts of Gothic architecture at home it is superfluous now to commend. When the allied armies had made it safe to venture to the Continent, Mr. Prout was among the earliest of the English to travel there. His love of the picturesque was gratified amid the new and remarkable combinations of form which met his eye at Nürnberg and in many of the adjacent cities. He was among the first English artists to add to what had been already made known of Venice by Canaletto. The annual exhibitions of the Water-Colour Society to which he belonged have testified to the skill and earnestness of eye and mind and hand employed on these to the last. Nor must it be forgotten that he was among the first when Senefelder's newly-discovered process was imported into this country to try his hand at it. The powers of the art of lithography—though its processes may have been improved and amplified amongst us since—were never better exhibited than in Prout's broad and vigorous touch. The Landscape Annual is another record of his powers. In representing foreign scenes, he gradually acquired that broad and conventional mode of representing distant architectural features which, though bold, was felt to be true, and was at once so new and gratifying to the general eye, that his powers of production were often unequal to the demands made upon them by the publishers. This great success, however, was confined to this peculiar branch; his trees were never successful, and his most beautiful effects are generally produced by light thrown upon a tower or high building in the middle distance, contrasted with the sky beyond. The groups in front of these architectural designs were always bright and cleverly arranged, and a symptom of mannerism has been noticed in the frequent smallness of the heads of these figures. Several engravings were published after his works, in line—the "City of Venice," a large mezzotint of "Chartres Cathedral" and coloured prints of the "Hôtel de Ville," "Louvain" and views of "Rouen" and "Ulm."

#### Christ's Hospital.

King Edward had very little to do with the foundation of Christ's Hospital. Both the house itself and the revenues for its support came from his predecessor, or were raised by the bounty of the citizens themselves, and we do not trace anything bestowed upon it in Edward's letters patent beyond the name by which it should be known. And that is nothing more than occurred in scores of other instances throughout the country, many a grammar school being named the school of Henry VIII., Edward VI. or Elizabeth respectively, merely because it was established (or in many cases remodelled) under authority derived from the sovereign. Moreover, Christ's Hospital was not founded as a school; its object was to rescue young children from the streets, to shelter, feed, clothe, and, lastly, to educate them—in short, to do exactly what in later times has been done by each individual parish for the orphan and destitute offspring of the poor. Any high-flown eulogies upon Edward's love of learning are consequently in this case wholly misapplied. It does not appear that he even assisted in what the citizens were doing at the Grey Friars. All that can be affirmed is that he was the founder of Bridewell Hospital, and that he recognised Christ's Hospital and St. Thomas's, which the citizens had already set on foot, the former having become their property by purchase. The story runs that the king's attention was directed to this good work by a sermon preached before him by Bishop Ridley in the year 1552, and that in consequence the king sent by the bishop a letter to the mayor, declaring his special commandment that the mayor should travail therein. There is no reason to doubt that the



sermon was preached, or that the amiable king was anxious to fulfil the part required of him, but this was not until after the citizens themselves had done what they could, and found that they required further aid from the Crown. Bishop Ridley himself, in his farewell letter to his friends, written shortly before his martyrdom, attributed the chief merit to the city magistrates: first, to Sir Richard Dobbs, in whose mayoralty the renewed effort was made, and who invited the bishop into the City council-chamber to advise with the aldermen thereon; and, next, to his successor, Sir George Barnes, whose "endeavour was to have a House of Occupation set up," and for that purpose procured the princely palace of Bridewell from "that godly king, that Christian and peerless prince."

## Correspondence

*The Editor does not hold himself responsible for opinions expressed by the writers.]*

### The Queen Victoria Street Fire.

SIR,—The sad loss of life at the General Electric Company's premises in Queen Victoria Street claims public attention in more than an ordinary manner. It is notorious that many office and warehouse buildings must necessarily be used temporarily for manufacturing purposes, and that individual rooms or floors have frequently to serve as workshops. Legislation, as it stands to-day, gives the public authorities considerable control over specific classes of buildings erected for specific purposes, but there is little or no control exercised as to the use of buildings or parts of buildings for purposes other than those for which they were originally intended. It is in such buildings that the congregation of a large number of workers becomes exceedingly perilous, and the sad loss of life on this and other occasions only too clearly shows the absolute necessity of greater severity in controlling the use to which such buildings are put.

The serious loss of life on this occasion, following so shortly upon a series of deaths in buildings partially used as business premises and partially used as tenements (we would here particularly refer to the fires at Hackney and St. Luke's), makes it evident that revision in the interests of human safety is required in more than one direction, *i.e.* especially in shops with dwellings above. Combined with this we have a number of large fires in which there has been no loss of life, but in which a vast quantity of property has been destroyed, as, for instance, in the Cripplegate and the Barbican and the dock centres. Our committee wish to urge most emphatically that fire prevention legislation requires revision, and that to make it effective it must be of a retrospective character. At the same time we should like to point out the personal responsibility which rests with the owners of the building and the employer of labour in seeing to the safety of the staff, and that this responsibility should be recognised and clearly defined by law.

It is not the intention of the committee at short notice to define what are the reasonable requirements to limit loss of life, but it is the opinion of the committee that a ready and easy means of escape should be provided from the upper part of every building in the County of London, both new and old—We are, dear Sir (on behalf of the British Fire Prevention Committee), yours very truly,

EDWIN O. SACHS, Chairman.

ELLIS MARSLAND, Hon. Secretary.

June 11, 1902.

### GENERAL.

**Mr. Aston Webb, A.R.A.**, was on Monday elected president of the Royal Institute of British Architects. None of his predecessors attained the distinction at so early an age.

**The Municipal Art Society** of New York have arranged a competition for a street electroliner and isle of safety for a crossing of Fifth Avenue, New York.

**M. Letellier**, the French contractor, has been enrolled in the Legion of Honour. Among his works is the Pont Alexandre III. in Paris.

**Mr. W. J. Wadham** has arranged to hold in the Royal Institute of Water-Colour Painters during the Coronation season a British Colonial Art Exhibition, to include works of the most eminent artists of the British colonies. It will be opened on June 13 by the Duke of Argyll.

**M. Tonquiau** has been appointed architect for the new theatre which is to be erected in Paris on the Boulevard, near the Rue Louis le Grand.

**Professor W. M. Flinders Petrie** was elected a Fellow of the Royal Society at the annual meeting.

**The Edinburgh Architectural Association** will tomorrow (June 14) visit St. Monans, Balcaskie and Pittenweem.

**M. Leygues**, Minister of Public Instruction in the late Cabinet, on Saturday distributed the prizes at the closing meeting of the Congress of French Architects.

**A Replica** of Mr. O. Ford's statue of General Gordon seated on a camel is to be placed temporarily in St. Martin Place, London, subject to the approval of the Office of Works. The statue will be sent to Khartoum in the autumn.

**The Musée des Arts Décoratifs** was officially opened last week. It is placed in the Marsan Pavillon of the Louvre.

**The Memorial** of the late Alphonse Daudet, the novelist by M. Saint Marceau, has been set up in the Avenue Gabrielle, Champs-Élysées, Paris.

**A Decree** has been passed by Oxford University providing for an expenditure of 730*l.* upon the repair of the balustrade and parapet of the Ashmolean building.

**The Italian Chamber** have adopted a Bill sanctioning the construction of an aqueduct from the Apennines throughout the province of Apulia. The cost of the undertaking is calculated at 8,000,000*l.*, of which the State and provincial authorities contribute 5,000,000*l.*, the balance to be furnished by the contractor in return for a 99 years' concession. Hitherto no tender has been forthcoming.

**A Memorial** is to be erected on the battlefield of Crécy to King John of Bohemia, who was killed in battle fighting against the English forces.

**Three Caves** have been discovered near Croydon about 14 feet in depth and 10 feet to 12 feet in breadth, one having a tunnel 4 feet high leading from it. Such underground chambers are common in Ireland and Scotland, but are rare in England. It has been suggested that they belong to the Neolithic age, and that they are prehistoric places of refuge. At present the only finds are a number of flints, some charcoal and a singularly perfect hammer-head, with a beautifully-drilled centre hole.

**The Memorial** to those Etonians who have fallen in the South African war is to take the form of (1) a record of names in the college chapel; (2) a commemorative monument in an appropriate position; and (3) a building worthy of the school including a library and hall.

**The London County Council** will make application to Parliament in the next session for powers to acquire the freehold of the leasehold portion of the site of the Pimlico Gas works and certain premises in Pulford Street, for the purpose of erecting an electricity generating station for the Council's tramways in the western half of London.

**The Hon. John Collier's** *In the Venusberg* has been purchased for the Southport Art Gallery. There was some opposition to the transaction.

**St. Oswald's Transept**, Chester Cathedral, will be opened on the 27th inst. The restoration has been carried out by Messrs. Thompson, of Peterborough, under the direction of Mr. Blomfield.

**The Cloth Hall** at Newbury has just passed from the Charity Commissioners into the hands of the Mayor and an influential committee, who intend restoring the building and converting it into a museum of local antiquities and an art gallery as the town memorial of Queen Victoria. This will cost more than 2,000*l.* The architect is Mr. Francis Mount.

**The Exhibition** of the sign-boards which have been prepared for the competition suggested by M. E. Détaillé, the painter, will be opened in Paris on November 1, and will continue until the 15th. The Municipal Council have offered 10,000 francs towards the prizes.

**The Duke of Connaught**, as Grand Master of the United Grand Lodge of England, will lay the foundation-stone of the new buildings of the Charing Cross Hospital on June 20 with full Masonic ceremony. Princess Louise (Duchess of Argyll), who is president of the hospital, has signified her intention of being present.

**The Foundation-stones** of St. Paul's new Congregational church, Standishgate, Wigan, have been laid in the presence of a large assembly. The old church was built 117 years ago, and in consequence of its decay it was decided to provide a new building at an estimated cost of about 6,000*l.*

**Holy Trinity** parish church, St. Anne Street, Liverpool, which was seriously damaged by fire in January last, has been reopened for Divine service after undergoing complete renovation. The damage done to the building by the fire has been repaired by Mr. W. Hall, under the direction of the diocesan surveyor, Mr. G. Bradbury, while the organ built by Gray & Davison has been in the hands of Messrs. Rushworth, of Mill Lane. In addition to these repairs other improvements have been effected.

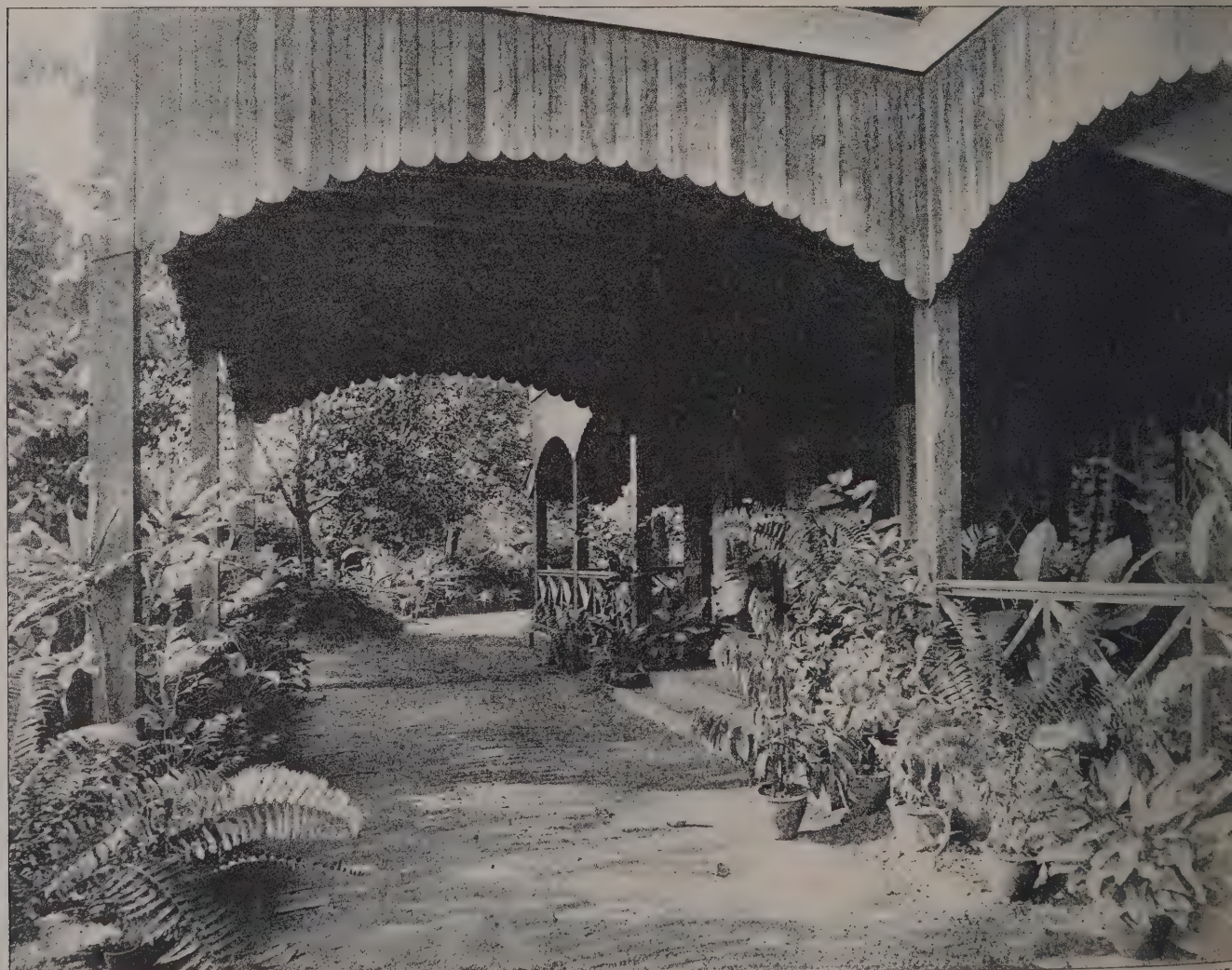


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VIEW OF HOUSE.



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INTERIOR OF PORTICO.

HOUSE AT KOKINE, RANGOON, BURMA.

J. ROBINSON, Architect, Rangoon.



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*The Architect*, June 15, 1902.



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CATHEDRAL SERIES, No. 390.—RIPON: THE WEST FRONT.





CATHEDRAL SERIES, No. 391.—RIPON: THE WEST ENTRANCE.









SOUTH-WEST VIEW.



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NORTH-EAST VIEW.

UPTON COTTAGE, SLOUGH.

W. HARGREAVES RAFFLES, Architect.







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THE  
Architect and Contract Reporter.

## EDITORIAL NOTICES.

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

## TENDERS, ETC.

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

## THE CORONATION.

**THE ARCHITECT will be published on WEDNESDAY, JUNE 25. All Advertisements, Tenders, and Contracts Open intended for insertion in that issue must be received at the Office, Imperial Buildings, Ludgate Circus, not later than 3.30 p.m. on Tuesday, June 24.**

## COMPETITIONS OPEN.

DEPTFORD.—Aug. 30.—Competitive designs are invited for a town hall and municipal offices. Premiums of 100*l.*, 75*l.* and 50*l.* are offered for the three selected designs. Mr. Vivian Orchard, town clerk, Municipal Offices, 20 Tanner's Hill, Deptford, S.E.

HARTSHILL.—June 16.—The committee of the North Staffordshire infirmary and eye hospital, Hartshill, Stoke-upon-Trent, invite designs for a home for nurses at Hartshill, Stoke-upon-Trent. Particulars may be obtained on application to Mr. Albert E. Boyce, secretary and house governor.

INDIA.—Nov. 1.—Competitive designs are invited for the erection of a memorial to Her Majesty the late Queen Victoria at Allahabad. A premium of 2,000 rupees will be awarded to the design selected by the committee. Mr. H. Nelson Wright, Indian Civil Service, honorary secretary, Queen Victoria Memorial Fund Committee, Allahabad, India.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

LIVERPOOL.—Sept. 15.—Designs are invited for new labourers' dwellings to accommodate about 2,500 persons, to be erected on the Hornby Street area. Premiums of 250*l.*, 150*l.* and 100*l.* respectively are offered for the first three selected designs. Particulars will be supplied by the Town Clerk.

SUNDERLAND.—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

TOTTENHAM.—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

WEST HARTLEPOOL.—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson-Smith, clerk, School Board Offices, West Hartlepool.

## CONTRACTS OPEN.

ACTON.—June 24.—For erection of public baths in Salisbury Street, Acton. Mr. D. J. Ebbetts, surveyor, 242 High Street, Acton.

ALDERSHOT.—June 19.—For erection of a church at Badshot Lea, near Aldershot. Mr. C. H. M. Mileham, Badshot House.

BACUP.—June 21.—For repairs at the baths. Particulars may be obtained on application to the Borough Surveyor.

BILLINGE.—For erection of a boiler-house near Billinge Hill, Lancs. Mr. Alfred Darlington, surveyor, Council Offices, Billinge.

BIRKDALE.—June 16.—For erection of a chapel and lodge at the new cemetery, Liverpool Road, South Birkdale. Mr. Albert Schofield, architect, 45 Weld Road, Birkdale.

BRADFORD.—June 19.—For extension of the engine-house at the new electricity works, Valley Road, Bradford. Messrs. Mawson & Hudson, architects, 2 Exchange, Bradford.

BRISTOL.—June 18.—For construction of a relief culvert in Broadweir, from Narrow Weir to Lower Castle Street. Mr. T. H. Yabbicom, city engineer, 63 Queen Square, Bristol.

BRIXTON.—June 23.—For converting the baths in Ferndale Road into a technical institute. Particulars at the General Section of the Architect's Department, London County Council, 18 Pall Mall East, S.W.

Fig. 5 is an Illustration of "VERITY'S PATENT"

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Fig. 5.



**BROOMHILL.**—June 20.—For erection of store premises and manager's house at Red Row. Mr. Thos. Tulip, Whinney Hill, Choppington.

**CARSHALTON.**—June 16.—For erection of a convalescent hospital at Carshalton, Surrey. Messrs. Treadwell & Martin, architects, 2 Waterloo Place, Pall Mall, S.W.

**CORNWALL.**—June 21.—For rebuilding the battery-house at Portreath. Mr. Sampson Hill, architect, Green Lane, Redruth.

**CUDWORTH.**—June 21.—For erection of a church at Grime-thorpe Colliery, near Cudworth, Yorks. Mr. C. Hodgson Fowler, architect, Durham.

**DEWSBURY.**—June 16.—For erection of a covered market in Corporation Street. Mr. G. Trevelyan Lee, town clerk, Town Hall, Dewsbury.

**DUDLEY.**—June 18.—For erection of two cemetery chapels and entrance lodge at the new cemetery, Stourbridge Road. Mr. John Gammage, borough engineer and surveyor, Town Hall, Dudley.

**ENFIELD.**—For erection of three detached houses and five shops at Bush Hill Park, Enfield. Messrs. Crickmay & Sons, architects, 13 Victoria Street, S.W.

**EALING.**—June 19.—For erection of a branch library, West Ealing. Mr. Wm. Ruston, town clerk, Town Hall, Ealing, W.

**EDMONTON.**—June 17.—For erection of schools at Montague Road and Houndsfield Road. Each school has four departments, and will accommodate 1,360 children. Mr. H. W. Dobb, architect, 99 Church Street, Lower Edmonton.

**FULHAM.**—June 19.—For erection of engine and accumulator-rooms, boiler settings and flue work, &c. Mr. E. J. Mott, clerk to the Guardians, 75 Fulham Palace Road, London, W.

**GISLINGHAM.**—For erection of a large building at Gislingham, Suffolk. Mr. W. Kerry, Post Office, Gislingham.

**HALIFAX.**—June 16.—For erection of two pairs of semi-detached villas on the Stafford House estate, Huddersfield Road. Messrs. Richard Horsfall & Son, architects, 22A Commercial Street, Halifax.

**HALIFAX.**—June 18.—For alterations at Popples, Holmfild. Mr. Frederick Fielding, architect, 7 Fountain Street, Halifax.

**HALIFAX.**—June 21.—For erection of five houses in Shaw Street, Holywell Green. Messrs. Chas. F. L. Horsfall & Son, architects, Lord Street Chambers, Halifax.

**HAMPSTEAD.**—June 19.—For construction of public conveniences at South End Green. Mr. O. E. Winter, borough engineer, Town Hall, Hampstead.

**HERNE.**—June 23.—For cleansing, repainting and general repairs of the isolation hospital wards and offices at West End, Herne, Kent, and for laying about 580 feet of 4-inch and 160 feet of 6-inch stoneware pipes, the building of inspection-chambers, fixing of gullies, ventilation shafts and the building of cesspools for the drainage of the said hospital. Mr. W. D. Statham, architect, Eddington, near Canterbury.

**HULL.**—June 18.—For taking-down part of the existing premises and rebuilding the Empress inn, Alfred Gelder Street. Mr. Joseph H. Hirst, city architect, Town Hall, Hull.

**ILFORD.**—June 23.—For erection of a boys and girls' school for 880 children, with latrines, play-sheds, &c., at The Horns, Ilford, Essex. Mr. C. I. Dawson, architect, Bank Buildings, Ilford.

**IRELAND.**—June 30.—For erection of five single one-storey cottages at level-crossings between Moira and Belfast, also one single-storey cottage near Belturbet, for the Great Northern Railway Company of Ireland. Mr. T. Morison, secretary, Amiens Street Terminus, Dublin.

**KENDAL.**—June 19.—For additions and improvements to the Old Hutton National schools. Mr. John Stalker, architect, Kendal.

**KESWICK.**—June 18.—For erection of banking premises at Keswick for the Carlisle and Cumberland Banking Co. Mr. J. H. Martindale, architect, Viaduct Chambers, Carlisle.

**LEEDS.**—June 18.—For erection of shops and warehouse premises in North Street and Lower Brunswick Street, Leeds. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

**LEEDS.**—June 21.—For erection of public baths in Broad Lane and Calverley Lane, Bramley. Mr. J. Lane Fox, architect, 13 Park Square, Leeds.

**LEEDS.**—June 23.—For erection of south aisle and other works at St. James's Church, Woodside, Horsforth. Mr. James B. Fraser, architect, 8 Park Square, Leeds.

**LONDON.**—June 17.—For erection of Thackeray, Dickens and Coram Buildings, Herbrand Street, W.C., for the London County Council. Particulars at the Architect's Department, Housing of the Working Classes Branch, London County Council, 19 Charing Cross Road, S.W.

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**ULVERSTON.**—June 23.—For alterations and additions to premises lately occupied by the Bank of Liverpool. Messrs. J. W. Grundy & Son, architects, Ulverston.

**WAKEFIELD.**—For erection of house in Bradford Road. Mr. Willie Wrigley, architect, 6 Westgate, Wakefield.

**WAKEFIELD.**—June 18.—For erection of an infirmary at the workhouse, Hemsworth, near Wakefield. Mr. T. H. Richardson, architect, Hemsworth.

**WALES.**—June 16.—For alterations and additions to Llwyndyrus C.M. chapel, Fourcrosses, near Pwllheli. Mr. Evan Lewis, Tyddyn Cestyll, Fourcrosses, Chwilog, R.S.O.

**WALES.**—June 16.—For erection of classrooms, painting and renovating present chapel and schoolroom at the Welsh Baptist chapel, Cwmaman. Mr. T. Roderick, architect, Clifton Street, Aberdare.

**WALES.**—June 16.—For erection of a house, Cwmaman. Messrs. J. Llewellyn Smith & Davies, architects, Aberdare.

**WALES.**—June 16.—For erection of four cottage villas at Tal-y-llyn, near Brecon. Mr. Hy. Waters, architect, Beaufort.

**WALES.**—June 16.—For rebuilding stable wing and covering cattle courts at Thornhill, Clackmarras. Messrs. A. & W. Reid & Wittet, architects, Elgin.

**WALES.**—June 17.—For alterations and additions to the Cross Keys Board school, Cross Keys, Mon. Mr. E. H. Johnson, architect, Risca.

**WALES.**—June 17.—For erection of a coalhouse and caretaker's room at the Pontyrhyl Board school, Bettws, the enlargement of the school windows and the provision of separate access for boys and girls, draining, levelling, kerbing, channelling and asphaltting the playground and the extension thereof, Mr. D. Edmonds, Capel Bach, Llangonoyd, near Bridgend.

**WALES.**—June 18.—For erection of a chapel at Ponkey, Rhos, near Ruabon. Messrs. Richard Owens & Son, architects, 3 Crosshall Street, Liverpool.

**WALES.**—June 21.—For erection of a church at Hendy, Pontardulais. Mr. W. Griffiths, architect, Falcon Chambers, Llanelly.

**WALES.**—June 23.—For extension of the premises of the Ynisher and Wattstown Co-operative Society. Mr. J. Rees, architect, Pentre.

**WALES.**—June 24.—For making roads and erecting fifteen to thirty houses at Blackwood, Mon. Messrs. James & Morgan, architects, Charles Street, Cardiff.

**WALES.**—June 28.—For alterations and additions to the Bedwas Bridge school, Bedwas, Mon. Mr. John H. Phillips, architect, Clive Chambers, Windsor Place, Cardiff.

**WALES.**—July 4.—For extension of schools at Gilfach Goch. Mr. Jacob Rees, architect, Pentre Rhondda.

**WALSALL.**—June 28.—For alterations and additions to carshed and repairing and painting shed, and the construction of workshops, stores and outbuildings at rear of same, the construction of manager's office and caretaker's residence, and erection of boundary walls and entrance gates and piers. Mr. Richard Henry Middleton, borough surveyor, Walsall.

**WEST BROMWICH.**—June 23.—For erection of schools in Oak Lane and Lodge Road, West Bromwich, to accommodate 1,150 children. Mr. Alfred Long, architect, 21 New Street, West Bromwich.

**WESTON-SUPER-MARE.**—June 14.—For erection of stone gate piers and coping, and fixing of railings, &c., at Knightstone. Mr. Hugh Nettleton, surveyor, Town Hall, Weston-super-Mare.

**WHEATLEY HILL.**—June 16.—For erection of twenty-eight workmen's houses at Wheatley Hill Colliery. Weardale Steel, Coal and Coke Company, Ltd., Thornley Colliery Office, Thornley, R.S.O.

**WIDNES.**—June 20.—For erection of a Wesleyan chapel in Albert Road, Widnes. Mr. C. W. D. Joynson, architect, Wednesbury.

**WOOLWICH.**—July 3.—For erection of twenty-five houses in Barge House Road and Woolwich Manorway, North Woolwich. Mr. Arthur B. Bryceson, town clerk, Town Hall, Woolwich.

**WORKINGTON.**—June 23.—For erection of a dwelling-house in Napier Street, Workington. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

**WORTHING.**—June 16.—For erection of a circular brick chimney-shaft at the electric generating station, High Street, Worthing, 140 feet high from the ground level and 7 feet

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WREXHAM.—June 16.—For construction of sanitary conveniences at the cemetery. Mr. Thomas Bury, town clerk, Willow Road.

WYNDHAM ROW.—June 17.—For alterations and additions to the Board schools, Wyndham Row, Cumberland. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

### THE RICHMOND HILL VIEW.

THE High Sheriff of Surrey, Mr. Max Waechter, has sent the following letter to the Mayor of Richmond:—

The Terrace House, Richmond, Surrey :  
June 5, 1902.

Dear Mr. Aldin,—As High Sheriff of Surrey, I contemplated giving a fête and fireworks in Richmond Park in celebration of His Majesty's Coronation, but by a lucky chance an opportunity has presented itself to commemorate that event in a form which will be more lasting and will benefit a much larger number of people. You will, perhaps, be aware that by the death of Mrs. Metchim, Petersham Lodge, which is the core of the Richmond view on the south side of the river, came into the market, and that to prevent this property from falling into the hands of speculators or speculative builders, I at once secured that part of it which belonged to the Metchim family. I have now come to terms with the owner of the remainder, the Earl of Dysart, and shall shortly be the owner of the freehold of the whole property.

I am about to grant a lease of the property to the Princess of Wales's Holiday Home for Governesses at a nominal rent, and subject to stipulations for the maintenance of the exceptionally fine trees on the estate and certain building restrictions. Subject to this lease, and subject to similar stipulations as to the maintenance of trees and restrictions of building, I desire to offer the freehold to the town of Richmond with the object of preserving the view from Richmond Hill. I think the conditions can best be arranged with your town clerk, and shall be happy to confer with him in case my offer is accepted by the Richmond Town Council.—Believe me, dear Mr. Aldin, yours very truly,

(Signed) MAX WAECHTER.

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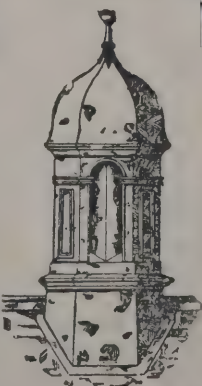
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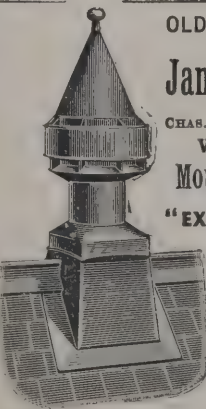
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A. Lyon . . . . .	23,997	0	0
T. F. Ullathorne . . . . .	22,988	3	5
J. Constable . . . . .	22,845	0	0

**BIRSTALL.**

For erection of an infectious diseases hospital at Foxhall, Yorks. Mr. J. W. BURROWS, architect, Birstall.

*Accepted tenders.*

W. & H. Sykes, Morley, excavating, drainage, masonry, brickwork, &c.

M. Willans & Son, Birstall, carpenter and joiner.

E. Walker & Co., Heckmondwike, plumber and glazier.

W. Parker & Sons, Heckmondwike, plasterer.

J. M. Thornton & Sons, Heckmondwike, slater.

T. Battey, Driglington, painter.

**BOSTON.**

For additions, &c., to fever hospital, Skirbeck, Lincs. Mr. JAS. ROWELL, architect, Borough Offices, Boston.

J. W. Pinder . . . . .	£458	0	0
Hipwell & Co. . . . .	438	0	0
J. Leafe . . . . .	427	14	3
W. Greenfield . . . . .	425	0	0
T. H. Cade . . . . .	409	10	0
J. LUCAS, Boston (accepted) . . . . .	390	0	0

**BRADFORD.**

For painting twenty-four through houses in Jesmond Avenue, and for erecting palisading at same. Messrs. A. GADIE & Co., architects, Century Buildings, Sunbridge Road, Bradford.

HOBSON & HAIGH, 100 Leeds Road, Windhill (accepted).

Also tendered:—W. H. Oxley, F. Copley, W. Priestley.

**BRENTWOOD.**

For erection of twenty-nine workmen's dwellings. Mr. JAMES E. FOTHERGILL, surveyor.

J. Smith & Sons . . . . .	£7,395	0	0
S. Parmenter . . . . .	7,109	0	0
Willmott . . . . .	6,947	0	0
H. Potter . . . . .	6,900	0	0
E. West . . . . .	6,797	0	0
J. Pavitt & Sons . . . . .	6,703	2	6
Legg & Clarke . . . . .	6,525	0	0
Oak Building Company . . . . .	6,299	0	0
Myall & Upson . . . . .	5,883	9	0
HARRIS & ROW, LTD, Shoburyness (provisionally accepted) . . . . .	4,930	0	0

**BRIGHTON.**

For supply and fixing furniture and fittings at the public library and art galleries. Mr. FRANCIS J. C. MAY, borough engineer

Chipperfield & Butler . . . . .	£1,640	13	5
Field & Co. . . . .	1,382	16	6
General Builders Co. . . . .	1,331	4	6
Shoolbred & Co. . . . .	1,255	2	0
Library Supply Co. . . . .	1,186	10	6
HAMPTON & SONS, London, S.W. (accepted) . . . . .	1,154	10	6
North of England Furnishing Co. . . . .	1,125	5	8

**DARLINGTON.**

For construction of a three-lift gasholder, 140 feet diameter, at the gasworks.

*Accepted tenders*

Newton, Chambers & Co., Sheffield, gasholder.

Smith Bros. (Burnley), Ltd, Burnley, Lancs, gasholder tank.

**DARTMOUTH.**

For street works. Mr. ARTHUR SMITH, C.E., borough surveyor.

R. T. Pillar . . . . .	£1,783	19	2
R. C. Pillar . . . . .	1,629	15	10
M. Bridgman . . . . .	1,485	18	9
S. F. CLOTHIER, Street, Somerset (accepted) . . . . .	1,341	5	0

**DERBY.**

For sewerage works authorised by the Corporation Act, 1901.

A. W. SMITH & SONS, Birmingham\*. £131,155 0 0

\* Accepted by the drainage committee subject to the approval of the Council.

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**DURHAM.**

For erection of Wesleyan church (with spire) and schools at Durham. Messrs. W. J. MORLEY & SON, architects, Swan Arcade, Bradford.

*Accepted tenders.*

M. Worsnop & Co, Scarborough Street, West Hartlepool, mason.

J. W. Rudd, Skipton Road, Harrogate, joiner.

J. Lindley, Great Wilson Street, Leeds, plumber.

B. Sugden & Sons, Manningham, Bradford, plasterer.

Varley & Son, Thornton, Bradford, painter.

W. T. Blakey, Castle Clare, Durham, slater.

Total, £8,200.

**EGREMONT.**

For rebuilding a house and premises at Smithfield, Egremont, Cumberland.

*Accepted tenders.*

Tyson & Sons, mason and slater.

T. B. Leece, plumber and glazier.

Note.—The company will do the joinery.

**FARSLEY.**

For reconstruction of boiler-house and dye-house and erection of a brick chimney at the Cape Mills, Farsley, Yorks. Mr. WALTER D. GILL, architect, Summerville Terrace, Stanningley.

*Accepted tenders.*

Appleyard Bros., mason, bricklayer and joiner £2,660 0 0

Whitehead Bros, ironwork . . . . . 806 10 0

J. Laycock & Sons, concreter . . . . . 106 0 0

F. Thompson, slater . . . . . 98 0 0

E. Pearson, plumber . . . . . 83 10 0

H. Grimshaw, painter . . . . . 9 14 3

**HALIFAX.**

For erection of an engine-house and alterations at West Vale Works. Messrs. CHAS F. L. HORSFALL & SON, architects, Lord Street Chambers, Halifax.

*Accepted tenders.*

J. & R. A. Crawshaw, mason . . . . . £1,035 6 0

J. & R. A. Crawshaw, concreter . . . . . 269 9 4

W. Mitchell, joiner . . . . . 182 0 0

Heywood & Co, patent glazing . . . . . 129 0 0

J. Holdsworth, plumber and glazier . . . . . 60 0 0

T. Dyson, plasterer and slater . . . . . 23 0 0

**HARROGATE.**

For erection of a pair of semi-detached villas, Harlow Oval, Harrogate. Messrs. BLAND & BOWN, architects, Harrogate.

*Accepted tenders.*

Nettleton & Co, Hill Top House, Bilton, Harrogate, mason.

R. W. Ledger, Strawberrydale Road, Harrogate, joiner.

G. Thompson, Park Lane, Leeds, plumber.

J. Platts, Saville Street, Wakefield, plasterer.

W. Atkinson, Kirkstall Road, Leeds, tiler.

Hutton, Shipley, painter.

**HOUGHTON-LE-SPRING.**

For tar macadamising about 2,700 square yards of roadway in Back Prospect Row, Back Quarry Row and Back Henry Street. Mr. VINCENT SMITH, surveyor, Newbottle Street, Houghton-le-Spring.

North of England Asphalte Company . . . . . £331 17 6

Wake & Hollis, Ltd. . . . . 319 11 8

J. HADFIELD & CO, 17 West Street, Sunderland (accepted) . . . . . 319 10 0

**KNARESBOROUGH.**

For resetting of two beds of retorts (seven and four).

J. WALSH & SONS, Halifax (accepted) . . . . . £50 0 0

**LEYTON.**

For street works in Grove Green Road, Leyton, Essex. Mr. WILLIAM DAWSON, surveyor.

W. Griffiths & Co. . . . . £1,074 3 8

G. J. Anderson . . . . . 1,023 13 11

W. MANDERS, Leyton (accepted) . . . . . 1,000 0 0

**LITTLEHAMPTON.**

For extension of the water-mains in St. Flora's Road. Mr. H. HOWARD, surveyor.

A. E. Nunn . . . . . £107 13 8

Duke & Ockenden . . . . . 103 0 0

W. WALLIS, Littlehampton (accepted) . . . . . 95 0 0

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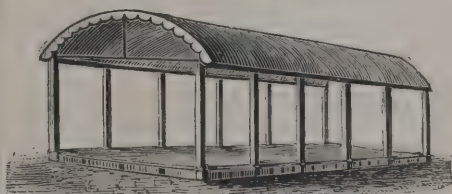
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LONDON, E.C.**



## LONDON.

For street works in Stradella Road (in completion), Herne Hill.

J. E. Etheridge.	£1,456	10	10
W. H. Wheeler.	1,290	9	0
Fry Bros.	1,266	18	0
W. Pearce.	1,265	1	4
T. Adams.	1,255	17	0
A. C. Soan	1,108	11	8
Lawrence & Thacker	1,068	19	6
W. Griffiths & Co.	1,065	7	10
G. J. Anderson	1,046	19	4
J. Mowlem & Co., Westminster*	1,023	4	2

For street works in Milkwell Yard, Denmark Hill.

T. Adams	£314	12	6
Trinidad Lake Asphalte Paving Co.	297	6	8
J. Smart	295	5	3
W. Pearce	283	5	8
Brunswick Rock Asphalte Paving Co.	279	1	6
A. C. W. Hobman & Co.	270	7	4
W. Griffiths & Co.	259	10	8
J. E. Etheridge	254	4	6
J. Mowlem & Co.	251	1	5
G. J. Anderson, Poplar*	234	7	0
Fry Bros.	234	0	5

For work in Burbage Road from Half Moon Lane to the railway, Herne Hill.

W. H. Wheeler	£1,243	5	4
J. E. Etheridge	1,138	13	4
Fry Bros.	1,055	11	6
T. Adams	1,109	1	2
W. Pearce	1,033	12	4
A. C. Soan	960	1	8
W. Griffiths & Co.	942	5	6
Lawrence & Thacker	940	13	2
G. J. Anderson	926	10	10
J. Mowlem & Co., Westminster*	884	12	7

\* Recommended for acceptance.

## MANCHESTER.

For erection of a house, Didsbury. Messrs. C. K. & T. C. MAYOR, architects, 41 John Dalton Street, Manchester.

Padmore & Sons	£1,652	0	0
McFarlane & Son	1,565	0	0
Megarity & Co.	1,546	0	0
E. Jackson	1,500	0	0
Burgess & Galt.	1,430	0	0
A. MASON, Didsbury (accepted)	1,385	0	0
R. Carlyle.	1,377	0	0

## MORTLAKE.

For erection of two shops and alterations to other buildings. Mr. ERNEST PENNINGTON, surveyor, Richmond.

W. N. Street	£1,525	0	0
Hughes & Co.	1,480	0	0
E. Seaber	1,450	0	0
J. W. Brooking*	1,429	0	0

\* Accepted subject to modifications.

## NEW BARNET.

For erection of a fire-engine station and steam-roller house, &c., in Leicester Road, New Barnet. Mr. HENRY YORK, surveyor.

W. Wade	£1,679	0	0
W. Goddard, jun.	1,593	0	0
WILLMOTT & SONS, Hornsey, N. (accepted)	1,580	0	0

## NEWHAVEN.

For laundry fittings to the workhouse.

BARFORD & PERKINS (accepted)	£161	0	0
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## SCOTLAND.

For taking-down and rebuilding gable and making alterations on tenement, 5 Kirkwood Place, Edinburgh.

W. C. Aitken	£731	0	0
W. Maclauchlan	595	6	0
Wright & Davie	586	13	5
A. Waddell & Son	583	0	0
Crerar & Swanson	561	14	7
J. Kinnear, Sons & Co.	547	17	11
J. Duncan	532	18	7
J. Brown	526	0	0
MELROSE & THOMSON, Dalmeny Street (accepted)	515	0	0

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**SOUTHWOLD.**

For repairing and extending the north pier at Southwold Harbour, Suffolk.

*Memel timber.*

G. D. Brettell . . . . .	£1,345	17	6
G. Double . . . . .	1,165	16	0
J. C. Trueman . . . . .	1,125	0	0
T. W. PEDRETTE, London, N. ( <i>accepted</i> ) . . . . .	872	16	9

*Pitch pine.*

W. King . . . . .	977	9	0
J. C. Trueman . . . . .	920	0	0

**WARE.**

For conversion of premises in Church Street into a mortuary, and other repairing works in connection therewith. Mr. J. E. SMALES, surveyor.

W. Lawrance . . . . .	£127	0	0
E. Bundock & Co. . . . .	115	0	0
T. HUNT, Ware ( <i>accepted</i> ) . . . . .	108	0	0

**WESTON-SUPER-MARE.**

For erection of stable extension of the model mews, Post Office Lane. Messrs. S. J. WILDE &amp; FRY, architects, Hans Place.

G. Sprake . . . . .	£530	0	0
W. M. Dubin . . . . .	528	0	0
J. & E. Stokes . . . . .	470	0	0
C. Addicott . . . . .	435	10	6
C. STEADLING, Oxford Street, Weston-super-Mare ( <i>accepted</i> ) . . . . .	419	15	0

For erection of a bridge, with masonry abutments and steel flooring over the north drain at Rattling Bow, Wedmore, Somersetshire. Mr. WILLIAM LUNN, engineer, Queen Street, Bridgwater.

E. NUTTALL, Manchester ( <i>accepted</i> ) . . . . .	£347	11	6
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For erection of an additional ward, &amp;c., at the fever hospital, Uphill Drove Road. Mr. HUGH NETTLETON, surveyor.

C. & E. Stradling . . . . .	£344	0	0
C. Addicott . . . . .	280	19	6
C. FEAR, Weston-super-Mare ( <i>accepted</i> ) . . . . .	250	0	0

**WIGAN.**

For erection of buildings in connection with the bowling-green in the Mesnes Park.

J. Scott . . . . .	£327	0	0
Darbyshire & Collett . . . . .	315	0	0
J. Wilson, jun. . . . .	312	0	0
D. A. ABLETT, Wigan ( <i>accepted</i> ) . . . . .	300	0	0

**WILLENHALL.**

For erection of classrooms and cloakrooms at the Short Heath Board schools, near Willenhall. Mr. JOSEPH P. BAKER, architect, Willenhall.

H. Gough . . . . .	£1,530	0	0
R. Speake & Sons . . . . .	1,492	0	0
A. Griffiths . . . . .	1,475	10	0
J. M. Tildesley . . . . .	1,469	0	0
Hammonds Bros. . . . .	1,426	0	0
T. Tildesley . . . . .	1,395	0	0
J. Warlters . . . . .	1,390	0	0
J. Hickin & Sons . . . . .	1,350	0	0
F. Mossley & Sons . . . . .	1,277	15	0

Note.—The matter has been referred back to committee for further consideration.

**WALES.**

For erection of offices, agent's residence, &amp;c., in Bradley Road, Wrexham. Messrs. DAVIES &amp; MOSS, architects, 2 Temple Row, Wrexham.

Davies Bros. . . . .	£1,615	0	0
W. E. Samuel . . . . .	1,570	0	0
W. Hughes . . . . .	1,530	0	0
R. Roberts . . . . .	1,520	0	0
R. Williams . . . . .	1,500	0	0
S. Moss . . . . .	1,357	10	0
T. WILLIAMS, Southsea ( <i>accepted</i> ) . . . . .	1,200	0	0

For erection of schoolroom and alteration to chapel and new joinery at the Primitive Methodist chapel, Garnfach, Nantyglo.

J. T. Morgan . . . . .	£750	0	0
Page . . . . .	735	0	0
H. Lewis . . . . .	730	0	0
J. JENKINS, Brynmawr ( <i>accepted</i> ) . . . . .	725	0	0

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The noted **T.L.B.** Facings and Rubber  
Bricks were used for the above impor-  
tant public works.

THOMAS LAWRENCE & SONS, BRACKNELL, BERKS.



*Received too late for Classification.***LONDON.**

For new factory, London Road, Plaistow, for Messrs. H. Wheeler & Co. Mr. A. J. WADE, architect, 36 Fifth Avenue, Harrow Road, W.

W. M. Norton . . . . .	£3,295	o	o
G. J. Hosking . . . . .	3,027	o	o
A. Daniels . . . . .	2,990	o	o
J. Groves . . . . .	2,698	o	o
J. W. Jerram . . . . .	2,629	o	o
Sumpter Bros. . . . .	2,599	o	o
H. G. Horswill . . . . .	2,580	o	o
W. J. Cottle . . . . .	2,500	o	o
EDWARDS & MEDWAY * . . . .	2,455	o	o
W. Crouch . . . . .	2,450	o	o
Architect's estimate . . . . .	2,500	o	o

\* Accepted, with basement added, at £2,660.

For alterations and additions at the Fishmongers' Arms, Wood Green, for Messrs. Watney, Combe & Read. Mr. J. C. JACKSON, M.S.A., architect, Town Hall Chambers, Borough, S.E.

Rice & Sons . . . . .	£3,323	o	o
Webber & Co. . . . .	3,297	o	o
W. Nash . . . . .	2,975	o	o
Courtney & Fairbairn . . . . .	2,961	o	o
H. Vollar . . . . .	2,940	o	o
Edwards & Medway . . . . .	2,911	o	o

**ELECTRIC NOTES.**

THE arrangements for the leasing of the electric-lighting provisional order by the burgh of Hamilton, N.B., to Messrs. Edmundson, London, were finally completed at a meeting of Town Council on the 27th ult. It was stated that the total cost of the works had been reduced to £31,494.

MR. E. A. SANDFORD FAWCETT, one of the inspectors of the Local Government Board, held an inquiry on Friday last into the project for lighting Aston by electricity. It was explained by the clerk, Mr. J. Ansell, and the electrical engineer, Mr. Wilson, that the amount which it was sought to borrow for

electric lighting was £2,436. In reply to the inspector it was stated with regard to the generating station the foundations had been partly got out, the Council being under obligation to build the station for tramways, which were to be electrically equipped after the conclusion of negotiations for their acquirement. As to the financial aspect of the question Mr. Ansell remarked that the Council had had numerous applications from manufacturers asking when they would be able to be supplied with electrical energy and all pressing on the Council the necessity for making such a provision. There was no opposition.

AT the Cardiff electrical lighting committee's meeting last week the borough electrical engineer (Mr. Arthur Ellis) reported that for the year ending March 31 last the revenue had gone up from 11,153 $\frac{1}{2}$  to 15,515 $\frac{1}{2}$ , an increase of over 4,400 $\frac{1}{2}$ . The payments included 8,255 $\frac{1}{2}$  works cost, and 5,692 $\frac{1}{2}$  interest and repayments, and there was a surplus balance to the credit of the rates of 1,106 $\frac{1}{2}$ . The number of lamps connected had increased from 37,500 to 51,800, and the number of units sold from 688,000 to over a million. Now that they had exceeded a million, Cardiff was included among the big stations of the country. The total revenue worked out at 385 $\frac{1}{2}$  per unit for private supply, which was remarkably low. Cardiff was fifth on the list of stations as regards percentage of units sold to those generated. The report was regarded as extremely satisfactory, the Chairman pointing out that if they were trading as a private company they would have 6,798 $\frac{1}{2}$  to divide.

**TRADE NOTES.**

THE new isolation hospital, Chadwell Heath, is being warmed and ventilated by means of Shorlands' patent Manchester grates, by Messrs. E. H. Shorland & Brother, of Manchester.

THE warming and hot-water supply of Cholmondeley Castle have been placed in the hands of Messrs. John King, Ltd., engineers, Liverpool, employing their "Rahnee" radiators in the great hall and principal apartments.

THE inhabitants of Crakehall, Wensleydale, Yorks, have given instructions to Messrs. W. Potts & Sons, clock manufacturers, Guildford Street, Leeds, to erect a new hour striking clock in their parish church, to commemorate the Coronation of King Edward VII.

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IN preparation for the Coronation extensive alterations and improvements have been made at the Colonial Office, and included in these is a Waygood electric lift of the very latest pattern. This lift was specially ordered to be in time for the dinner given to the Colonial Premiers, and it is gratifying to know that this work was entrusted to an entirely British firm.

MESSRS. J. WEEKS & CO., LTD., of King's Road, Chelsea, have recently received orders to fix their heating apparatus in the East Galleries of the Victoria and Albert Museum at South Kensington, the extension of the lion house in the Zoological Society's Gardens in Regent's Park, and the new seed warehouse of Messrs. Jas. Veitch & Sons at the Royal Exotic Nursery, Chelsea.

MESSRS. ALLARD & CO., of 33 Jewry Street, E.C., have sent us a copy of their new and revised illustrated price list of office and shop fittings and furniture. It contains a large number of carefully drawn presentments of the various goods, and the prices, which appear to be very low, are clearly given. The information given, in fact, is so complete that from it one could with facility order the complete appointments for an office or, for that matter, for a suite of offices without the trouble of inspecting the goods themselves.

### BUILDING AND BUILDERS.

THE contracts for the new infectious diseases hospital at Scarborough have been let. The total amount is 10,540*l.*, a sum of 1,300*l.* less than the engineer's estimates.

THE foundation-stones of the new Primitive Methodist church in Leigh Road, Leigh, Lancs, were laid on Saturday afternoon.

THE present cottage hospital at Mexborough being inadequate for the requirements of the growing population, plans have been passed for an up-to-date structure, to cost about 7,000*l.*, towards which about 4,000*l.* is in hand.

THE June report of the Amalgamated Society of Carpenters and Joiners states that the total membership is now 68,321, the number on unemployed benefit 1,373 and on sick benefit 1,351. The majority of the Scottish branches report trade as fair. The branches in Pretoria and Johannesburg, it is added, have now been reopened.

AT a meeting of the Linlithgow School Board plans for the proposed new elementary school, in place of the burgh school, which was recently destroyed by fire, were submitted from two architects—Mr. Fairley, Edinburgh, and Mr. William M. Scott, Linlithgow. The meeting having considered the plans, unanimously agreed to accept that of Mr. Scott. The estimated cost of the building is 5,900*l.*

MR. S. BRIGHOUSE held an inquest last week at Warrington touching the death of Timothy Costello, sixty years of age, bricksetter's labourer, 37 Old Road, Warrington, who died from injuries sustained by a fall at Messrs. Gossage's Works, Widnes. It appeared that deceased and another man named Evans were engaged in the erection of a large chimney at Messrs. Gossage's works. Deceased was walking across a plank when he fell to the ground from a distance of 9 feet 6 inches, sustaining some fractured ribs. He was removed home and died as stated. A verdict of accidental death was returned.

MR. E. A. SANDFORD FAWCETT, Local Government Board inspector, held an inquiry at Aston on Friday last into the Council's application for 2,150*l.* for a branch free library at Aston Cross, in the course of which it was mentioned that since the year 1883 the Council had leased a house in the Lichfield Road, and at the present time that arrangement did not meet the requirements of the district, and a site had been given by Messrs. W. & E. Ansell. The amount now required to be borrowed was 2,000*l.* for building and 150*l.* for furnishing. No opposition was offered to the application.

THE foundation-stone of a building to be called the Queen Victoria Church Institute, and intended to meet parochial requirements, at Stoke-on-Trent, was laid on the 9th inst by the Bishop of Chester. The site of the institute is at the corner of Church Street and Booths Old Road, and the building will be erected by Mr. T. R. Yoxall (mayor) from the plans of Messrs. Lynam, Beckett & Lynam, at the contract price of 3,000*l.* On the ground floor there will be a lock-up shop, the principal entrance to the institute, and one side of the restaurant, with a frontage to Church Street, the main front of the restaurant, dining-room and large church room being in Booths Road. On the first floor there will be billiard, dining and tea rooms, and a gymnasium, and on the second floor the accommodation will consist of rooms for the Girls' Friendly Society, office, &c. The kitchens, cellars, and heating apparatus will be located in the basement.

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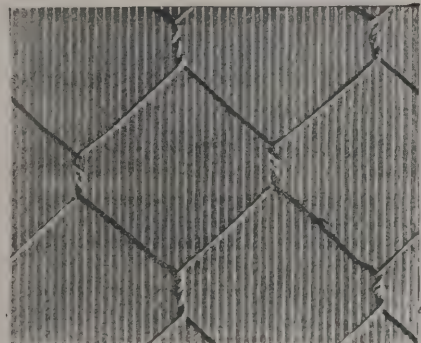
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THE new Talbot Lane Church, Rotherham, to be erected on the site of the old structure, which was destroyed by fire, will be in the Decorated style of Gothic architecture, with spire rising to a height of 125 feet, and is designed with nave and transepts and a chancel, which is two steps up from the nave, and in which the choir will be located, the organ being in a side recess. A gallery providing seating accommodation for 340 will run round three sides of the church, approached by two staircases in front, and two back staircases will also give access thereto. It is proposed to arrange a connection from the present schoolroom to the gallery. The seating accommodation on the ground floor will be about 500. A minister's vestry, choir vestry, and a third vestry are provided on the church floor level, whilst a large ladies' parlour 34 feet by 29 feet is arranged under the chancel, with lavatory attached, and a kitchen adjoining. The windows of the church will be of tracery of rich design and filled with ornamental leaded lights. The roof will be waggon-headed and of pitch pine, with circular cove plastered between the pitch-pine ribs. All the pews and other internal woodwork will be of pitch pine, except the pulpit and choir pews, which will be of oak. The warming will be by low-pressure hot water, and the heating apparatus will be placed under the minister's vestry and a little below the level of the church parlour. The ventilation will be by means of hopper inlets on Tobin's principle, the windows also will open inwards at the top; outlet ventilators will be put in the roof. The building will be faced with stone.

THE baths committee of the Carlisle Corporation have confirmed the recommendation of the sub-committee that the plans of the engineer for the proposed Turkish baths at a cost of 2,500*l.* be adopted, and, subject to the approval of the Council, they have instructed him to prepare bills of quantities and advertise for tenders for the work. The cost, 2,500*l.*, is 500*l.* more than the estimated cost of carrying out the plan originally approved of. The style of architecture which the engineer has adopted in drawing the plans is suggestive of the name which the baths are intended to bear, and both externally and internally the building will have a distinctly Oriental character. The baths will be of a nature suitable to a district like Carlisle, and under proper management they ought to become a very useful institution. The entrance will be by a passage 4 feet wide. It will be accessible to gentlemen through the second-class swimming-baths and to ladies through their slipper-bath corridor. There is a cloakroom at the end of the passage. The cooling-room is a building 29 feet 9 inches

square. It is provided with a plunge-bath in the centre. It has accommodation for fourteen persons, and there is provision for extra accommodation in the case of necessity. The plunge-bath is 21 feet long and 7 feet 6 inches wide and 4 feet 6 inches deep, and it forms a central feature of the cooling-room. The roof is domed over the circular end of the bath, and is secured by horseshoe shaped arches. There are three hot-rooms, one 20 feet by 16 feet, another 19 feet by 6 feet, and the third 8 feet by 6 feet. The shampooing-room is 17 feet by 11 feet 6 inches. A small Russian bath is provided. The building will be lighted by electricity, the whole of the walls and floor will be carried out in tiling, and special attention will be given to providing an efficient system of ventilation. The building will cover 52 square yards more than the building originally proposed to be put up.

### VARIETIES.

THE death is announced of Mr. Henry Kirke Hebb, late deputy town clerk of Lincoln.

THE opening of St. Andrew's Episcopal church, Niddrie, N.B., took place on Saturday. The church is seated for 250 persons, and can accommodate 300.

A NEW infants' department of the Roman Catholic school in Newgate, Pontefract, has been opened. The new building has cost about 2,300*l.*

MR. FRANK AUGUSTUS PRATLEY, chief sanitary inspector at Waterloo, near Liverpool, has been appointed surveyor and sanitary inspector to the Epsom Rural District Council at a salary of 230*l.*

At a special meeting of the Doncaster Town Council, on the 3rd inst., the recommendation of the Council in committee appointing Mr. R. A. H. Tovey town clerk and coroner, was on the motion of Alderman Pawson, carried unanimously.

THE death occurred on the 3rd inst. of Mr. Richard Hodkisson, of Leamington. The deceased, who was one of Leamington's most respected townsmen, was founder of the building firm of Hodkisson & Son, from which, however, he retired some fifteen years ago.

IT is announced that merchants have just distributed an order for 4,000 tons of galvanised corrugated roofing-sheet for shipment to South Africa, and that most of the contracts have been obtained by Midland firms. The orders represent



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aggregate value of 45,000*l.*, and will give an impetus to the galvanised sheet trade of Birmingham and Staffordshire.

The parish church of Tidenham, Gloucestershire, was reopened on Sunday last by the Archdeacon of Gloucester, after careful restoration and improvement carried out under the supervision of Mr. Sidney Gambier Parry. Amongst other things, a carved oak screen has been placed across the tower arch. The interesting tenth-century leaden font has been put into a more prominent place on a beautifully designed stone base, and the organ of the church has been nearly doubled in size.

An inquiry was held on the 4th inst. by Colonel Slacke, J.E., inspector, Local Government Board, at Billericay, with reference to a scheme to supply water to sixteen parishes from well it is proposed to sink in the chalk. Evidence was given by Dr. Threch, D.Sc., medical officer to the county, by Dr. Carter, medical officer to the Council, and by Mr. Gordon V. Harris, M Inst.C.E. (Merryweather & Sons, Limited), the engineer of the scheme. The works will include duplicate pumping-engines, a reservoir at Billericay to supply the surrounding villages and a water-tower for the town service.

The Board of Education have decided, at the suggestion of the Council of the Society of Arts, to hold during the early part of next year an exhibition of engraving and etching in the Victoria and Albert Museum, South Kensington. The exhibition will consist of examples of copper and steel engraving, including line mezzotint and stipple (plain and coloured), aquatint and etching. The Board are being assisted in the selection and arrangement by an influential advisory committee, which held its first meeting at South Kensington on the 4th inst. All communications respecting the exhibition should be

addressed to the Secretary, Exhibition of Engraving and Etching, Board of Education, South Kensington, S.W.

At the last meeting of the Liverpool Estate committee it was resolved "that competitive schemes be advertised in the local and other suitable papers for the erection upon the portion of the George's Dock site, situate between the continuation of Brunswick Street and Water Street, of baths and tramway offices, and that an assessor be appointed to advise upon the selection of plans." It was also resolved that the architect of the selected design should be paid the usual fee of 5 per cent. upon the total cost of the work, but that the Corporation will appoint and pay their own quantity surveyor. The committee also agreed that premiums for the first three schemes considered best in the order of merit be awarded 200*l.*, second 100*l.* and third 50*l.*

THE new Roman Catholic church at Lowestoft was opened on June 5. It consists of a lofty nave with clerestory, supported on pointed arches and red granite columns, aisles, sacristy, lady chapel, morning chapel, sacristy and confessionals. Boldly moulded stone arches separate the sacristy and chapels from the other parts. An elaborate stone and marble high altar is erected in the sacristy, with five traceried two-light windows behind. Three entrances in front, and a massive square tower at one angle of front, having a staircase turret. Five-light tracery window in front gable. The church is faced with red brick with Costessey dressings, is Decorated Gothic in style, and has cost about 7,900*l.* for the church without seating. The architects are Messrs G. & R. P. Baines, 5 Clement's Inn, W.C., and F. W. Richards, 14 Stanley Street, Lowestoft. The works have been carried out by Mr. G. E. Hawes, of Norwich.

THE Belle Steamers having chartered three of their magnificent saloon steamers to run from Southampton to view the Fleet are taking the opportunity of carrying passengers who have no special taste for crowded railway travelling from London to Southsea and Southampton and back at an extremely moderate fare, viz. 12*s.* 6*d.* single and 21*s.* return. In addition to what will no doubt be a most enjoyable run, as the bookings are limited to a number that will insure travelling in comfort, passengers will get a fine view of the Fleet assembled at Spithead both going and returning. A steamer is timed to leave Fresh Wharf, London Bridge, at 6 A.M. on Tuesday, June 24, Thursday, June 26, and Friday, June 27, and will arrive at Southampton about 8 P.M. the same days. Arrange-

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ments have also been made for through bookings from Fenchurch Street (L. T. and S. Rly.), *via* Tilbury, by the 6.25 train. Two of the steamers will return on Sunday morning, June 29 and the other on Monday morning, June 30, allowing return passengers from two to five days' stay at Southampton. Tickets and all information can be obtained from the Coast Development Company, Ltd., 33 Walbrook, E.C.

THE new swimming and private baths forming the extension to the public baths in Woodcock Street, Birmingham, were opened yesterday, the 12th inst. The new swimming-bath is 81 feet long and 30 feet wide, and leading from it are forty-eight private dressing-rooms, the openings to which are formed of terra-cotta courses, mouldings and arches. These give a very neat and pleasing effect to the building. The roof is supported on ornamental cast-iron ribs of special design, and the bathroom is well lighted by the introduction of a Muranese glass roof, in addition to a large window in each gable end of the building. The private bath departments consist of eighteen separate bathrooms, divided into three sections, and the floors are laid with mosaic terrazzo paving, with ornamental borders throughout, excepting in the case of the promenade round the swimming-bath, where a special border of ribbed adamantine tiles, 2 feet wide, has been laid next to the kerbstone in order that bathers may get a good foothold. A special needle and shower-bath has also been provided with the usual lavatory accommodation. The estimated cost of the buildings as sanctioned by the City Council was 11,000*l.*, which included 800*l.*, the cost of sinking a new borehole from the bottom of the existing well for the purpose of obtaining an additional supply of water to meet the demand caused by the extensions. This additional supply of water was amply secured before the baths and parks committee recommended the City Council to authorise the extension of the baths. The cost of the various engineering works included in the sum mentioned amounted to 950*l.* The buildings have been erected by Messrs. John Bowen & Sons, of Balsall Heath, from designs prepared by Mr. F. W. Lloyd, the architect appointed by the baths and parks committee.

COMMENCEMENT has been made with the new High-Level Bridge across the Tyne. The contractors, the Cleveland Bridge and Engineering Company, Darlington, have started operations at the south, or Gateshead side, and the north side of the bridge will be a little to the left of the present Central Station at Newcastle. In size and cost it will be the largest bridge undertaking in the United Kingdom since the Forth

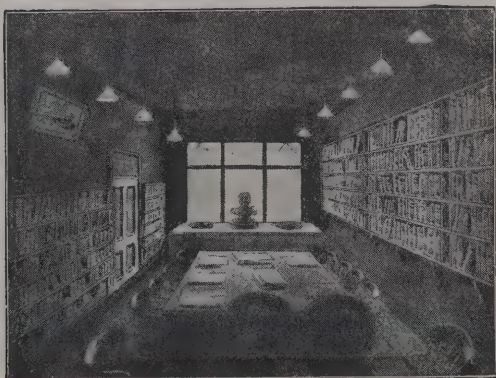
Bridge was completed, the contract price being 470,000*l.* The existing high-level bridge, designed by Robert Stephenson, cost 49,000*l.* That bridge has three sets of rails, whilst the new bridge will have four, and will be solely for railway traffic. The present high level has also a roadway underneath for ordinary traffic. The new bridge will greatly relieve the congested state of the present bridge, and will enable express trains to run straight through from the north to the south without the inconvenient shunting back arrangements. The bridge will consist of two enormous spans of 300 feet each, across 600 feet of waterway.

THE directors of the Carlisle Race Stand Company have finally considered the eight sets of plans sent in for the erection of a grand stand on the new racecourse at Blackhall. The result of their deliberations was that the plan sent in by Mr. Joseph Graham, architect, Bank Street, Carlisle, was selected as the most suitable, and the second and third premiums of 10*l.* and 5*l.* respectively were awarded to Messrs. Mortimer Son, Lincoln, and Messrs. Manning, Newmarket. The successful plan shows a building of brick with steel framework, public stand to hold 2,500 people, conveniently reached from the enclosure by a 36-feet wide entrance of stone steps; and stand to accommodate 500 with separate divisions and separate entrances (1) for the county gentlemen and distinguished visitors, (2) stewards, and (3) members of the Press, owners, trainers and jockeys. The public stand will be partly and the private stands will be wholly protected from the weather. The rooms for the clerk of the course and other officials, jockey dressing-room, reporters' room and telegraph department will be in close proximity on the ground floor near the corner stand, and will be provided with rapid and convenient means of communication. The public stand will consist of a series of steps made of concrete and asphalt. The stewards' stand, which may be entered by a private way from their own room or by a private entrance from the enclosure, and the adjacent private stands occupy a situation immediately opposite the winning post, a point of which a good view is also commanded by the public stand. Overlooking the private stands is a tower which is ascended by a separate staircase, and which may be used by reporters, &c., who wish to watch the horses throughout the whole of the race, a thing they cannot do at present without inconvenience. The plans show a large luncheon room in proximity to the private stands and a large bar, 80 feet long. Subscribers, owners and trainers will enter the enclosure by an entrance in the centre of the building, and the

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public by five turnstiles at the north end, adjoining which there will be pay boxes, secretary's office, strong-room and cloak-room, &c., with internal intercommunication. At the end of these buildings there will be a police station and latrines. The estimated cost of the work is 3,850*l*.

## THE DEVELOPMENT OF THE TIMBER TRADE OF AUSTRALIA WITH THE UNITED KINGDOM.

On Wednesday last Mr. Edward T. Scammell, F.R.G.S., delivered an interesting lecture on the above subject at the Australasian Club, 132 Leadenhall Street. Mr. E. T. Doxat, of the Australasian Chamber of Commerce, occupied the chair, supported by the Hon. H. B. Lefroy, Agent-General for West Australia.

After alluding to his paper on "The Timber Resources of the Australian Commonwealth," recently read at a meeting of the Society of Arts, the lecturer proceeded to describe the immense forest areas of Queensland, New South Wales, South Australia, Western Australia, and Tasmania, comprising a grand total of nearly 200 million acres, equal to the whole of the timber-producing areas of Europe, exclusive of Russia. What this might mean as an asset to the Australian Commonwealth, if rightly developed and controlled, it was impossible to say, and yet of the timber at present exported to the United Kingdom Australia supplies only 1 per cent, a ridiculously small proportion. The question therefore arose whether, being the great market which this country affords and the considerable timber resources of Australia, it was not possible to alter this state of things for the better.

Mr. Scammell next proceeded to give a brief sketch of the few Australian timbers that have to some extent obtained a foothold in this country, viz. the jarrah and karri of Western Australia; the blue gum, stringy bark and blackwood of Tasmania and Victoria; and the blackbutt and ironbark of New South Wales and Queensland. The principal use to which jarrah and karri have been applied in this country is street paving, but they are specially suitable also for many classes of engineering work. The principal English railway companies have, for instance, adopted karri for the decking of station platforms, goods sheds, bridges and piers, as, owing to its hardness, resistance to wear, durability and freedom from

knots, it provides not only a more satisfactory flooring, but in the end it is found to be more economical than fir or pine. Two of the principal English railway companies alone have ordered karri timber during the past eighteen months sufficient to construct from 12,000 to 13,000 waggons, while quite 100 miles of railways have been laid with karri sleepers. As pier timbers it is found that jarrah and karri are among the cheapest and best in the market.

In dealing with the special characteristics of Australian timbers, the lecturer drew attention to one point which was of considerable importance at the present moment, viz. their comparative non-inflammability, and the careful consideration of this subject was demanded on the part of all who were interested in the construction of fireproof buildings and of tube railways, tunnels, &c., where sleepers have to be used, or any woodwork, particularly where electricity is employed as the motive power. As jarrah and karri, as well as other Australian timbers, char rather than burn, buildings constructed with floors and joists of these woods would be practically fireproof.

It was further contended that no effort should be left untried to bring under the notice of the British dealer and consumer the special uses to which the products of the Australian forests were adapted. It was not claimed for them that they can supply the place of the soft woods of more northern climes, nor that they can supplant oak, teak, greenheart, mahogany and other hardwoods which are better known and more widely used; but in view of the rapidly decreasing supply of some of these timbers and of the uses to which Australian woods are specially adapted, there appears to be no reason why Australia should not do a large and increasing trade with the United Kingdom.

## DISCONNECTING DRAINS.

The report of Mr. Malcolm Patterson, engineer to the Bradford Sanitary Association, contains the following remarks on disconnection:—

Attention may be drawn to an interesting contribution to this important question by Mr. Walter Markham, who on February 12 last read a paper on "The Application of Disconnection," at the Institute of Sanitary Engineers. In the paper he doubts the need of any disconnection of wastes, and maintains that all dirty water wastes should be treated in the same way as soil-pipes; that they should be led into the

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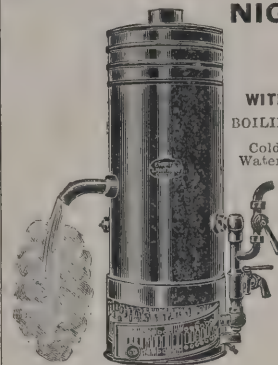
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nearest manhole without the intervention of a gulley. In doing this, Mr. Markham impugns the whole scientific opinion of the day, and stands almost alone. This does not prove, *per se*, that he is wrong. He bases his revolutionary view, first, on the excellent principle that the object of drainage is the swiftest and most sanitary removal of soil and dirty water wastes from the centre of population; and, second, so far as can be judged from the paper, on his experience of the flat residences in the West End of London. Every trap or gulley which exists on a system of drainage is an obstruction to the flow of the sewage, which causes deposit and produces sewer gas, and also a hindrance to ventilation. Yet it does not follow that traps should be done away with. Indeed, the inside trap at the sink is acknowledged to be essential, merely needing ventilation; and the proposed abolition of the gulley is based upon the opinion that it is an unnecessary nuisance. A nuisance it is, if neglected, as often enough we find it; but the same must be said of the trap which is inside, and, being inside, some might think it the more offensive of the two. But, while in practice all experienced sanitary engineers have found that in the matter of waste pipes a single line of defence is often turned by accident, the defeat of the double line of defence, at one and the same time, is of the rarest occurrence; so rare, indeed, that, in the testing of many thousands of drain branches, over a period of twenty years, we have not yet had a single case.

Undoubtedly the flat system affects results, and must be reckoned with. It is here that the main outlet disconnecting gulley is so dangerous, a single trap often receiving the whole sewage of 100 people at the foot of a "common stair," where the drain pumps out its sewer gas at each flush. Here also a single person who misuses the upper wastes may cause a sickening nuisance to families below them. Like scum, the worst tenants rise to the top, and flats do not suffer the same facility of the handy discharge of slops as ordinary dwellings. Thus the aggregation of humanity in a small area—itsself a backward step of the most dangerous kind in modern civilisation—may render imperative some modification of the system of disconnection, which otherwise cannot be easily improved.

A further point was emphasised by the lecturer, namely, that his proposed treatment should only be applied on a complete scale, that is, not to a single dwelling, but to a section of a town, where sewers are adequately ventilated. This would demand action by the authorities not yet authorised by statute.

While approving of the principle which rules Mr. Markham's remarks, namely, that efficiency of discharge of putrescible matter is a prime object, perhaps the foreman I am of opinion that to cease all disconnections would be to carry theory beyond the control of practice. In these matters it is human nature we have to contend with, as well as natural forces of decay and accident. Practice convinces that, all things duly considered, the obstruction of solid excrement in large traps at the foot of a soil-pipe or the end drain is more dangerous than its free passage. It also convinces me that the obstruction of ordinary liquid sewage by self-cleansing gullies is less dangerous than its free passage, especially if we have regard to the difficulty of the safe removal of all our internal fittings.

No possible amount of sewer ventilation will render so air other than a poisonous air. All human work is imperfect and even that drainagework which comes nearest perfection is, and always will be, liable to be used imperfectly and perniciously. This fact is engraven on the minds of all those who have applied to their wisest theories the test of practice; and it teaches us the golden rule, never to expect a network of drains to be always working at their best, any more than any other invention of man.

### SOCIETY OF ENGINEERS.

A VERY interesting visit was made by the members Associates of the Society of Engineers on Wednesday, June 12, to the pumping stations and works connected with the water supply system of the Crystal Palace and the new roof over the central transept.

#### *The Crystal Palace Water System.*

There are few, if any, of the members of the Society who have not, at one time or other, paid a visit to the Crystal Palace, and it may be that there are equally few who, although fully appreciating the varied attractions of the building grounds, have ever bestowed a thought upon the multifarious engineering details which are necessary to the production and maintenance of those attractions. It was considerations of this kind which suggested the present visit of inspection, which permission was most readily accorded by the directors of the Crystal Palace Company. The inspection related mainly to

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ing stations and works connected with the water system of the Crystal Palace, the following description of which is compiled from an article on the subject which appeared in the *Engineer* of February 1, 1901.

It will doubtless be a matter of surprise to all to learn that the extraordinary amount of water requisite for the needs of the Crystal Palace varies between 250,000 gallons and 300,000 gallons per day throughout the year. This is enough—at 100 gallons per head—for the supply of a town of from 8,000 to 10,000 inhabitants. This amount leaves out of account altogether any which may be used for dietetic purposes. Such water is obtained from another source than that from which the Crystal Palace supply is drawn. For the most part the Crystal Palace depends for its water supply upon the amount of rainfall collected from its grounds—nearly 200 acres, including the grounds of the Crystal Palace, which are available as catchment area—and supposing a rainfall of 25 inches a year, which is the amount calculated by the Meteorological Office, the total rainfall is over 117 million gallons. Of course, only a proportion of this is caught, and the actual amount used is about 90 million gallons. Some of this water is used twice over, so that the actual amount of water in circulation is less than this. In dry years the supply is not equal to the demand, and the mains of the Crystal Palace Water Company are drawn upon. The average quantity taken from this source is about 10 million gallons. In wet years it was between 13 and 14 million gallons—an expensive tribute for rain-water. Naturally enough, seeing the elevation of the Crystal Palace and the huge tanks at the southern end of the water company charges high rates for water supplied. In fact, the company does not care much about supplying at all when the price it charges—1s. per 1,000 gallons. Taken at this price the average expenditure of the Crystal Palace on water is some 500% a year, and the amount purchased forms but a little more than one-tenth of the total consumption.

The drainage from nearly all the land within the Palace boundaries falls by gravitation to the boating lake, which is, as a fact, the main storage reservoir. Its area is some 100 acres and its depth varies from 6 feet to 9 feet. Its surface is, on an average, 155 feet below the mean level on which the Crystal Palace itself is built. The tanks in the towers come some 100 feet above this again, a total difference of, say, 435 feet. The fall of 155 feet takes place in a distance of 800 yards. The slope of the hill is therefore very fairly steep. The ground, however, is of a retentive nature, holding the water to a large extent; moreover, the loss by reason of evaporation from the

numerous surfaces of water must be considerable. The total exposed surface amounts to nearly 15 acres. The various basins, for the most part, drain into one another in succession, but all the overflow water eventually finds its way into either the boating lake or the cooling pond. In order that it can be utilised, however, it is necessary that the water should be raised to a height from which it can command every part of the grounds and buildings. Placed on the top of each of the towers is a large circular storage tank. These are 47 feet in diameter, and they are provided with inverted funnel-shaped bottoms. The capacity of each is, with a depth of 35 feet, some 290,000 gallons. Some idea of the strength of these towers can be obtained by considering what this volume represents in weight—it is nearly 1,300 tons.

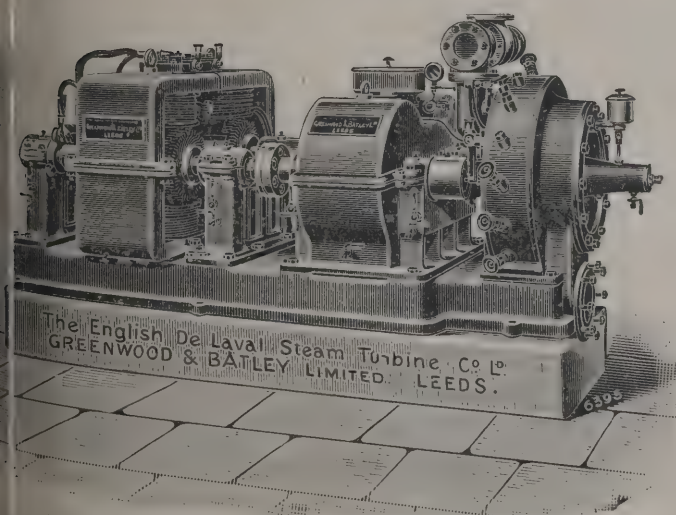
The water in the tanks at the top of the two towers is devoted almost entirely to reserve in case of fire, though some of it is used for blowing the bellows of the great organ, and some for actuating hydraulic lifts. The tanks are joined by two separate 8-inch cast-iron mains, which have fixed to them some fifty hydrants. The water in the two tanks, therefore, always stands at the same level, since there is open communication between the two. In these two tanks there is therefore a possible storage of nearly 600,000 gallons. The water is always at a pressure of about 120 lbs. at the floor level of the palace. At a height of some 80 feet above the level of the ground near the bottom of the north tower are two storage tanks. These tanks are each of them 48 feet square by 16 feet deep, and together they can hold some 460,800 gallons. There is, hence, a possible storage of water under pressure of over one million gallons, taking the towers also into consideration. Of course, however, the pressure of the water from the tanks—which to distinguish them from those in the towers may be called the lower-level storage tanks—is less than that from the towers, being only some 35 lbs. per square inch. A 15-inch main from these tanks is led through the building, where the water is used for general purposes. At the foot of the north tower is an irregular-shaped storage reservoir, which is capable of holding 5½ million gallons. Its area is about 2½ acres, and it can be filled to a depth of 9 feet. The water from this reservoir can be pumped into the lower-level tanks or into those in the towers, and it is also available for the fountains, but not, of course, for the buildings, since its level is too low. It is, however, 50 feet above the highest fountain and 124 feet above the lowest.

There is yet another source of water supply—the lower

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pumping station. Here there is a well which is sunk through the superincumbent strata till it meets with water-bearing green sand at a depth of some 300 feet, and chalk at some 360 feet below the surface. Its total depth is about 250 feet, but three bore-holes 10 inches in diameter are sunk from the bottom of the well to a further depth of 250 feet, making the total depth to the bottom of the bore-holes some 500 feet. The bore-holes are cast-iron lined down to the green sand. The well is brick-lined for its full depth of 250 feet and is 8 feet 6 inches in diameter. At a depth of 150 feet there are four headings at right angles to each other. These vary in length, the longest being 30 feet, and are 8 feet 6 inches in diameter. Down in the well, at a depth of about 150 feet, is a set of three-throw pumps made by Hunter & English. The delivery from these is 4 inches in diameter, and is taken up to the reservoir, and a branch is also taken to the lower-level tanks. The ordinary water level in the well is at a depth of some 95 feet from the surface, and the totals of the lifts to the reservoir and the tanks are respectively 268 feet and 350 feet. The yield of the well is about 40,000 gallons a day, and when it was originally sunk it was intended to use the water from it for drinking purposes. It was found to be somewhat hard, however, as well as being rather saline—though otherwise of excellent quality. It is now only employed for general purposes. The drinking water used is obtained from the Lambeth Water Company's mains, and there is a tank near the south tower which is capable of containing 12,000 gallons of this drinking water. A 4-inch main takes the supply throughout the building. The amount used during the year is some 4,000,000 gallons.

The pumping machinery employed is of an antiquated pattern, and most of it dates from the earliest days of the Crystal Palace at Sydenham. In the north tower pumping-house, which is situated close beside the foot of the north tower, there is a pair of engines made by William—now James—Simpson & Co. These are of the beam type, and each has one steam and two hydraulic cylinders. The steam cylinder is 25 inches diameter, with a stroke of 42 inches. The pumps are of the bucket-and-plunger type. The larger pump cylinders, which are used for lifting the water from the reservoir to the lower-level tanks, a height of, say, 83 feet, have 19-inch buckets and 16-inch plungers, with 51-inch stroke, and the smaller cylinders, which are used for pumping the water from the reservoir to the tank at the top of the tower, a height of, say, 245 feet, have 14-inch buckets, 11-inch

plungers and a 28-inch stroke. Both these hydraulic cylinders are in the case of each engine worked from one end of the beam, but only one of the cylinders is in use at a time. Thus it is not customary to pump into the tower and up to the top of the tower at the same time. These engines bear the date 1853. They are in a good condition and are still at work. The steam to drive them is obtained from two Galloway boilers, 20 feet by 6 feet, which were put in in 1875, and work at 30-lbs. pressure. The engine work condensing, the condensers being of the jet form, a vacuum of 26 inches is obtained. The horse-power developed at twenty-two revolutions is about seventy from both engines.

Down at the lower pumping station there is a cross-compound double-horizontal pumping-engine. This is used for pumping water from either the boating lake or the cooling pond into the reservoir or into the lower tanks. The engine was originally made by Cox & Wilson—a firm now extinct—in 1853. Subsequently it was altered—the pump rams being reduced in size—by Thomas Middleton & Co. in 1887. The two steam cylinders are 35½ inches in diameter and have a 36-inch stroke. They drive direct the piston-rods of two double-acting pumps, the cylinders of which are 15 inches in diameter. The means of curiously shaped fork connecting-rods the piston-rods are also connected to the two cranks on a shaft carrying a fly-wheel, placed at the opposite end of the engine to the steam cylinders, and a jet condenser is worked from a crank connected to the piston-rod. The level of the boating lake is some 16 feet above the level of the pumps, and therefore, ordinarily, the pumps have the water supplied to them under this head of water. If, however, the pumps are drawn from the cooling pond, as sometimes occurs, this is not the case, and there is, on the contrary, a slight lift. The engine makes 14 revolutions a minute, and the pumps, as already stated, are double-acting. In a trial carried out not very long ago, this engine pumped 198,000 gallons of water into the lower-level tanks—a lift of 253 feet—in 3 hours 17 minutes. The 21-inch main runs from this engine-house to the reservoir, a distance of some 1,150 yards, and there is also a connecting pipe to the lower-level tanks. Jet condensers worked off the piston-rods are fixed under the engines, and the condensing water is obtained from the cooling pond.

The overflow, which in times of heavy rain takes place from the boating lake and cooling pond, is led away by a culvert which passes out of the Palace grounds near the main entrance, and eventually finds its way into the Ravensbourne

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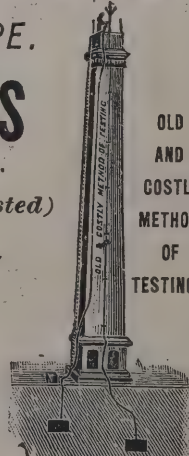
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be a great saving if the storage capacity in the were greater, for then much, if not all, of this waste of could be prevented. The boating lake, however, is and not of natural formation, and it would be impos- raise safely its bank without very considerable expense. are now, as a fact, rather worse in this respect than since the cycle track, polo ground, &c., have been ted on the sites of what were once large reservoirs. their time did much by acting as subsidence reservoirs the water by allowing time for sedimentation before it the boating lake. Now, however, in addition to a storage capacity, the water in times of rain reaches the lake in a very turbid condition. In this condition, of it is sometimes necessary to use it.

engine for working the well pumps was made and by Easton & Amos—now Easton, Anderson & —in 1853. It is a compound vertical engine, working beam. The cylinders are 13 inches and 22 inches, and ke of the low-pressure cylinder is 50 inches. The of the crank is 25 inches, and the engine makes tions a minute. The pinion on the crank shaft has 1, the spur wheel on the pump shaft has 92 teeth, speed of the pump shaft is about 11 revolutions a The pumps are three-throw, the three barrels being ches in diameter, and the stroke is 2 feet. Both this larger pumping engine are supplied with steam from acashire boilers, 30 feet by 7 feet, made by Jones is, of Millwall. These work at 40 lbs. pressure, and it is to note that while the well engine is compound and ing—the jet condenser being used—the cylinders are ad, and the pressure is only 40 lbs. at the boiler.

tain amount of the water, when it has been used for purposes in the grounds, eventually finds its way back eating lake, and the cycle of operations is repeated. ater part, however, is lost by evaporation, absorption t ground or by being delivered into the sewers or the lvert. In spite of the antiquated nature of the pump- chinery it runs smoothly and well. The engines cer- ave not the appearance of having been at work for ifty years, and of having done a fairly heavy duty all e. Of course, as compared with a waterworks, the Palace water arrangements are not on a very extended ough there are at least 25 miles of piping of one sort mer connected with the water supply. Some of these e as much as 3 feet in diameter. What is remarkable,

however, is that there should be all this machinery in connec- tion with one single establishment, a circumstance which appears to be unique.

#### *The Centre Transept Roof.*

Forty-eight years ago, namely, in 1854, the Great Exhibition building of 1851 was reconstructed on the Norwood Hills at Sydenham, as the well-known Crystal Palace. The glass roofing, of which there is about 14 acres, is on the ridge and furrow system of Sir Joseph Paxton, the designer of the original exhibition building. The glass was placed in position upon the main framework of the roof by the alternate fixing of glass and sash bar, the latter resting upon the ridge timber at the upper end and upon the Paxton gutter at the lower. The glass was pressed home into grooves formed on either side of the sash-bars, which were coated with paint immediately before the glass was placed in position, the paint successfully taking the place of putty.

The maintenance of this roof in efficient repair proving a source of considerable expense to the Crystal Palace Company, it was resolved about three years since to reglaze the whole of the roofs, commencing with the great arch over the centre transept of the Palace, upon the "Eclipse" principle of Messrs. Mellows & Co., of London and Sheffield. To this end the iron main framing of the roof was left unaltered, but the old Paxton gutters and ridges were removed and replaced by new ones of wood covered with lead. The sash-bars consist of light T steel, entirely encased in a drawn coating of lead with an admixture of tin.

These bars spring from gutter to ridge in place of the old timber-sash bars, the lead being drawn with projecting strips on either side for embracing the edges of the glass. The sheets of glass used measure 51 inches by 18 inches, instead of 49 inches by 10 inches as formerly, and the weight is 26 ozs. per square foot, with 31-oz. glass on the crown instead of 16 oz. and 21 oz. In fixing the new glass neither putty nor paint has been used, and none will be required in maintaining the roof, the glazed area of which is about 2 acres. The lantern which surmounted the old roof was removed, and the new roof is completely semicircular. There is now practically no external surface which will require painting, and should any glass need replacing it can be done with a minimum of trouble and expense. The cost of maintenance is thus greatly reduced, especially when the comparative inaccessibility of the roof is taken into consideration.



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Each case is dealt with in four stages, involving visits to four different rooms, all on the same floor. These stages are—1. The Map Department reception room, where the applicant points out the property on the ordnance map, and gives the necessary instructions for the preparation of the filed plan; 2. The drafting room, where his deed is perused, the fees assessed, and the draft entries for the register are drawn up and submitted for his approval by a second-class clerk; 3. The stamp office, where he procures and affixes to the draft land registry stamps for the fees (a receipt is given if required); and 4. The registration clerk (third class), who accepts his deed and draft, and other documents, if any (giving a receipt if required), and formally enters the application and gives it its order of priority. The applicant then has nothing more to do, unless some question arises in the course of the registration.

As already stated, questions arise more frequently as regards the plan than as regards the legal features of the case. About 94 per cent. pass without any legal query; about 61 per cent. without query on the plan. Most of these are easily disposed of, as is shown by the number of cases that are completed in the course of a week or a fortnight.

Where special expedition is required, special efforts can be made to secure it. For instance, on one occasion application was made on a Friday morning to register one of the largest London theatres. The manager was starting for America on

the Sunday or Monday, and wished to take the land certificate with him. The plan on the deed did not agree with the ordnance map; this would usually have involved some delay waiting for one of the surveyors to be at liberty to investigate it. The solicitor, after explaining the circumstances, asked to be allowed to take a surveyor to the ground at once to investigate. They went off in a cab together, the surveyor returned and reported on the discrepancy, the plan was altered, the register and land certificate were made up, and the deed and certificate were handed to the solicitor on the following (Saturday) morning. Nor is this by any means an exceptional instance of what can be done where the applicant is willing to furnish the necessary information, and has reasonable grounds for exceptional treatment—such as the pendency of other transactions, which cannot go on until the registration is complete.

The subsequent course of the application inside the registry is somewhat complicated, owing to the numerous details through which it has to go: its main features are these: the preliminary work done with the applicant as already described :—

1. After acceptance of the application, various particulars of the case which it is found useful to preserve in an accessible form—e.g. the parish, the name of the property, whether freehold or leasehold, its value, the fee paid, the name of the solicitor, and any special directions as to the return of the deeds left with it that may be necessary—are entered in a book kept for the purpose. At the same time the deed, the copy, the draft entry, and every document connected with the matter is stamped with the number of the application, the date of its reception in the registry; a suitable number of loose blank pages to form the register are added, and the register and envelopes are prepared which will be required for despatching the land certificate and other documents when the registration is completed. The whole is then placed in a large envelope marked outside with its number, and is sent forward to the next stage. These things are done mainly by boys. The original deed is sent to the Map Department to be used by the surveyors in the preparation of the plan.

2. The second process consists in the checking of the draft entries. It must be remembered that the original draft is sent under a certain amount of pressure as regards time, in order not to keep other applicants waiting. This causes inaccuracies occasionally, and sometimes, too, failure to notice less obvious points which call for special notice. It has

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found useful to submit every draft to the perusal of an officer (a first or second-class clerk), who has full time to attend to all details, and to consider the sometimes lengthy and complicated deeds on which registrations are based, and to make any observations as to points of law which may arise to them.

The draft, after being checked, is submitted for final approval to an assistant registrar, who looks it through to see that it conforms generally to the established practice, and considers any observations made during the second stage, and sends it forward for completion or directs it to be held for further consideration or inquiry as he thinks desirable. Correspondence with the applicant appears necessary in some cases or directs it. This occurs in about 6 per cent. of the cases.

The next stage is conducted in the Scrivenery Department, where the actual registers are prepared, and land certificates, and the cards for the name of the land are prepared. All entries, both in the register and in the cards, are type-written, a special machine which makes bound volumes being used; the register and the cards, and a third copy for storage in case of fire, are typed and bound. These are examined with the drafts before they are sent to the Scrivenery Department.

The four processes occupy as a rule three or four days. When the papers are complete, the papers are placed in their cases for the return of the deed and the plan for the land certificate to the Map Department.

Meantime, simultaneously with the above processes, the Map Department has been preparing the filed plan, and a card for the land certificate. The Map Department is divided into six sections, each with a superintendent and staff of clerks, draftsmen, and assistants. Each section deals with a particular portion of the county, and is familiar with its peculiarities. The procedure is as follows:—

The original deed and the instructions given by the applicant are placed in the reception room, and the filed plans of all registered properties for comparison, are sent to the superintendent who (or his assistant) at once gives them a preliminary inspection with a view to seeing whether any difficulty seems likely to arise in the preparation of the plan. If no difficulty is likely to arise, the case is marked "simple," and is dealt with rapidly; if otherwise, a note is sent to the applicant informing him that a question has arisen, and that there may be some delay.

2 a. The "simple" cases are dealt with as follows:—Each plan is executed in triplicate. One copy is filed in the office, another is to be attached to the land certificate, a third is put away in a strong room in case of loss or destruction of the first. The cutting out and preparation of these three plans from the Ordnance survey sheets, or, if those are out of date, the Land Registry revised lithographed tracings is carried out by a boy and an assistant draftsman; the plans are then carefully examined and checked with the deed and identification by the superintendent or his assistant, and are submitted to the chief superintendent or his examiner for final approval. These processes usually occupy about two and a half hours.

3 a. The cases of difficulty are dealt with by a different set of men so as not to interfere with and delay the simple ones. The first step is to send a surveyor to the ground. Not unfrequently the difficulty is cleared up by this alone, and the case is then proceeded with as "simple." Where, however, the surveyor's report shows a substantial doubt as to the identity, extent or configuration of the property intended to be registered, the applicant is written to, and the doubt is cleared up. If any question of law arises, the matter is referred to an assistant registrar for directions. When all is settled the plan is prepared (in triplicate), checked and compared with the documents by the superintendent personally, and forwarded, with all the correspondence and notes, to the chief superintendent for final approval. These cases occupy on an average about six hours of official time, but of course, where there is correspondence, considerable intervals sometimes intervene between the issue of a note or letter and the receipt of a reply to it, and at busy periods of the year, notwithstanding the frequent application of overtime work, cases otherwise ready to be dealt with have to await their turn. If special expedition is required it can nearly always be arranged for.

4 a. Every plan is finally examined and approved by one of the two chief superintendents or his examiner—cases of special difficulty by the former always. The case is then returned to the reception room, the property is marked on the general index map—freehold or leasehold as the case may be—the plans and relative papers are filed, and the case so far as the Map Department are concerned, is finished.

Returning now to the point at which we left the application above:—

5. The land certificate plans and deeds return from the Map Department in batches—several batches each day. These

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are sorted and placed with their corresponding papers by boys. The land certificate is then made up, with its plan, and sealed, and the entire matter—register, certificate and all ancillary documents—is re-examined by third-class clerks, to see that no mistakes have been made, that the documents are duly marked and addressed to the right persons, and, in fact, that the case is ready in every respect to be completed.

6. The assistant registrar then signs the certificate, and finally looks over the documents; the certificate and deeds are sent off under the superintendence of a second-class clerk by registered post to the persons entitled to them, being checked with the book mentioned in the first stage, where also the number of days occupied in the case is noted. This is done as a rule on the evening of the day on which the plan is returned from the Map Department.

7. Various minor details in connection with filing the registers, drafts, index-cards and other ancillary matters, checking the receipts for the posted documents and inquiring after those that are not acknowledged, &c., all of which require care and attention, are carried out mainly by boys as soon as possible after the completion of each case.

On an average between fifty and sixty such applications, besides almost as many dealings with registered land, pass through the office every day. At busy times, just after quarter days, over 100 first registrations are sometimes received in a day, and dealings in proportion.

These processes have been found by experience to be on the whole productive of a good standard of accuracy, and not unduly to interfere with expedition. Time being so important a feature in all proceedings, there must, of course, be a limit to the multiplication of checks. Individual responsibility for correctness at every stage is probably in the end a more effectual, as well as a more economical, system than numerous examinations of one man's work by another. Every stage of each application is authenticated by the initials of the officer who is responsible for it, and all inaccuracies discovered are thus brought home to the persons in fault.

#### IN OR ABOUT A FACTORY?

IN the Court of Appeal on the 5th inst. the Master of the Rolls and Lord Justices Mathew and Cozens-Hardy had before them the case of *Holmes v. Birmingham Tramway Company*, which was an appeal by John Wall Holmes, the applicant, from a

refusal of the learned County Court judge at Birmingham award him compensation under the Workmen's Compensation Act. It appeared that in connection with the tramway at Birmingham repairs were executed in the sheds from the cable is worked. The machinery in the premises tuted the place a factory. The cars when not in use w stored in these premises. Owing to the cable no applicable to a small strip of line at the entrance premises, a locomotive was used to draw the cars up engine broke down when in the act of bringing a car shed on May 20 last, and the plaintiff, who was er in the factory, was ordered to execute the ne repairs. Having finished the work, the man upon the engine. Unfortunately the coupling the engine and the car broke, and the plaintiff's f crushed between the two vehicles and had to be am The point raised was whether the accident happened or about a factory" within the meaning of the Ac County Court judge held that as it occurred some 11 from the premises the accident could not be found happened "about" a factory within the meaning of t and accordingly he refused to award compensation. now contended on behalf of the appellant that the judge misdirected, and that he ought to have taken in sideration the question whether the plaintiff at the time accident, being engaged on the main business of the could be said to have been in that sense within the r of the Act.

The Master of the Rolls found that the County Court had directed himself in strict conformity with the deci the Court of Appeal. The Court of Appeal had laid that the fact of a man at the time he met with the being in mere physical contiguity to a factory was not s to bring the case within the meaning of the words "in a factory," although it had been held in another case accident which occurred outside a warehouse, but on perty of the warehouse proprietor, happened about a In the present case the accident occurred over 100 yar the factory and in the public highway. As to the co that the workman could be said to be "about" a because he was engaged on the business of his master met with the accident, he was of opinion that it coul maintained.

Lord Justices Mathew and Cozens-Hardy concurred the appeal was accordingly dismissed, with costs.

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## A NEW DANGER.

ssity that contractors and their foremen should exercise the greatest possible care to prevent accidents and liability lives by reason of injury to workmen in their employ ified by a decision recently given by Mr. Justice in the Superior Court at Montreal, in the case of eageau v. J. B. Martineau. The plaintiff claimed damages for the death of her husband, David a builder's labourer in the employ of the defendant, was killed while assisting in the operation of a an electric shock caused by the cable of the derrick to contact with an electric-light wire just beyond the from which building materials were being loaded on k and carried back some 25 feet for use in the build-church. The evidence showed that some days prehe accident the foreman received a shock, and ordered be put on the sidewalk to indicate the point beyond tray of the derrick should not be allowed to go, but was not so arranged as to prevent the tray from and it. The judge laid special emphasis on this fact, that it constituted gross carelessness on the part of an. For the defence it was contended that Gauthier ved no orders to assist with the derrick on the morning ident, but did so of his own accord while waiting for ns. The judge ruled out this plea on the ground that ad been assisting with the derrick on the previous had received no instructions that he was not to resume r duties. Judgment was given in favour of the for the sum of 2,500 dols.

## NILE DAMS AND RESERVOIRS.

ity last a lecture was given by Sir Benjamin Baker, he Royal Institution. He said that Mr. Cecil Rhodes stmas when riding across the hot and dusty desert Aswân and the Nile reservoir works incidentally that, after all, there was no climate like England's; r rain, why, it did good and hurt nobody. Glancing t the apparently limitless desert on all sides of them, and valleys, beautiful in form, but doomed for all time of uniform burnt-brick hue, bare of trees and of the ured growths which adorn a rainy country, one could reflect how puny were the efforts of man when

attempting to combat any decree of nature. The desert lands of Egypt would remain desert however many millions of pounds were expended in Nile reservoirs. All that man could do was to extend somewhat the narrow strip of green running along the banks of the Nile, and to render that and the other low-lying lands more productive than they were at present with a scanty supply of water. The Nile reservoir at Aswân would contain over 1,000,000,000 tons of water—more than enough water for one year's full domestic supply to every city, town and village in the United Kingdom with its 42,000,000 inhabitants. The great Nile reservoir and dam at Aswân, the barrage at Asyût, and various supplementary works in the way of distributing canals and regulators were designed with the object of mitigating the existing evils, by supplying in summer a larger volume of water at a higher level in the canals, so that not only could more land be irrigated, but that labour in lifting water would be saved. By far the most important of the works constructed to enable the water stored up in the great reservoir to be utilised to the greatest advantage was the barrage across the Nile at Asyût, about 250 miles above Cairo, which was begun by Sir John Aird & Co. in the winter of 1898 and completed this spring. In general principle this work resembled the old barrage at the apex of the Delta; but in details of construction there was no similarity, nor in material, as the old work was of brick and the new one of stone. The total length of the structure was 2,750 feet, or rather more than half a mile, and it included 111 arched openings of 16 feet 4 inches span, capable of being closed by steel sluice-gates 16 feet in height. The object of the work was to improve the present perennial irrigation of lands in Middle Egypt and the Fayoum, and to bring an additional area of about 300,000 acres under such irrigation by throwing more water at a higher level into the great Ibrahimiyah Canal, whose intake was immediately above the barrage. The piers and arches were founded upon a platform of masonry 87 feet wide and 10 feet thick, protected up and down by a continuous and impermeable line of cast-iron grooved and tongued sheet piling, with cemented joints. This piling extended into the sand bed of the river to a depth of 23 feet below the upper surface of the floor, and thus cut off the water and prevented the undermining action which caused so much trouble and expense in the case of the old barrage. The height of the roadway above the floor was 41 feet and the length of the piers up and down stream 51 feet. The river bed was protected against erosion for a width of 67 feet up stream by stone pitching, with clay puddle underneath to check

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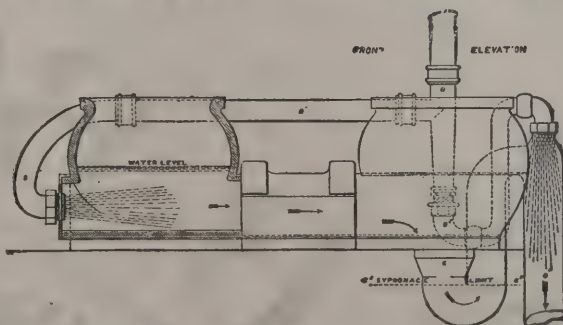
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infiltration, and down stream for a similar width by stone pitching, with an inverted filter-bed underneath, so that any springs which might arise from the head of water above the sluices should not carry sand with them from underneath the pitching. The Aswân dam was not a solid wall, but was pierced with sluice openings of sufficient area for the flood discharge of the river, which might amount to 15,000 tons of water per second. There were 180 such openings, mostly 23 feet high by 6 feet 6 inches wide, and where subject to heavy pressure when being moved, they were of the well-known Stoney roller pattern. The total length of the dam was about  $1\frac{1}{4}$  mile, the maximum height from foundation about 130 feet, the difference of level of water above and below 67 feet, and the total weight of masonry over 1,000,000 tons. Navigation was provided for by a "ladder" of four locks, each 260 feet long by 32 feet wide.

It was easy enough to design dams, but not so to construct them. Fortunately, since our reconquest of the Soudan and the establishment of telegraphic communication, floods could be foreseen almost exactly and provided for. The work had to be so timed as not to be swept away by flood. The busiest months were May and June of 1900, when, in the race against time, the average daily number of men employed was 13,000, although the temperature rose to the height of 118 degrees. Messrs. Aird had done their huge task to the entire satisfaction of the Egyptian Government and of everyone with whom they had been associated, and the same recognition was due to Ransomes & Rapier, who were called upon to complete all the complicated machinery of sluices and gates one year under contract time and did it. In conclusion, the lecturer showed the photographs of numerous personages concerned, and devoted his closing words to eulogy of Lord Cromer, the selector and trainer of two such distinguished sons of the Empire as Lord Milner and Lord Kitchener.

#### ELECTRICITY IN MANCHESTER.

AN important addition to Manchester's electric power was made on the 27th ult. with the inauguration of the new generating station in Stuart Street. This new station covers an area of  $8\frac{1}{2}$  acres. Within the building there are to be two installations—the present installation of 15,000 horse-power, devised by Dr. Kennedy, and a second installation of 12,000 horse-power, in

accordance with a scheme of extension prepared by Mr. Metzger after his appointment as chief engineer in 1898. Under Dr. Kennedy's scheme six 2,500 horse-power alternator sets are being installed, in addition to two water-tube boilers and other plant. Three-phase alternating currents of a frequency of 50 cycles per second are generated at an "extra high pressure" of 6,500 volts, and are transformed at this pressure to the substations. The supply from the stations is at 500 to 550 volts pressure for supply to the tramways, and at 410 and 205 volts pressure for lighting and other purposes. The buildings at Stuart Street consist of a framework filled in with walls of brickwork. This design has been adopted, in the first instance, in view of the importance of completing the works with all possible speed. The boiler pump-room and engine-house are all on an extensive site. Workshops will be provided in a separate building which will be placed a large storage feed-tank to contain 500,000 gallons of water. In connection with this scheme substations are being erected upon the south side of the city. In order that sufficient power might be available for the Hyde Road and Stockport Road tramways on the special efforts have been made to complete the 250-foot chimney (another chimney 250 feet high will also be erected to the north and centre bays of the boiler and engine-house, and certain portions of the plant which they contain, as the substations at the Polygon, Bennett Street, Levens, Heaton Norris and Denton and the cables connecting Stuart Street and the substation. Under the scheme of Mr. Metzger two machines of 6,000 horse-power each, the largest of the kind and type in England, are to be put down. The buildings required to house this additional plant are, however, of sufficiently large dimensions to accommodate 24,000 horse-power. These buildings, which have not yet been erected, will be similar in character to those already described, and additional substations are to be provided in connection with this installation. When both schemes have been completed the total horse-power available at the various works of the electricity department (Dickinson Street, Bloom Street, Stuart Street) will be 58,000 horse-power, and 360 miles of cables will be needed to transmit the current. The tramway committee alone will require current for 800 cars, and lamp connections will amount to half a million eight candle-power lamps. It is expected that the amount of electricity consumed during last year (10,502,299 units) will be nearly doubled during the next twelve months.



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# The Architect.

## THE WEEK.

THE chairman of the Fire Brigade committee of the London County Council offered some explanations at the meeting on Tuesday which should be recorded in order to make it clear that the committee have not been so inefficient as is generally imagined. In the first place, it was said that the hook-ladders which had been in use for some time in America and on the Continent were tried, but were found to be inapplicable in London. It was also shown that the City was not entirely deficient in aids and appliances. There were three horsed escapes at Redcross Street, Bishopsgate and Whitefriars stations, and manual capes at six street stations; there were long ladders at Whitefriars, Bishopsgate and Redcross Street. Provision is made for fires at St. Bartholomew's Hospital, and certain recommendations as to outside ladders were the result of an inspection by Captain WELLS in 1897, but neither the Council nor the Fire Brigade was responsible. Since 1896 the protection of the City from fire had not improved still, but had been improved in many ways. Station accommodation had been largely increased. Where there were three steam fire-engines there were now six; one horsed escape had been increased to four, one long ladder to three, eight horses to twenty, and fifty-seven men to sixty-three. While the chairman's explanations deserve attention, there can be no concealment of the fact that the system failed under the last deplorable test, and that on preceding occasions the force of the Brigade was insufficient to overcome the evil.

FEW strangers when visiting Paris have the courage to explore the region where is the Arène de Lutèce. Yet the spot is not far from the Jardin des Plantes and the Lille aux Vins. There seems to be little doubt it was a Roman creation where combats between gladiators, or between wild animals, may have often place. The existence of the arena was forgotten until 1870, when in the course of the construction of the new street which was to bear the name of MONGE, the mathematician, the remains were discovered. The whole of the arena has not been exposed, and it may therefore be assumed that the citizens of Paris are indifferent to the old masonry, which we must suppose requires the exercise of imagination from a spectator to attain effect. An effort is about to be made which will help to render the place attractive. The actors of the Français generally travel once a year to Orange in order to give representations of plays, of which the subjects are classic, in the old Roman theatre. Why should not similar experiments be conducted in Paris? An appeal has been addressed to the Municipal Council for permission to give a series of representations. The proposal was received most favourably by several members of the Council, and it is now under the consideration of one of the committees.

THE ornaments of gold which were recently found in London and purchased by the Trustees of the British Museum for 600*l.* have been again made the subject of a Parliamentary discussion. The law officers in Ireland as well as in England have declared that the British Museum is not the place for their exhibition, but rather the museum of the Board of Education in Dublin. The Trustees are, however, fortified by legal opinion in their resolve to retain the objects which they have bought. The remarkable spectacle presented that the Crown authorities have commenced legal action against the Trustees of the British Museum in order to have these ornaments declared to be treasure trove and the property of the Crown. If that declaration was obtained the result would be that the objects must be removed to Dublin. The Treasury thought the case was one in which the costs of the Trustees of the British Museum in defending the suit might fairly be met out of public funds on one side as on the other. Technical assistance has been prepared to support the case of the Trustees, but it is doubtful if the action can be heard before

the long vacation. On the other hand, it has been said that the ornaments are not Celtic but were captured during a raid in England or on the coast of Gaul. In that case there would be less reason to place them in Ireland. The action will probably cost ten times the amount paid for the treasures, and the only point at issue seemingly is whether the objects are treasure trove or not. We have so often referred to the ornaments, it seems hardly necessary to repeat that they consist of a boat, a bowl, two chains, two twisted neck-rings and a hollow collar. The last is the most important. It is  $7\frac{1}{2}$  inches in diameter, and is formed of two repoussé plates of thin gold, folded over in a tubular form and soldered together. Particular attention was directed to the fastening, which is remarkable, a fixed projection at one end catching in a slot at the other, and in order to unfasten the collar when thus locked one half has to be turned at right angles to the other. The collar is beautifully ornamented, and has on it repoussé work and fine engraved lines, the whole design being done by a compass, which was much used in Celtic ornament, but in this instance the result was unique of its kind. At the back of the collar on one side is a complete circle, with the point of the compass in the centre. If the Government should obtain judgment in their favour there is no doubt the ornaments will be sent to Dublin. At the same time they are likely to give gratification to a larger number of British and foreign archæologists if they are allowed to continue in the Bloomsbury museum, which is so universal in its scope objects produced in any age or country do not appear to be out of place.

A LETTER has been written by Mr. W. EMERSON on the extreme danger from fire to which St. Paul's Cathedral is subjected in consequence of the wood stages with which it is now so completely shrouded. For its entire length the south side is encased in woodwork, very much of it being so slight in character that it would burn up with great rapidity. From the interior of the building it is seen that this woodwork is brought up close to the windows, which are obscured for nearly half their height. The tiers of seats are surmounted by canvas and tarpaulin. The woodwork slopes up from the street to the church walls, to which in many places it is actually attached. Fire would, of course, run with terrific rapidity up this slope and would expend much of its energy against the Cathedral walls. The result of the burning of these flimsy structures would calcine the limestone with which the walls are faced, and, giving rise to showers of sparks on a vast scale, might even attack the roofs. Attention was drawn some days back to a similar danger to the National Gallery, and an assurance was given that ample precautions have been taken. At Westminster the seats for the public are well detached from the walls of the Abbey. It is to be hoped that the City authorities are taking every precaution in the event of fire, by careful watching and proper provision of fire appliances.

THE publication of the "Building Trades' Directory" is always an event of importance to the numerous classes of business men who are represented by it. No other work so well reflects the great army of producers who are at the command of architects. To the compilers there is no distinction of degrees. A small town, if it should possess a builder, is equally recognised with the provincial cities or the Metropolis itself. All are treated in an exhaustive and accurate manner. The "Building Trades' Directory," like the others issued by the company, are triumphs of methodical inquiry. All the tests we have applied have been sustained by the pages, and as on former occasions we can again gladly testify to the care and impartiality shown throughout. It is no longer needful to say the book is indispensable to all who have dealings with any of the trades, for the Directory has long since established its utility. But there never was a time when it was more necessary to retain business in England, and in the efforts which will be required the Directory will be found a trustworthy auxiliary.



## FESTAL ART.

"THE Man in the Street" has of late taken the position of representative of English opinion. From his conversation about the decoration of London at the present time it becomes evident that what is popularly considered as the most successful structure which has been set up is the addition which is to serve as a vestibule to Westminster Abbey. It is believed to be so picturesque in itself and enhancing of the building, there has been a desire expressed for its retention. That, it must be owned, was prior to the detersive effect of the recent rain. After all the speeches and writings concerning art, the large sums which have been expended on teaching, the foundation and equipment of public galleries during half a century, the British mind is still in such a backward state it can put a sham on the same level as the glorious Abbey, and is likely to feel more regret on the removal of the lath-and-plaster structure than on any of the transformations which the Mediæval work has had to suffer.

If we walk through the principal streets of the Metropolis it will be found that what has given charm to the Westminster annexe is exhibited in many varieties. Every year we are growing more realistic, and in consequence we prize imitations in proportion to their fidelity. At the Abbey the skill with which a resemblance of the old masonry is produced excites wonder, and in the arches and the larger structures, as well as in the humblest ornaments, the general satisfaction is owing to the absence of novelty.

It was not unwarranted to expect that on such an occasion imagination and fancy would for once be allowed some liberty. For temporary decoration it is not necessary to adhere to stereotyped forms, as if the least departure from them involved appearance in a police court and the infliction of penalties by a magistrate. The present is a time when even the new art, with its extravagances, might be permitted to assert itself. But public opinion is adverse to everything which can be regarded as novel, and probably there never was a celebration when so much money was expended on the reproduction of traditional forms on a big and little scale. The Japanese manufacturers have been also pressed into service for the supply of coronation ornaments, but in endeavouring to satisfy British taste they have perpetrated much which must have excited the laughter of the dusky artists and vendors, for anything more hideous was never seen out of nightmares.

Excuses for the deficiencies of the objects which have been employed to demonstrate British loyalty are easily forthcoming. In the first place the decorations are not intended to have endurance, and the practical English nature is opposed to the dissolving of pearls in wine or the sacrifice of beautiful art to a temporary purpose. The ornamentation is only to be transient, an unsubstantial pageant which will leave not a rack behind. It must also be said that out-of-doors festivities are rare with us, and consequently we are not possessed of that mental organisation which can promptly turn an opportunity to account when one arises. Merry England was never remarkable for street decorations. When young and old came forth to play upon a sunshine holiday they did not seek for much external splendour,

And pomp, and feast, and revelry,  
With mask and antique pagentry,  
Such sights as youthful poets dream  
On summer eves by haunted stream,

were to be found within baronial halls rather than in LUD'S own town. When FROISSART said of the English, "ils se rejoissoient tristement, selon la coutume de leur pays," his judgment comprehended the street-scenes he witnessed when there were public celebrations.

There can be no question, however, that public rejoicings have long exercised a most beneficial influence on art. The highest art originated in them. The glorious frieze of the Parthenon, in which sculpture attained its culmination, is no more than a record in marble of a procession on a summer day in honour of ATHENÉ. The Greek artists were happy in being able to witness many other scenes which were equally inspiring. If LEIGHTON could make so admirable a picture from a description of the Daphnephoria, what must have been the effect when living youths selected

for their beauty passed before the eyes of a painter? There were several other processions no less attractive, such as the Brauronia, in which poets or rhapsodists, as well as girls in crocus-coloured garments shared—the Delia, the Dionysia, the Oschophoria or vintage festivals, and others. In them painters and sculptors could see the best proportioned forms to be found in a district, not posed like models, but in graceful action, and all having enjoyment in their participation. A Greek procession was not like one of ours, for, as the Daphnephoria picture suggests, there was a variety of ages in order to avoid monotony, and there were numerous small groups rather than one having the uniformity of drilled soldiers or of slaves kept together by authority.

In Italian cities the public festivals, although they may not have been equal in refinement to those in Greece at an earlier time, possessed a charm of their own. Let us cite one example. When LEO X. proposed to visit Florence the first step taken by the authorities was to invoke the aid of all the artists. Architects, painters and sculptors were enabled to co-operate; it was among their privileges. No less than twelve triumphal arches were erected. These were no mere copies in timber of Roman examples, but adorned with statues and paintings, and in effect probably surpassed ancient works. ANTONIO DA SANGALLO constructed an octagonal temple. JACOPO SANSOVINO exhibited his skill as a sculptor as well as an architect, and not only prepared bas-reliefs and figures for the temporary façade of the cathedral, but made an immense horse like one of the antique figures in Rome. ANDREA DEL SARTO painted the façade in his best style. BACCIO BANDINELLI modelled a statue of a giant. Obelisks, columns and groups of figures were executed, and as much as possible was accomplished to recall to the Pontiff renowned objects which were familiar to him in his capital. If we may judge from what is said by VASARI and other writers, the artists of Florence were expected to be ready to give their services for the decoration of the streets during festivals in honour of visitors, corporations or religious guilds. Their assistance appears to have been rendered without other payment than the satisfaction of serving the city by upholding its reputation for art, and there were so many willing hands the burden on an individual artist was not onerous. If we remember that each of the artists was surrounded by several assistants and apprentices, we can more easily realise how extended was the excitement which was caused by a public festival in Florence, and how young and old were eager to have the distinction of sharing in the preparations.

Indeed, the artists seem to have enjoyed themselves at their social meetings by strange exercises, which were possibly experiments or rehearsals of scenes which were to be displayed afterwards before the public. VASARI, in describing the company known as the "Caldron," to which ANDREA DEL SARTO, ARISTOTE DA SANGALLO, BACELLI, the musician, and other artists belonged, tells us that GIAN FRANCESCO RUSTICI one evening made an immense vessel in which the members were placed, and which, with the aid of various decorations, was intended to represent the legend of the boiling of JASON's father in order to rejuvenate him. In that case there were supposed to be several Argonauts. Such a scene, if exhibited in public, would have been an undoubted success, and it was appropriate for a body of Caldronites. The stories told of the strange creations by DA VINCI, the Medusa's head with the eyes flashing fire, the moving reptiles and animals, the Neptune with mermaids and tritons, all seemed to recall the spectacles that were witnessed in Florence and other Italian cities. The company bearing the title of the Trowel was remarkable for its *tableaux vivants*, which were based on mythological subjects. LORENZO DE MEDICI was a member of one of the companies, and he used all his diplomatic skill to have the spectacles of his fellow members more successful than those of their rivals. But all those animated scenes were presented with a background which, if inanimate, was also attractive. In fact, an Italian city in those times was like a great painting in which all parts of the composition helped in producing a general effect.

Similar scenes were enacted elsewhere. The Flemings had also their living pictures and temporary structures of fantastic architecture which served as backgrounds for



them. When RUBENS had acquired renown both as a diplomatist and as a painter the municipal authorities of Antwerp were not afraid to apply to him for schemes for the decoration of the streets when DON FERDINAND the Regent was about to visit the city. The great artist had ceased to paint, but he complied with the request; the engravings of the triumphal arches which he designed are known to amateurs. He was only continuing a tradition which was general on the Continent, that great artists should assist in the public manifestations of art, for without such displays it was believed impossible for art to thrive.

INIGO JONES was a contemporary of RUBENS, and surpassed the Flemish painter in aptitude for arranging spectacles. BEN JONSON might sneer at the architect's ability to reveal mythology by paintings on slit deal, making boards speak, and treating painting and carpentry as the soul of masque. But the bricklayer poet's descriptions, in spite of his prejudice, are evidence of the marvellous ingenuity of INIGO JONES's scenic arrangements, and WALPOLE was justified in saying that the festivals of LOUIS XIV. were copied from the shows of Whitehall. It is remarkable that the architect's skill was never utilised for a spectacle outside the Court circle.

In many ways we still differ from foreigners, as in the days of INIGO JONES, and one of them is the scepticism that an artist can be helpful in the decoration of a street. It is considered that the manufacturers can be trusted to produce the most satisfactory results. There are many artists in London who would not have hesitated to prepare elaborate designs free of cost if their skill had been invoked in a proper manner. But the offers which were made were received so coldly there was no encouragement or anyone who valued his own dignity to design or advise. The decoration consequently, if regarded as a whole, will be more suggestive of the factory than of the studio, and it will reveal the shortcomings of the applied art of England. If the love of the beautiful is to be judged by the aspect of the streets, we are afraid the foreign visitors will be astonished at our claims to be proficient in the arts. There can be no doubt about the expenditure exceeding the amount which would be needed to produce a more tasteful arrangement, but that is a common experience in this country. As in other instances, the will must be taken for the deed, and the outlay will have to be accepted as an equivalent for the absence of good taste and invention. "Never anything can be amiss when simpleness and duty tender it," says SHAKESPEARE, and that principle requires to be often adopted when judging of public efforts in England, and it may be in matters of more consequence than Coronation decorations. At the same time it is to be regretted that decoration will be confounded in the public mind with the jost of crude colours and graceless forms which the streets of London are about to present.

#### REGISTRATION OF BUILDING SITES.

FROM time to time there are trials in the criminal courts relating to the obtaining of money by false pretences through fictitious mortgages. In one of the latest, two properties were fraudulently mortgaged no less than seventeen times. In another case the property was mortgaged twelve times. It is also known that a sum of over 50,000*l.* was given in a third case on the supposition that the deeds were genuine. Surveyors with any experience are rarely surprised when they hear of those transactions. And property sometimes rests on so uncertain a basis in England, it is a simple matter for unscrupulous people to become acquainted with the circumstances in particular instances and to raise money on, as it were, the doubtfulness of the ownership.

The temptation to dishonesty which arises from the hesitation of Government to interfere with private affairs is a new one. Political economists have descanted at length upon the indefinite nature of ownership, which made the buying and selling of land one of the costliest and most hazardous of businesses, but amendment was impossible owing to the opposition which was aroused among lawyers. The investigation of title was among the slowest of legal operations, and it was paid for accordingly. Not until a

daring lawyer arose like the first Lord WESTBURY, who was rather pleased to have enemies against him and to be charged with disloyalty to his profession, was there a chance of reform. After a long struggle he was able to pass an Act for the registration of title, but as it could only be optional in its provisions, its efficacy was exceedingly restricted. Few and far apart were the entries. Various endeavours were afterwards made to institute a thoroughly workable system of registration, but in vain. It is still feasible, as recent convictions testify, to raise repeated mortgages without a jot of a title to the property, and yet by a very simple system all dangers of that kind could be avoided.

We do not hear on the Continent that rogues, although they may abound there, find it easy to forge imitations of conveyances or to invent them, and by that means to obtain money seventeen times over on a small estate. There is security against such criminal practices through an official registration. The State maps show the limits of all property in land, no matter how small may be the area. Every change of ownership, every financial transaction connected with the properties must be recorded in order to acquire legality for them. A man who is invited to advance money on a mortgage can with no trouble or loss of time discover the position of the applicant, and ascertain whether a piece of ground or a house can be burdened with an additional mortgage without excessive risk. In foreign countries the sovereign was never supposed to refrain from controlling private property, and hence there is more simplicity about the titles than with us. In England also the theory is believed in that all the land is the possession of the monarch, but there has been so little meddling with property for centuries that private ownership is in practice accepted as unfettered. But in a great number of cases it would be impossible to produce documentary evidence sufficient to uphold the proprietorship. It is well known that in Ireland property has been sold under the Encumbered Estates Act, and all the expenses paid, in order to acquire a title from the Commissioners which could not be easily questioned in a court of law. In England a similar opportunity, if offered, would be eagerly utilised.

Owing to the uncertain state of many titles the Land Transfer Act has allowed a division of them into Absolute and Possessory. To determine the former it would be necessary to have an official examination of title. But the Legislature has hesitated about making that work obligatory. A Possessory title, on the other hand, does not demand much examination, and it may grow, if unquestioned, into an Absolute title. For all purposes of sale, possession during sixty years is as valid as possession during six centuries. It would be as onerous a task to disturb possession in one case as in the other. The doubts that so many people entertain about their titles, because they cannot claim to represent a long line of ancestors who lived on the same property and enjoyed all its rights uninterruptedly, should not deter them from taking advantage of registration under the Land Transfer Act, which facilitates dealings in land and increases the value of property to some extent.

The metropolitan area, from the vast number of the properties, is the principal scene of the discreditable transactions which have their origin in the mystery attending land. It is, therefore, interesting to review the efforts which have been made during the last three years to institute a general registry of title for the County of London. An experiment of the kind must have influence upon the future as well as the present, and Mr. C. FORTESCUE-BRICKDALE, the registrar, who conducted it, was anxious that there should be no failure. It is no small matter to endeavour to establish in an ancient and crowded district the procedure which is readily adopted in new countries like the British colonies. The Order of Council was dated July 18, 1898. At first it was intended to be applied to only a small part of the county, but gradually the whole metropolitan area on both sides of the Thames, with the exception of the City, has been enabled to have the benefit, if desired, of the Land Transfer Act.

The importance of the Order, if judged only in a business sense, will be understood when it is said that "in the course of three years 32,268 separate properties, of an



aggregate value of 34,907,643 $\frac{1}{2}$ l., have been placed on the register, and 21,875 transactions by sale, mortgage, inheritance and otherwise have also been recorded of these properties subsequently to their entry on the register, making a total of 54,143 applications dealt with." Every property registered requires the perusal of at least one deed, besides a great deal of recording, examination and mapping. It is needless to say that the properties present a remarkable diversity of character. Among them we are told are "buildings of every kind and value, from first-class residential houses and gardens in the west end to the poorest tenement dwellings in the east; from houses of business in the central thoroughfares, which have been standing for centuries, and where ground is sold and measured by the inch, to farms, orchards and agricultural holdings in distant suburbs, and building estates, with roads barely marked and plots unfenced, in the first stages of their development. There are registered chapels, schools, theatres, hotels, factories, flats, cellars, single floors, parts of rooms, archways, courts, passages, party walls, docks, wharves, parks, burial-grounds, railways, streets, tunnels, underground passages, rights of way, rights to light and air, to lateral support, to obstruct light and air, to build, to embank, to use gardens; settled land, tenancies in common, joint ownerships; freeholds, leaseholds and sub-leaseholds of every degree of complexity, including cases where the tenures are so intermixed as to be indistinguishable." Although the work was only experimental and 54,143 applications were dealt with, there was only one appeal to the Court, and in it the registrar's decision was affirmed.

As yet the work has to be got through in temporary premises, but a new building in the Tudor style is about to be erected for the Land Registry at the south-east corner of Lincoln's Inn Fields. In spite of the inconvenience of deficient accommodation the business has been transacted without loss of time to the public, for about 38 per cent. of the applications, it appears, were dealt with in less than a week, and only one attendance on the part of the landowner or his solicitor was required. It augurs well for the future, and reveals a great change among lawyers when it is acknowledged that the success of the department is in some measure due to the assistance given by members of the legal profession. The advantages of registration are therefore becoming manifest, and efforts are made to promote its successful development.

The staff appointed consists of the registrar; two assistant registrars, one a barrister, the other a solicitor; two first-class clerks, seven second-class and sixteen third-class clerks. For the mapping and surveying work there are two chief superintendents, ten examiners and superintendents, twenty-four surveyors and thirty-five assistant draughtsmen, besides supernumeraries and boys. There is also a scrivener department. As usual the technical department is paid at a lower rate than the administrative. Apart from the registrar, his assistants and clerks number thirty-one, and they are paid 7,415 $\frac{1}{2}$ l., or an average of 240 $\frac{1}{2}$ l. a year. In the map department there are 104 employés, who are paid 10,200 $\frac{1}{2}$ l., or an average of about 100 $\frac{1}{2}$ l. a year. By another return the number is put down as 102, and the salaries at 14,887 $\frac{1}{2}$ l. It is not surprising to learn that it is difficult to obtain suitable surveyors, revisers and draughtsmen. The last are chiefly of the architects' assistant class.

The register consists of three parts, viz. the property register or description; the proprietorship register and the charges register recording the charges, leases and other encumbrances. The entries are based on the last conveyance of sale, or on the lease. There is also an ordnance plan of the property. In the case of transfers or charges there are new entries, and if only a portion of the estate is dealt with, the limits are marked on the original plan and a new plan is made. Whenever there is a change of ownership it is stated on the land certificate obtained by the leaseholder, as well as on the register. The official work, as we have said, usually occupies not more than a week. About 90 per cent. of those cases which take more time are delayed through some serious discrepancy between the description in the applicant's deed and the state of the property as marked on the revised ordnance map. On another page we have copied some examples of the

discrepancies, and they suggest that similar plans afford opportunities for law suits at a future time.

There was a time when doubts were expressed about the value of the Ordnance Survey as a legal document, and it was said the sheets could not be accepted in law courts. The reason given was the impossibility of finding a witness that could testify to the accuracy of the maps. A less rigid rule now prevails. The maps were used for the surveys for the Encumbered Estates Act and the Landlord's Estates Act of Ireland. They are also recognised by the Land Transfer Acts. The Ordnance Survey in the county of London is not up to date, and to make it useful for the registry, revision in almost every case is indispensable.

An applicant for registration in the first instance points out the property with which he is dealing; but it has been found that all applicants are not competent to read maps, and many cases of wrong identification have occurred. If the property is correctly shown on the published Ordnance Survey plan, and agrees with the description in the legal documents, all that is required is to cut out the part from three plans, to mark the boundaries with a band of colour and to inscribe the heading and number. One copy is filed in the registry, a second is bound up with the land certificate and given to the proprietor, and a third copy is placed in a strong-room for reference in case the filed copy is lost or destroyed. Where the descriptions and plans do not agree, revision on the ground is indispensable. Lithographic plans which are produced at a very cheap rate are now used to supplement the Ordnance Survey.

Already the system of registration has accomplished beneficial effects. In the course of the three years several successive dealings have occurred with various pieces of land which are on the register. Under the ordinary system a great many deeds would have to be prepared, with a proportionate expense, whilst at the Land Registry Office only a few short entries are needed. The more deeds that are prepared the greater is the liability to error, but errors may be considered as avoidable in the books of the department.

The system cannot be complete until absolute titles are also registered. It is assumed by some owners that technical flaws will be discovered by the department, and that registration would be refused. Hitherto the only cases in which there was refusal were those "in which the owners were aware that they would have trouble if they attempted to sell in the ordinary way, and hoped that the Land Registry might be able in some manner to cure the mischief. This, it need hardly be said, is not the purpose for which the Land Registry is intended. It is not a hospital for weak titles. It is rather an assay office, where an ordinary title may be, as it were, hall-marked by public authority, so as to prevent the necessity for repeated private tests on successive future dealings. The standard adopted so far has been neither above nor below that which is found to be sufficient for practical safety on ordinary sales and mortgages of the various classes of property coming under review."

It sometimes happens that people who contemplate the erection of new buildings draw back on account of their misgivings about the soundness of the title to the sites. Many cases are known in which money was lost and much trouble given by defects which the lawyers had overlooked. It is often said that a leasehold is therefore safer than a freehold. It becomes the interest of architects to aid in supporting a system which will help to diminish the inconvenience which is possible whenever land is not treated like commodities in general, and intending purchasers are prohibited from investigating the power to sell. If the system of registration had been insisted on thirty years ago, there would be now a great many apprehensions removed which disturb the minds of purchasers of land, and have arisen within that period. Late as is the time for the enactment, the benefits to be derived from registration are not easily estimated.

The Ecclesiastical Commissioners have not made arrangements for the sale of Hartlebury Castle. They are willing, however, provided a suitable residence can be obtained or means can be found for erecting such a residence, to approve of the sale of the Castle.



## WESTMINSTER ABBEY AND ITS RESTORATIONS.

MEETING of the Society for the Protection of Ancient Buildings was held on the 11th inst.

Lord Balcarras, M.P., who presided, moved the adoption of the annual report, and said it showed that in many cases the Society took credit to itself for having done useful work, though there were buildings of extreme interest and beauty which had been lost owing to the fact that the principles of the Society were not so widely accepted as they could desire. During the twelve months their income was only a trifle over 300*l*, and that was a very small sum for a Society which did so considerable amount of work. With a larger number of members it would be possible for them to deal with a still larger number of buildings. He pleaded, on behalf of the building fund, that persons who gave subscriptions for the building, repair or restoration of ancient buildings should do so through the Society, as by that means there would be a guarantee of the money's being judiciously laid out, while there would be a corresponding improvement to the position and influence of the Society.

Miss Morris seconded the motion for the adoption of the report, and this was agreed to.

Professor Lethaby read a paper on "Westminster Abbey and its Restorations." Referring to the preparations made for the Coronation of Edward I., he said the accounts still in existence showed that a great stable was built in St. Margaret's Churchyard, temporary halls were set up in the gardens of the Palace for the people to feast in, a wooden passage was built from the Palace to the church, and, most interesting entry of which we were told that the new tower above the choir was covered with boards, and a wooden floor was laid down in the choir, showing both that the works in this part of the church were not yet complete, and, what had been a much controverted point, that a central lantern tower was contemplated in the original scheme. Henry III.'s work was followed by violent destructions, and by the more insidious form of destruction still going on under the name of restoration—false in name as in fact. He traced the story of these destructions from the date in question, and, coming to modern times, said that the first third of the nineteenth century seemed to have been devoted to the destruction of the Palace buildings, the Painted Chamber, St. Stephen's Chapel and the Star Chamber. Westminster Hall was renewed with inanity, and Henry VII.'s chapel was entirely recased. Westminster Gate, towards Hill Street, and other precious buildings in Dean's Yard were destroyed. Then came the age of Blore, Scott and Pearson. Blore stuck at the lovely early fourteenth-century bays of the cloister and put new in their place, and gave the north front of the nave another dressing. Scott completed the renewal of the cloister, and reared the south transept and set up the chapter-house again. Mr. Pearson did not like Wren's work at the north transept, and felt called on to re-edit it into its present form. At the present similar corrections were going forward at the west front, and in the present year the south rose window, renewed less than a century ago, had been cut out and redone once more. They began with new glass, but on the principle that it was best to do work thoroughly, stone and all had gone. He would suggest to them how different it would have been with Westminster if, instead of learning, theory, and caprice, they had put this energy in pulling down and setting up, there had been steadily carried on during the last century a system of patching, staying and repairs—a sort of building dentistry. Even if they could arrest the process of so-called improvement which was slowly creeping over the whole building in a sort of daily paralysis, and substitute mere daily carefulness, much might be handed on for another age.

Mr. Somers Clarke, in proposing a vote of thanks to Professor Lethaby, said that in connection with the Coronation the most wonderful efforts were now being made to save the fabric of the structure. These efforts, he thought, were mainly the outcome of the action which had been taken in the matter by their Society.

The vote of thanks was passed.

## ST. MICHAEL'S, LINLITHGOW.

WE lately described the proposed project of restoration of St. Michael's Church, Linlithgow, in which stone vaulting over the nave was contemplated. At the last meeting of the standing committee of the heritors of the parish of Linlithgow and the church committee of the Town Council a communication from Mr. William George Black, secretary to the council of the Archaeological Society, to the following effect was read:—"By instructions of the council of the Archaeological Society, I beg to send you the annexed excerpt from the minutes of their meeting on May 16, which it is hoped on a favorable opportunity you may bring under the notice of the heritors of the parish of Linlithgow." The excerpt referred to

was in the following terms:—"A letter was read from Mr. Peter Miller, solicitor, Linlithgow, enclosing a report by Messrs. John Gordon & D. Bennett Dobson, architects, Glasgow, recommending certain proposed alterations and restorations on the tower of St. Michael's Abbey Church, Linlithgow. After careful consideration of the papers submitted, it was resolved, on the motion of the Very Rev. Principal Story, seconded by Mr. J. D. G. Dalrymple, hon. secretary, That the Council strongly deprecate the proposal to erect a stone roof on the nave of St. Michael's Abbey Church, Linlithgow (which it never had), and the restoration in the manner proposed of the crown on the tower if it necessitates the reconstruction of any portion of the tower. The secretaries were instructed to send a copy of this resolution to Mr. Peter Miller, solicitor, Linlithgow, and to the clerk to the heritors of Linlithgow and the secretary of the Society of Antiquaries of Scotland." The Clerk also submitted a letter of May 23 which he had also received on the subject from the secretary (Mr. Thackeray Turner) to the Society for the Protection of Ancient Buildings, to the following effect:—"The Society for the Protection of Ancient Buildings has been deeply interested in the proposals for dealing with the structural condition of St. Michael's Church, Linlithgow, and proposed attempts to improve the building, as stated in the architect's report published in the *Scotsman* of April 26. The committee of the Society feels so strongly opposed to some of the proposals that it has decided, after careful consideration, upon venturing to address the heritors upon the subject. The Society would in no way wish to thwart the praiseworthy desire of those who are anxious that this magnificent building should be preserved; but at the same time it cannot consider that the erection of flying buttresses and stone vaulting over the nave can be justified on this or any other grounds, and although it is fully aware that some hundred years ago the tower possessed a characteristic stone crown, which was taken down for structural reasons, it nevertheless thinks that its re-erection could not be justified if it had to be made anew, conjecturally; for drawings and even photographs of the original would not enable an architect to reproduce the original in all its details, even if it were desirable to do so. Of course if, unknown to the Society, the original stones are in existence, the case would be different, but at the present time the public opinion of those who have paid attention to the subject is fairly unanimous in considering that reproductions of ancient work, even when they are known to be accurate copies, are dull, lifeless and consequently undesirable. Holding these opinions, the Society trusts that the heritors will consider it is justified in opposing the architect's scheme, and in urging the heritors to withhold their approval to any unnecessary alteration of the building, and to insist that all works shall be confined to structural repair, such, for instance, as those of which, we gather, the tower is in real need." The Clerk reported that he had acknowledged receipt of the communications to the senders, and the meeting directed that they "lie on the table."

## INACCURATE PLANS IN DEEDS.

THE Registrar of the Land Registry has rendered a service to owners of property and others by calling attention to the inaccurate plans which are supposed to be exact representations of the ground on which buildings are erected. The subject has been treated occasionally in *The Architect*, and we have pointed out to lawyers how much inconvenience they were creating for their clients by allowing plans on conveyances to be drawn in the offices of law-writers and the back rooms of stationers' shops by men and women who could have no knowledge of surveying, and were indifferent to north, south, east and west when arranging a plot of land on parchment or paper. We reproduce some of the specimens which were lodged in the Land Registry Office and a comparison of them with the corrected Ordnance plans, and the descriptions will suggest how easily law suits can originate in the defects of plans which have without doubt cost as much as if they were prepared by competent surveyors.

*Example 1.—Deed conveying more than was intended.*

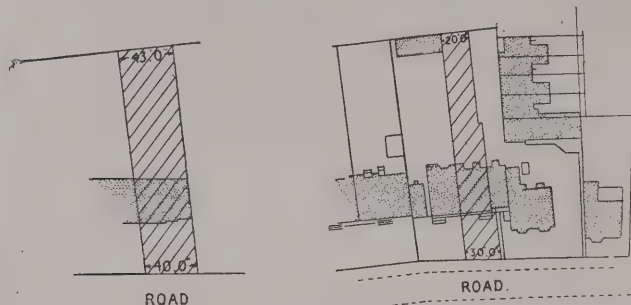
The verbal description was a typical example of its class; it ran as follows:—

"All that piece or parcel of land situate in the parish of in the county of London bounded on the North partly by land formerly belonging to A and partly by stables and premises formerly belonging to B (all which land stable and premises afterwards belonged to the said C) on the south by a dwelling house now or late belonging to the said B and known as No. 3 [really 117] Z Street on the East by the road called Z Street running from a road formerly called Y Lane but now and for some time past called V Hill



and on the West by land now or late belonging to the said A which said piece or parcel of land contains on the East side or front thereof next the said road called Z Street forty [really thirty] feet on the South side thereof one hundred and eighty-two feet on the West side or rear thereof forty-three [really twenty-two] feet and on the North side thereof one hundred and eighty-five feet be the several dimensions little more or less and also all that messuage or tenement or dwelling-house erected and built on the said piece of land or part thereof known as No. 4 [really No. 115] Z Street otherwise M House together with the appurtenances (which said premises are more particularly delineated in the plan drawn in the margin of these presents and thereon coloured red and green)."

The crossed portions of these two plans represent—on the right, the ordnance map of the land intended to be conveyed; on the left, the plan on the deed, reduced to the ordnance scale—names being omitted.



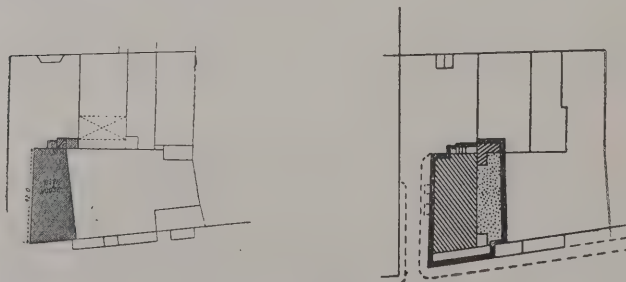
The impossibility of applying this description and plan (which had evidently been copied with insufficient corrections from some former deed) to the actual state of things on the ground as shown by the ordnance map led to further inquiry, which resulted in the applicant being registered as proprietor of the smaller amount shown in the right-hand plan, which was all he had intended to buy.

#### Examples 2, 3, 4.—Deeds conveying less than was intended.

In the last case the verbal description was long and elaborate, though the state of the property boundaries was simple and clear. In this case the verbal description was concise in the extreme, but the property boundaries were most elaborate, including large cellars under and a staircase and lobby in an adjoining house, and excluding the attics in the house conveyed—the whole spread over an area almost double the extent of the land shown on the deed plan. Of these matters the deed contained not the slightest indication in any part. The words used were as follows:—

"All that piece or parcel of ground situate on the east side of Street in the parish of in the county of London together with the beerhouse erected thereon and known as the and numbered Street aforesaid all which premises are more particularly delineated and coloured red on the plan drawn in the margin of these presents."

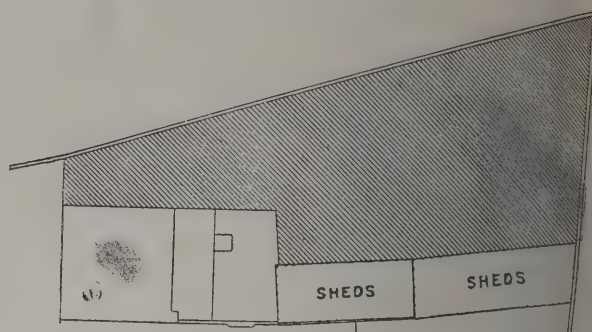
The plan was as shown in the left-hand plan below. As this did not appear to fit the ordnance map very well the ground was visited, the facts ascertained and a correct plan and description were made. The registered plan showed by different tints the various portions of the property held on different floors, as shown in the right-hand plan below, the thick black representing the red boundary line and the different shadings the different tints used. The left-hand plan is reduced to the ordnance scale.



#### 3. In one case the words were as follows:—

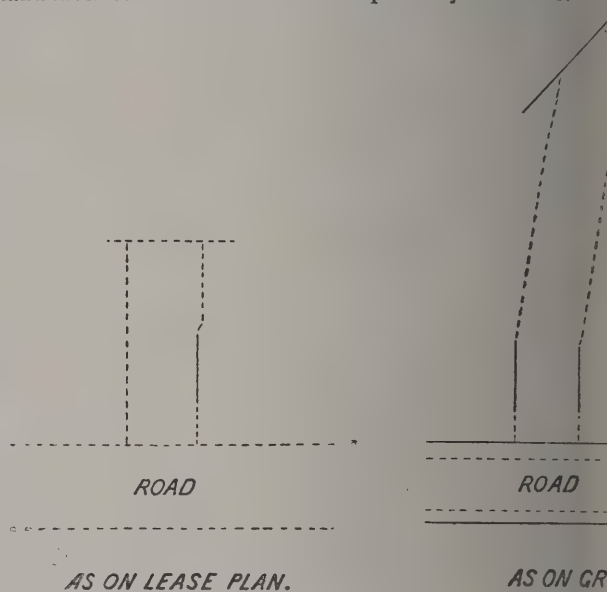
"All that freehold piece of land adjoining No. 1 Street aforesaid which with the boundaries abutments and dimensions thereof is more particularly delineated and described on the said plan annexed hereto and therein coloured blue."

The plan was coloured like this:—

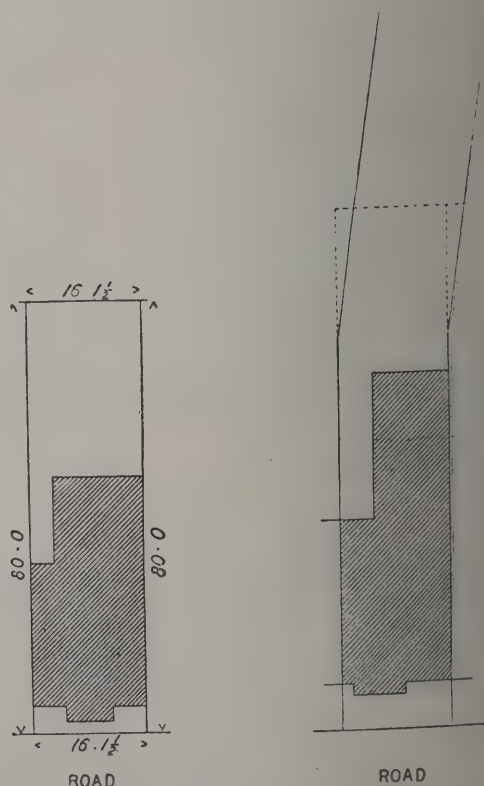


The blue colour only extended to the shaded part in above plan, but the parts marked "sheds" were intended to be conveyed as well.

4. In another case (a lease) the plan on the deed and land intended to be leased were respectively as follows:—



Example 5.—Deed conveying land not intended, and omitted land intended to be conveyed.



In this case the deed (as will be seen from the plans) conveyed land not intended to be conveyed, and omitted a portion intended to be conveyed. The words used were:—



"All that piece or parcel of land situate in the parish of in the county of Kent [really the county of London] and having a frontage to the Road of 16 feet 1½ inches as the same is more particularly delineated and described in the plan drawn in the margin of these presents and thereon coloured pink together with the messuage or tenement erected thereon and known as 118 Road aforesaid."

The left-hand plan below is a copy of the plan on the deed. The right-hand plan the shaded portion shows the correct position and position of the house, the dotted line at the back shows the land contained in the deed plan according to the dimensions written on it, the continuous lines represent the messuages erected and intended to be conveyed.

*Note as to Examples 2 to 5.*

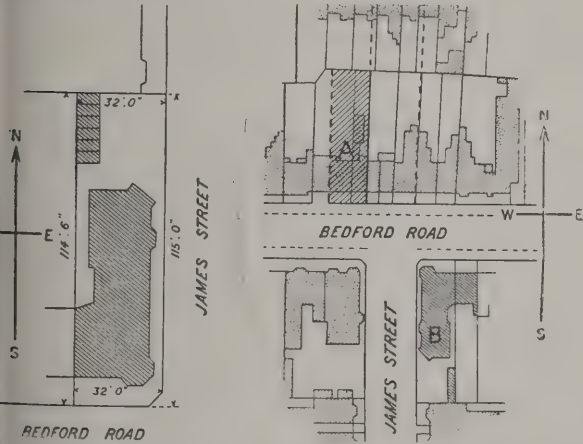
When they were compared with the revised ordnance map the insufficiency of the conveyances became apparent, but their defects had escaped observation until the land registry surveyors pointed them out. The deeds in all these instances except two, where the words seemed just capable of applying to a larger area if necessary) were corrected and re-executed. If this not been done the errors would have remained until discovered perhaps by some future purchaser, more careful than his predecessors, who, if well advised, would have refused to complete until the defects were made good, an operation which after the lapse of years would prove much more expensive and difficult to accomplish than now while the parties are still in communication.

*Example 6.—Land described and identified, forming no part of the land intended to be conveyed.*

In this case the verbal description in the deed (with different names) ran as follows:—

"All that piece of land situate lying and being on the North side of Bedford Road and on the West side of James Street and being at the junction of such road and street in the parish of in the county of Surrey [really the county of London] together with the two Block residential Flats known as House erected and built thereon or on some part thereof as the same premises are delineated and coloured red in the plan drawn in the margin hereof."

The plan on the deed agreed with the verbal description. The left-hand plan below is a copy of it, the street names being correspondingly altered.



When laid down on the ordnance map (shown in the right-hand plan above) it occupied the position shown by the cross-hatched portion marked A. Being asked to explain the discrepancy of internal detail, the applicant stated that the existing houses were to be pulled down and that James Street was to be extended northward as indicated. The registry surveyors were not quite satisfied and made further inquiry, when it appeared that the original plan had been made by mistake upside down, that the verbal description had been proposed from it, and that the conveyance was intended to refer to the house at the opposite corner (shown also on the left-hand plan and marked B), the ground plan of which will be found to agree, when inverted, with that of the house shown in the right-hand plan.

The Campanile of the new Roman Catholic cathedral at Exeter will be illuminated with electric light on the evenings of the 26th and 27th inst. Among the devices employed will be a powerful searchlight to be worked from a building 282 feet from the ground. There will also be two enormous crowns containing some hundreds of electric lights.

PALESTINE EXPLORATION FUND.

ON Tuesday an address was given at the annual general meeting by Major-General Sir Charles Wilson, R.E., F.R.S., on "The Recent and Proposed Excavations of the Fund." The chair was taken by Lord Eustace Cecil, and there was a large attendance. The report, read by the Secretary, stated that the receipts exceeded 1,900*l*, and expressed regret at the losses sustained in the deaths of Lord Dufferin, Bishop Westcott, Sir Richard Temple, Mr. T. Rymer and Dr. Conrad Schlick. It was a source of gratification that Dr. Glaisher, though in his ninety-fourth year, maintained unabated his zeal and labours for the fund.

The Chairman, after brief reference to the annual losses, mentioned the main discoveries of the year, of which the principal was that of the ruins of Gezer. The thanks of the fund were due to Mr. Stewart Macalister, Dr. Masterman and other labourers for the fund. It was, however, a serious matter for regret that the ancient remains were so greatly injured by the natives and others. Much of the success of the Society was due to the co-operation of the United States, and gratitude was especially due to Dr. Theodore Wright. He moved the adoption of the report.

The motion was seconded by the Rev. Dr. Rogers, who urged the speedy prosecution of the work, in view of the devastating influences at work and the frequent incursions of robbers.

The report was carried.

Sir Charles Wilson said that the work of the last year had been mainly the excavation of mounds in the valley of Judah, and they had thrown light on many ancient sites. The excavations revealed remains of pre-Israelitish times from 1700 B.C. and the successive periods down to Byzantine times. Painted ware and Mycenaean pottery were found in this region, and specimens of early Greek ware as well as Assyrian and Babylonian objects. The site was probably to be identified with that of Gath. Remains were also found of a town abandoned in pre-Israelite times, and there relics of subsequent periods were also discovered. Statues were found of Demeter and Berenice, and also pottery and other fragments of the third and fourth century B.C. imported into Palestine. Two inscriptions in Greek characters were discovered, and one of them was divided into seven columns, and there was a curious translation from Hebrew to Greek, the Greek characters being read from right to left. There were many tablets commemorative of important events, such as birth or marriage; and there were symbolical references—e.g. a white stone was taken to represent him that overcometh. In these remains instructive sidelights were thrown on the social life of the people living at various times in Palestine. Mr. Macalister had done most valuable work, and his conclusion was that few of the caves he examined were earlier than the Seleucid period. Some of the caves contained, it would seem, remains of an aboriginal or, perhaps, a composite population distinct from that of the towns. The pottery began with the pre-Israelite or Amorite period—earlier than the Mycenaean times. They were similar to specimens discovered by Professor Flinders Petrie in Egypt. Specimens of the earliest work were shown on the screen. Among this very early pottery no lamp had been discovered. The painted pottery or sherds presented Mycenaean features, though probably not Mycenaean work. In the Jewish period the Mycenaean and Phoenician influences seemed to have disappeared. The names of the potters—always of a tribal character—were found on many specimens of the Jewish pottery; among them were the two-winged scarabæus and birds. After the Jewish period there was a distinct growth of beauty in form and design. In these later times there were few completed statues, but some of these were of fine workmanship and form. A number of dolls of various shapes and bound in very singular manner that had been discovered by Mr. Macalister were shown on the screen. One of the great caves was used as a columbarium after its original purpose had been abandoned. As to the future programme of the fund, it was proposed to work on the littoral of the Dead Sea, and it was intended to take accurate meteorological records of the Jordan Valley. It was supposed that the former rise of levels had been followed by a fall. Careful observations would be taken at Jericho and other points. Mr. Macalister, however, proposed particularly to devote himself to Gezer, where valuable historical material might be discovered. There was much to do, and great results might be expected; but funds were needed. The German and Austrian explorations had been well supported and brought interesting remains to light, and it was to be hoped that the British fund would not fall behind. The address concluded with illustrations and explanations of the ancient and modern water-supply of Jerusalem.

A vote of thanks was heartily passed to Sir Charles Wilson.

The Earl of Idlesleigh will preside at the annual congress in connection with the Royal Institute of Public Health which will be held in Exeter from August 21 to 26.



## NOTES AND COMMENTS.

THE Corporation of Westminster appear to have been inspired by the spirit which in days before municipal reform was known used to animate such bodies, when they set up the stands near the Law Courts for spectators of the Coronation procession. At such a time the utmost facility should be allowed to the great mass of the public who have no friends in a Corporation and cannot afford to pay for seats. The stand, however, has encroached on the pavement to such an extent as almost to prevent traffic. In a legal sense the Westminster Corporation have a right to the pavements in all the streets of their city. It is not good sense or good taste to monopolise so important a spot. The blocking of the pavement is so reprehensible, Mr. Justice GRANTHAM, who has the control of the stands which have been erected for the use of the judges and the Bar, would not allow any encroachment on the footway, and on Monday, in his Court, he stated the facts, in order that no opprobrium might in the public mind be attached to the Lord Chancellor and the judges.

It would be difficult to discover a work of the class which will bear comparison with the large volume containing illustrations of buildings in which Burmantofts faience, vitreous glazed terra-cotta and glazed bricks have been employed. From its execution it is so beautiful as to be elevated out of the category of ordinary industrial publications. There are about fifty plates of buildings, all of which have interest as architects' works, but what must strike every one who glances at the collection is the adaptability of the Burmantofts specialties to the most varied styles of architecture. The Technical College, Darlington, is in rather severe Gothic, but the peculiarities of the style are admirably expressed in every part. The mouldings are as true in their way as the ornamental panels or the large floriated finials. On the other hand, the interiors of the Queen's Hotel, Leeds, which are adorned in ivory and gold faience, are as delicate and boudoirish in character as the finest French carving. The work in the latter building is, from its finesse and charm, sufficient to indicate the progress made in our time in manipulating clay. The panels would at first sight appear to be refined repoussé-work in metal rather than faience. But evidently the distinction between architectural work and advanced ceramics is being diminished, and in this hotel the ceiling will rival any vases which can be placed in the rooms. The figure-painting in the panels has also the true decorative character. In a Leicester church we see Romanesque, in which archaic severity is softened by the capitals of columns with cherubs' heads as elements, and the winged figures of various sizes which are introduced in the chancel screen, the pulpit and elsewhere. Terra-cotta figures are liberally used in the exterior of the news room at Leicester, and with the abundance of columns give a unique effect to the building. In Lloyds Bank, Leeds, and the National Provincial Bank, Manchester, Mr. WATERHOUSE, who has had so much influence in the utilisation of terra-cotta, has encased the columns and veiled the walls with Burmantofts materials. The advantage of the faience has been recognised frankly, and scope is allowed for the display of its properties by contrasting colours. In the Hotel Great Central, London, it is employed as a wall-lining and for the decoration on a grandiose scale of the courtyard. In the Turkish baths at Blackpool the faience is recognised as peculiarly suited for walls, doors and ceilings, for there is not only Eastern richness of effect, but the surety of cleanliness. The surfaces are impervious, and can be cleansed expeditiously. Indeed the sanitary advantages of the material are among its recommendations, and they impart a new interest to the beauty of form and colour in the decoration. Another benefit is the economy of this variety of plastic art. It will be observed by comparing the warehouse in Leicester with those which hitherto have been raised in Manchester and other provincial towns. In Messrs. FAIRE'S building there is no excess of decoration, and the structure at once suggests its purpose. But the well-balanced ornament is so skilfully introduced it seems to be a necessity, and it is found in places where it cannot be injured. In the Alhambra Theatre, Blackpool, the reliefs are also in the right positions, but in this example the need of big announcements of entertainments diminishes

the effect; the modelling of the figures is throughout artistic. In the London offices of the Commercial Union Insurance Company the ceilings are of faience, and show refined ornament in the Italian style. Photography cannot deceive, and the detail seen in the plates will sustain scrutiny with a magnifying glass. It would be erroneous to conclude that the specialties are destined for decorative work alone. Victoria Station, Nottingham, proves that the Burmantofts glazed brick and vitreous glazed terra-cotta can be used with success for engineering structures, and there are several exteriors which testify that the materials are universally applicable in construction. The volume is the most creditable record of honest work which can be desired, and we might say the most persuasive. In it we see how successfully strength and beauty can be combined, and how remarkable is the progress which has been accomplished in the great Burmantofts Works through the union of artistic power, business management and commercial enterprise.

THE London County Council have adopted measures which will diminish the risk of any fire which may arise during the Coronation festivities. Firemen with portable telephones will be stationed at the fire alarms on or near the route to be traversed by their Majesties, and firemen will also be stationed to point out the positions of fire hydrants along the line. Arrangements will be made for the attendance of engines to interfere as little as possible with the general plan. It is proposed to carry out on June 27 arrangements similar to those adopted on the occasion of Queen VICTORIA'S Diamond Jubilee procession, and which were found most satisfactory. Four horsed escapes and seven steam fire-engines will be placed at convenient points on the route for attending fires in the thoroughfares through which the procession will pass, and arrangements will be made for the attendance of engines generally without crossing that line. The other precautions arranged for June 26 will hold good for the following day also. All leave for firemen will be stopped until the end of June. Authority has been also given for hiring additional horses. The stands near the Abbey have been inspected by the chief officer. It was intimated, however, to the First Commissioner that the services rendered were performed on the distinct understanding that neither the Council nor the Fire Brigade undertake any responsibility in the matter.

"LE BON ROI DAGOBERT" with his Prime Minister St. ELOI, the goldsmith, are to the majority of Frenchmen only mythical personages. So many amusing songs have been made about them, they will not be easily forgotten. A chair which is in the Bibliothèque Nationale is stated to have been executed by the saint, and it has some characteristics from which it may be concluded to be a work of the seventh century. There seems to be little doubt that in any case it is older than the Coronation chair at Westminster, but it has not been used at many functions. One reason was that during a great many centuries the ceremony of Coronation was performed at Rheims, where the chair was not kept. It has often been represented in archaeological books, and is now found in the Cabinet des Médailles of the library.

## ILLUSTRATIONS.

PARISH CHURCH, ARBBROATH, N.B.

NEW STABLING, FOXHOLME, HAREGATE.

IVESON HOUSE, FAR HEADINGLEY, LEEDS: THE SALON.

DESIGN FOR PANEL IN CARRIAGE, SOUTH AFRICAN RAILWAY.  
DESIGN FOR INLAY.

ONE of the designs we publish this week was prepared by Mr. STEPHEN WEBB as a part of a scheme of decoration in connection with the South African Railway. The second is from a working drawing for an inlay of various woods, some of them stained, and mother of pearl. Mr. WEBB has made the engraving, and the inlay has been considered very successful.

CATHEDRAL SERIES—RIPON: GENERAL VIEW OF THE TRANSEPT.  
PORTION OF THE NORTH SIDE OF NAVE.



## HORSHAM.\*

THE fine old town we have seen to-day is a borough and parish in the Hundred of Singlecross and the Rape of Bramber. (Parenthetically, I may here mention that Rape, as a county division, is peculiar to Sussex, the county being split up into six of these. The word is supposed to be identical with the hreppr; or rope, of Iceland. It was the custom of the Teutons to set out land by the aid of a rope—as modern surveyors use the chain—and the six Rapes of Sussex were divided due north and south, each containing its castle, its river and its forest.) By some authorities Horsham is said to have derived its name from Horsa, or Horse's Meadow, but the commonly-accepted interpretation of the name is that it was from Horsa, a brother of Hengist, who is said to have founded it. The first syllable, however, was common to both Angles and Saxons, while the second (Hām, meadow) supplies unquestionable proof of its Saxon antiquity. Although only meagre records of the early history of Horsham are available, here is very little, if any, doubt that with forty-one other manors in Sussex it was given by William the Conqueror to William de Braose, who landed in this country with him in 1066, and continued in the hands of that well-known family until, in 1298, Olivia, co-heiress of William de Braose, the seventh in descent from his ancestor bearing that name, carried it by marriage to John de Mowbray, the lord of Axholme, whose descendant, Thomas, was created Duke of Norfolk in 1391. De Mowbray's granddaughter, Margaret, married Sir Robert Howard, and their son John, a Knight of the Garter, was by Richard III., in 1483, made Duke of Norfolk. From him the estates, which included the lordship of Horsham, have descended—except for several attainders which were afterwards reversed—to the present duke of that name. Probably the arms of Horsham owe their derivation to the De Braoses, which were azure crucially of crosslets, a lion crowned all or; in the Horsham borough arms, however, the crosslets are missing, the lion is in argent, and is resting his dexter paw on an antique H.

In the time of Henry III. a dispute arose as to boundary between the parishes of Shipley and Horsham; but in 1247 an arrangement was come to between Robert de Samford and the Prioress of Ruspur whereby the boundaries were amicably settled. Horsham has been a Parliamentary borough since 1295. On the passing of the Reform Act, however, it lost one of the two members it had been entitled to return to Parliament, as the total electorate was below 300. That it was a place of commercial importance is proved by its having a "Merchants' Guild" from very early times. The fact of the church being large also supports the theory that the population was considerable—although in the thirteenth and fourteenth centuries the size of a church did not so accurately represent the number of the parishioners as it did the liberality of the founder. Very probably, however, about this time Horsham was a populous parish, as by an endowment of the Bishop of Chichester in 1231 it was arranged that the vicar should be provided not only with a chaplain, but also a deacon and sub-deacon. Horsham during the fourteenth century was noted for the excellence of the arrows for crossbows, or "quarrels," as they were styled; and also horseshoes, a large trade in both of which was carried on. At the time of the Civil Wars feeling ran high between the Royalists and Roundheads. A quaint letter written at this time, now in the British Museum, gives one an idea of the state and feeling of the parties here and at Pulborough. The letter was penned by a Royalist, who signed himself "R. T.," and reads as follows:—

"With us at Horsaum, we are now 500 men in arms. The reason was this. Upon Friday, June 16 (1686), the magazine was commanded by the committee at Arundell; but our countrymen are generally so ill-affected that they rose with one consent, and two or three hundred appeared in an instant, leaving their mattocks and plows to rescue the swords and muskets."

This letter would seem to show that the inhabitants generally were on the king's side. A criterion as to what the feeling in the town was at the restoration of Charles II. is supplied in the fact that three of the principal inhabitants—Thomas Middleton, Edward Eversfield and John Eversfield—were selected by the "Merry Monarch" as knights of the Order of the "Royal Oak."

Bull-baiting was carried on for many years in the Carfax—said to be a corruption of "Carrefour" or "Quatrevoies," signifying where four roads meet—and, as we saw this afternoon, the last date on which this "popular sport" was indulged in was 1814. The rough element in the town were much annoyed at its abolition; and it was even stated, in defence of the Spanish custom, that the bulls enjoyed the sport, and had been known to escape from the fields at Chesworth and make their way to the Carfax in order to participate in the exciting scenes usually associated with the pastime.

\* A paper read by Mr. W. H. Truelove before the members of the Upper Norwood Athenæum.

It would be noticed that the roofs of some of the oldest houses are still composed of Horsham stone, or "slate," as it is very commonly called. This material belongs to an old geological formation which bears marks of sea or water ripples. In early times it was plentiful in the neighbourhood, being much used for roofing purposes, notwithstanding its weight, and that roof timbers had to be very substantial to carry such heavy "slates." It was a peculiarity of the town fifty years ago that the pavements were also composed of the same material, but these have given way to York stone and modern composites, and I have not seen any of the old pavements in my perambulations of the town, although a few still remain in the outskirts. A high price is now paid by builders for this stone when any of the old residences covered with it are pulled down, their object being to give newly-built houses an ancient appearance. Many interesting houses of the Middle Ages still exist in Horsham, notably the Manor of Denne—(on Denne, or Dane, Hill it is averred the Danes assembled to defend themselves against Alfred the Great, shortly after the death of Guthrum, their chief)—Hills Place, Causeway House and North Chapel. The two last mentioned we passed on our way to the church. North Chapel, a once famous building, supposed to have been a residence of the Hoo family, has been transformed into four cottages. Mention must also be made of the Grammar School, built in 1540 and restored in 1840.

There are four principal streets in Horsham, running at right angles almost due north, south, east and west, by which names they are called. Between the East and West Streets, but narrower, is Middle Street, known for very many years as Butcher's Row. Most of the shops and houses abutting on this street undoubtedly belong to the days of antiquity, and the projecting floors and overhanging gables point to the fact



CAUSEWAY HOUSE.

that it is the oldest part of the town. The Causeway, through which we passed in making our way to the church, was formerly a fashionable walk for ladies and gentlemen in the afternoon. In the centre of the town the old prison formerly stood at one extremity of an open square, which was known by the name of "Jail Green." Two weekly markets have been held for very many years, and four fairs are held annually in Horsham, two by a charter granted in 1461 to the Archbishop of Canterbury. Before the introduction of railways the turnpike roads through Horsham were remarkably good, several stage coaches passing through from London to Brighton. A daily coach, called the "Star," was noted not only for its speed, punctuality and safety, but for the civility of its driver, Robert (commonly called "Bob") Whittle, who for many years, six days in the week, started for London in the morning at a quarter to seven, and returned at eight o'clock in the evening, doing the double journey of 72 miles in eight hours. Horsham is now an important junction on the L. B. and S. C. Railway to Portsmouth.

## Horsham Church.

The parish church stands at the south of the town just above the river Arun. It is dedicated to St. Mary the Virgin, and occupies the site of a church of a still earlier date, the lower portion of the tower, and part of the north wall of which still remain. The round-arched doorway and narrow windows with their deep splays leave no doubt that this portion of the building belonged to the Early Norman period. The tower, adorned with grotesquely carved heads, is supported by massive buttresses surmounted by a spire, and is 230 feet high. It would be noticed that this spire is out of the perpendicular, the cause of which is attributed to the action of rain, wind and



sun on the massive timbers, it being built of wood, covered with shingles. The present church was erected against this tower in 1247, through the munificence, it is believed, of the nuns of the Convent of Rusper, who then possessed the rectorial tithes. It would appear that the original church was considerably smaller than the present edifice, as the width of the nave is much more than that of the tower. The church, including the tower, is 146 feet long, 53 feet 8 inches wide, and measures 47 feet 10 inches high. The regularity and simplicity of the design are at once apparent. The chancel and nave are uniform in width and height, and the aisles extend from end to end in unbroken lines. It is impossible to say what was the earliest form of the east window, but there is little doubt that it consisted of three simple lancets, one jamb of each of the side-lights having been found in the east wall. On the south side of the east window is a beautiful fenestella,



HORSHAM CHURCH.

a niche enclosing a piscina with a shelf above to act as a credence. Altogether, the building of the thirteenth century had been erected at the least possible cost, as there are traces of very little if any ornamentation. In 1307 the chantry chapel was built adjacent to the north aisle, the name it received being "the chapel of the Holy Trinity," a part of which now forms the principal entrance to the church. The style of architecture of this chapel is known as the Early Decorated. It contains an elegant window of two lights at the east end and two single lancets at the north end. During the alterations of 1864 a small lancet window was also discovered in the west wall, and the piscina (which is in a perfect state of preservation) was removed from the south wall to the position it now occupies in the east wall. There is also a vault or crypt 19 feet in length and 14 feet in breadth, with a vaulted roof, which communicates with the churchyard by a pointed arch in the north end. The object of this vault is not known, but there is no foundation for the statement that it was intended as a place of interment. In 1447 Richard Wakehurst and others obtained a license to found a perpetual chantry in the church, which was known as the "Boteler's chantry." It is also supposed that in 1231, when John de Braose granted the church and its appurtenances to the prioress and nuns of Rusper, that the brotherhood who officiated had an oratory in this church, which is now known as the "Shelley" chapel, being the burial-place of that well-known family.

The church in the fifteenth century was considerably altered, the lancet windows of each aisle being blocked up or replaced by others in Perpendicular style. The east windows of the chancel and aisles were similarly treated, the clerestory windows only remaining untouched. Some of the new windows showed considerable taste and skill, being remarkably fine specimens. From 1550 the church seems to have fallen into decay, and its stability was endangered, either by the sinking of the ground below the foundations or the excavations for vaults under the columns, causing the nave to lean towards the north and east; and at different periods steps were taken to prevent it falling in by masses of masonry and supporting girders.

In 1634 it was noticed that there were three coats of arms of the Mowbray family alone, and in the east window were no less than fourteen coats of arms of ancient families. The font

belongs to the fifteenth century, and is of Sussex marble, octagonal in form. The vestry is a large square building, and consists of two rooms, the upper one being used as a muniment-room. It contains a very large old chest, which must have been put together where it now stands. The lower room communicates with the church by a fine old oak door, which is probably coeval with the building.

The venerable church, owing to neglect and want of funds, however, was allowed to crumble and deteriorate until in 1864 its condition was seen to be a discredit to the town, and the thorough restoration of the building was taken in hand by a committee of the principal inhabitants. The restoration included "the reconstruction of the nave; rebuilding and adding a wing to the south aisle; removal of the galleries; reseating the church; readjusting and strengthening the roof; throwing open the fine entrance, through the belfry and tower-arch, into the church; providing for ventilation, light and warmth, and generally repairing the whole building."

The pews are now all of oak, the seats in the choir being a little more ornamental than the others. The stained-glass windows in the church are both numerous and beautiful specimens, but too much space would be required to enumerate all; still, mention must be made of the large east window in the Perpendicular style by O'Connor, the funds for which were provided by ladies of the parish. The restoration, which cost about 12,000*l.*, was completed by November 14, 1865, and the Bishop of Oxford preached at the reopening service.

#### Monuments.

There are three monuments in the church of especial interest. On the south side of the altar on a tomb with escutcheons is the effigy of Thomas, Lord de Braose, the last of the Chesworth branch of that family. It would be noticed that he is in the military garb of the time of Richard II., and his head is defended by a basinet, adorned with jewels, his arms and legs being in plate armour. The one on the north side of Purbeck marble belongs to the Hoo family, the canopy also being of marble. On the south side, behind the De Braose monument, is an altar tomb to the memory of Elizabeth, wife of Thomas Delves, who died December 2, 1654, and was only in her twenty-sixth year. On the chancel pavement is a brass figure of an ecclesiastic, the head and inscription of which, however, are missing. From the dress, and the letters T and C in the border of the embroidery of the cope, it is probably to the memory of Thomas Clark, vicar, who died in 1411. At the east end of the south aisle are two mural monuments—one to Robert Hurst, Esq., who represented Horsham in Parliament for many years, who died in 1843, aged ninety-three, and his wife and daughter; the other to Bonella Simpson, wife of a vicar of Horsham, who died the same year, aged forty-two. During the work of restoration a large number of monuments were removed from the walls and placed in the tower, including three of the Shelley family—Sir Bysshe Shelley, who died in 1815, aged eighty-three; Sir Timothy Shelley, Bart., died 1844, aged ninety-one; and Elizabeth, his widow, who died 1846, aged eighty-three. There is also one to the poet Shelley.

There is in the tower a curious brass plate, all in block letters, to the memory of a South London lady, which reads as follows:—

"In a grave near this spot lyeth y<sup>e</sup> body of Vrsula Slade who d<sup>d</sup> at Horsham Park 10 Novemb 1797 æt<sup>is</sup> 81. She was y<sup>e</sup> y<sup>t</sup> da<sup>r</sup> of Thomas Slade of Battersea in y<sup>e</sup> C<sup>y</sup> of Svrrey Esq by Mary his wife da<sup>r</sup> of George Vandyke Esq a collateral descendant of Sir Anthony Vandyke K<sup>t</sup>. This brass tablet was erected to y<sup>e</sup> memory of y<sup>e</sup> s<sup>d</sup> Vrsula Slade by her niece Sarah Smithe of Horsham Park in this parish."

On a stone slab near by is a memorial to a barber-surgeon named Pyke, of which the following is a copy:—

"In this seat here lyeth  
ye body of Thomas  
Pyke, Barber Chyrurgion  
who departed this life  
the 15th day of Novemb  
in the yeare of our  
Lord 1681, and in remembrance  
of him, this monument  
was erected by his  
brother John Pyke."

In the churchyard, but in different parts, are two stones with peculiar inscriptions. One of these is to a man, and all that appears on it is, "He was;" the other, to a woman, "She was." The splendid organ was built by Willis, of London. There is a fine peal of eight bells, the last two being added in 1752. The tenor bell weighs 23 cwt. 3 qrs. 16 lbs. Horsham has been a vicarage since 1229, the first vicar being Roger de Wallingford, who was appointed by the prioress of Rusper in 1231. The present vicar is the Rev. Canon Evan Daniel.

St. Mark's Church, in North Street, was erected in 1840 as



a chapel of ease to the parish church, the site being given by Mr. Thomas Coppard. In 1878 it was entirely remodelled for Canon Bridges from designs by Mr. Loftus Brock, F.S.A.

#### Chesworth.

What is now the residence of Mr. George Longley was in the thirteenth century a fine baronial house, with an extensive manor attached. When Edward I., in 1299, was travelling in the district he passed at least one night, June 30, in the house, and on September 2 and 3 in the same year, when journeying to Canterbury for the purpose of celebrating his second marriage, he also stayed there, the mansion at that time being possessed by Lord William de Braose, probably the seventh in descent from the De Braose who landed with the Conqueror, and who died in 1326. Edward II., two years before this event, had honoured the Lord of Chesworth with his presence, the date being September 4, 1324. It was from Chesworth this monarch gave permission to Stephen de Power to delay compliance with a proclamation which ordered him and all persons who owned lands valued at 40*l.*, or rent or fief worth 40*l.* a year, to take up arms fit for knights before Michaelmas. King Edward II. whilst here also granted a pension of 70*l.* to Wm. de "Brewosa," who, with his heirs, had given to him "the vill and castle of Brambre" and Shoreham, at which sum they were valued. The king's expenses when at Chesworth are stated to have been 10*l.* 19*s.* 3½*d.* It would appear that his daily expenses during this tour in Sussex amounted to about 11*l.* a day, as at Shepeley (Shipley) the day before they were within a few shillings of that sum, the details being:—Dispensary, 18*s.* 11½*d.*; butlery, 33*s.* 7½*d.*; wardrobe, 4*s.* 2½*d.*; kitchen, 20*s.* 1½*d.*; hall and chambers, 5*d.*; stables, 64*s.* 6*d.*; wages, 59*s.* 9½*d.*; and alms, 4*s.* From an inventory made in 1547, the house consisted of eighteen rooms, besides the hall, chapel and offices, among the latter being the kitchen,



CHESWORTH.

pantry, scullery, brewhouse, bakehouse, slaughterhouse and smith's forge. A chamber and bedstead were also attached to the latter, the slaughterhouse also containing beds. In the chapel attached, which was said to have been "handsomely furnished," there were a number of altar cloths. Most of the furniture of the house, also the hangings and curtains, are stated to be "olde and woryn," but as it had probably been in the De Mewbray and Howard families for very many years their "ragged" appearance is not to be wondered at. This inventory also gives the number of bedsteads in the house as 21; there were also 74 feather beds, but only 118 blankets, 13 "pillars" of down, and 9 mattresses; no more than 2 chairs are given, but there were 11 tables with "trestylls."

Thomas, Duke of Norfolk, who was arrested for high treason, and executed on June 2, 1572, appears to have been the last personage of importance who lived at Chesworth, and from a survey made in 1638 the house and premises were stated as being in a very dilapidated condition, and rapidly falling into decay. Mr. Charles Eversfield subsequently became lessee, by whose descendants it was afterwards purchased. They also built Denne as a family seat, and it is probable a portion of the old ducal home was pulled down and the materials used for the new residence, as when Denne was repaired about the middle of the last century oak timbers of great antiquity were found there. It is averred that a subterraneous passage existed between Chesworth and Denne, but Mr. Longley's son informed me no trace of such a passage had been discovered. Although Chesworth stood low, it was surrounded by a moat, portions of which, as we saw, still remain. The chapel is now divided into different departments,

and serves the purposes of kitchen, dairy and storehouse. This chapel was probably added to the house about the middle of the fifteenth century, judging by the architecture of the existing remains. Bedrooms at one time ran across the upper part of the chapel, but fire destroyed many of these long ago. The present appearance of the old baronial manor is a fair-sized farmhouse. The original form of the house is uncertain, as it was much altered and repaired during the last century, but it probably towered higher than at present. Numberless are the traditions that could be noted in connection with this old-time residence if space permitted, but we are assured of this fact—for many centuries it was the home of the oldest baronial families of the land, and several times the kings of England bearing the same name as our present beloved Sovereign supped and slept there.

#### The Poet Shelley.

With Field Place, on Broadbridge Heath, is associated the birthplace of the Sussex poet—Percy Bysshe Shelley. Beyond this there is nothing remarkable about the house, which I am informed has been considerably altered at different times, the portico having been added to the original building. The mansion is now occupied by Major and Mrs. Travers (through



FIELD PLACE.

whose kindness we were permitted to inspect the room in which the poet was born), but the Shelley family are expected to again be in residence there in September. The poet, as we saw from the plate in the bedroom, was born there on August 4, 1792. His grandfather, Sir Bysshe Shelley, of Castle Goring, was an eccentric personage, and spent the last twenty years of his life at Arun Cottage, a small farmhouse in Horsham. He was succeeded by his son Sir Timothy, who married Elizabeth Pilfold, and the poet was their eldest son. Percy spent his first few years at Field Place, his sisters being the boy's only companions, and he shared their education for a time. Having no male friends, he never acquired a taste for the sports and games common to boyhood. His first school was Sion House, Brentford, but he was far from happy there, being subjected to much rough usage. At thirteen Shelley was sent to Eton, where his whole spirit rebelled against the ill-treatment meted out to him by both masters and boys. When only eighteen he passed on to Oxford, and at that age wrote "Queen Mab," having previously composed several poems while spending his vacations at Field Place, which gave such evidence of genius that they were printed for private circulation. Whilst at Oxford, it is said, he would read for sixteen out of the twenty-four hours, and subsisted chiefly on bread. Among other peculiarities of his nature, he would throw stones into a pond for hours, sail paper boats or shoot at a mark with the duelling pistols carried in his pocket. He was fond of Greek and the physical sciences; indeed, he studied hard whilst at University College, being set down as a recluse. With a Mr. Hogg he published a pamphlet with the title of "The Necessity of Atheism," which aroused a storm of indignation, resulting in both being expelled from the College. At that time (1811) he was engaged to a cousin, of whom he was passionately fond, and his expulsion resulted in the engagement being broken off and his father being much displeased with him, especially as he would not break off Hogg's acquaintance. He came to London and was allowed 200*l.* a year by his father. His sisters, too, sympathised with him, and sent him many gifts through a Miss Harriette Westbrook, whom he married, after a short acquaintance, at Gretna Green, although she was much below the poet in social position and not at all suited to him. Two children were born of the marriage, but



after three years they separated, and his wife shortly afterwards committed suicide by drowning. Shelley wished to regain possession of their two children, but the Court of Chancery forbade him removing them from the custody of Mr. Westbrook, their grandfather, who had settled 2,000*l.* upon them. This caused the poet much grief, as he was set down as a profligate. Shelley passed the summer of 1814 in Switzerland, where he made the acquaintance of Lord Byron, and shortly after his wife's death in 1816 he married Miss Mary Godwin, the authoress of "Frankenstein," with whom he went to Italy. He never afterwards returned to his native land. "Alastor," his first mature poem, was written just prior to his first wife's death. At Rome he wrote "Prometheus Unbound," undoubtedly his finest composition, and from 1818 to 1822, when he too was drowned, his intellect and pen gave evidence of vast energy by the number of poems and other pieces produced. It happened on July 8, 1822, while returning in his own boat to Lerici, on the bay of Spezzia, where he resided. Always fond of the water, he had just previously purchased a small yacht, and, in company with a Captain Williams and a boy named Vivian, they left Leghorn, whither he had been on a visit to Lord Byron and Leigh Hunt, when suddenly a storm arose, and the boat went down almost instantaneously, all three perishing. Their bodies were washed ashore, and, in accordance with Italian law, cremation followed, among those present at this sorrowful function being Lord Byron, Leigh Hunt and Captain Shenley. Notwithstanding Shelley's many eccentricities and peculiarities, he had a large circle of friends, by whom he was held in high esteem. He was liberal, and, when he had the means at command, even generous, striving in his own way to serve his generation. While there was in his life much to regret, we as Englishmen cannot but admire his genius and the beauty of the poetical music he has bequeathed us. Among the miscellaneous poems by which he is best known, the "Ode to the Skylark" and "The Cloud" give undoubted evidence of the master hand, in addition to showing his grip of human nature, as the following well-known lines undoubtedly demonstrate:—

We look before and after,  
And pine for what is not;  
Our sincerest laughter  
With some pain is fraught;  
Our sweetest songs are those that tell of saddest  
thought.

#### Warnham,

like its near neighbour, Horsham, is in the Hundred of Singlecross and the Rape of Bramber. The manor was held by William de Saye in 1272. The church, in the Early English style, is dedicated to St. Mary, the tower belonging to the Norman period. This is said to be quite as old as Horsham church tower.



WARNHAM CHURCH.

A chantry, dedicated to St. Margaret, is mentioned, under date of 1518, by Cartwright in his description of the church; he also speaks of the site of an altar-tomb, with three shields and quatrefoils, of the time of Edward I. To Sir John Caryll, Kt., who died in 1613, and his wife, Maria, there was a monument in a good state of preservation. The Michells, who preceded the Shelleys at Field Place, are also commemorated.

A marble tablet, with elaborate pillars, on the south wall near the chancel, is in memory of Frederick Murray Lucas, youngest son of Mr. C. I. Lucas, who died suddenly from

cholera at Surat, in India, while travelling round the world in 1887. He was only in his twenty-eighth year.

In the Shelley chancel are several curios, and the village stocks are there fastened to the wall. We also noted the huge padlock on the chest near by.

The pews are all oak, as are the entrance door and the beautiful chancel screen.

In 1847 it was enlarged, and in 1886 Mr. C. T. Lucas, of Warnham Court, spent some 9,000*l.* in restoring the sacred edifice. The chancel was then rebuilt, the floor relaid with marble mosaic and several additions and alterations carried out.

The living is in the gift of Mr. Lucas, the present vicar being the Rev. R. Bowcott.

Near Warnham Pond, where the poet Shelley in his childhood passed many happy hours with his miniature boats, is the mansion of the Carylls; and Warnham Court, before referred to, is a handsome mansion built in the Elizabethan style.

Gentlemen, I thank you for favouring me with your company and for the patient hearing you have given these "rambling" remarks, which have principally been obtained from Miss Hurst's book on "Horsham" and Lower's "History of Sussex." We have in ideal spring weather covered new ground abounding in many historic details, and my hope is all have enjoyed and will retain pleasant recollections of the tour made this afternoon in the neighbourhood of Horsham.

The illustrations are from photographs by Mr. Charles Wheeler, Mr. Henry Virgoe, and Major Travers.

### SOCKBURN, DINSDALE AND HAUGHTON-LE-SKERNE.

A LARGE party of members and friends of the Architectural and Archaeological Society of Durham and Northumberland visited Sockburn, Dinsdale and Haughton-le-Skerne on the 5th inst. Shortly after 10 o'clock the company left Darlington railway station in brakes, and drove to Eryholme, on the Yorkshire side of the river Tees, passing *en route* through picturesque scenery. Eryholme Church was viewed. It is an interesting building. About fifteen years ago, as explained by Mr. C. C. Hodges, it was restored. In the carrying out of the extensive scheme certain features of antiquarian importance were removed, but, thanks to Mr. Hodges, the visitors had the satisfaction of seeing, through the medium of photographs, interior and exterior, the ancient edifice. Though much of the latter had actually gone, nothing Mr. Hodges stated, had been destroyed, excepting a lancet window at the east end of the aisle of the nave. The architecture of the church is late Norman, excepting the chancel, which is of the Decorated period.

At Sockburn, the next place visited, there was abundance to engage attention. The ruins of the old church, which carry one back in thought to pre-Conquest times, derive a special attractiveness from their close and prolonged association with one of the oldest families of the north, namely, the Conyers. The privilege of being upon the historic spot was enhanced by remarks from Dr. Greenwell, who said that it appeared in every way probable that the site would be occupied in prehistoric times, though there existed no real proof of that. In the reign of Henry VIII. Leland referred to it as being "of ancient time the very inheritance of the Conyers." The name Sockburn seems to have been originally Soccesburgh, or the buhr of a soke, a franchise, a buhr being a fortified place. Under Anglican occupation there was a church and cemetery at Sockburn. That there was a cemetery there was proved by the finding of sepulchral crosses and grave covers. In the year 780 or 781 they had historic notice of Sockburn, Highbald being then consecrated Bishop of Lindisfarne. Then in 796 Eanbald was there consecrated Archbishop of York. Consequently it must have been a religious house of some importance. In the year 883 Guthred, redeemed from slavery and made King of Northumbria through St. Cuthbert, presented the place to the latter, and so it came into the possession of the Church. Early in the eleventh century Sockburn was given by Flambard to Roger de Conyers, who held the land by presentation of a falcion to the Bishop of Durham, then Prince Palatine. The falcion was exhibited, and Dr. Greenwell referred to the legend to the effect that a member of the Conyers family had slain a worm with the weapon. From Roger de Conyers descended a long line of Conyers, who branched off into a great number of lines. The family, in fact, remained at Sockburn for many centuries, and became a very important house, not only in the county of Durham, but also throughout Yorkshire and other parts of England. Dr. Greenwell knew of no other house which had spread more widely, and yet he did not think there was left a Conyer of the male line, and very few of the female line. Sir Thomas Conyer, in fact, the last baronet of the line, got into such impecuniary circumstances in 1810 that



became an inmate of Chester-le-Street workhouse. By subscription a fund sufficient to take him out of that institution was raised, and he died some years later in possession of a decent income. There were still living representatives of the male line, Sir Thomas having several daughters who married into humble life. They were, Dr. Greenwell continued, indebted to Sir Edward Blackett for having taken the most anxious care not only of the ruins, but also of valuable stones which until lately had been entirely neglected. Sir Edward instructed Mr. Knowles to roof the ruins of the Conyers chapel, into which those interesting relics had been placed. Mr. Knowles gave an account of the ruins and of the work he had done for Sir Edward Blackett. At Sockburn, he said, they had evidence of two Saxon churches. A fine mailed effigy of a Conyers of the early part of the fourteenth century, together with ancient crosses and grave covers, were also described by Mr. Knowles, after which Mr. Hodges put before the company a few details of the falchion.

Resuming their tour, the archaeologists in due time reached Marsdale, the parish church of which was the subject of remarks by Mr. Knowles, Dr. Greenwell and Mr. Hodges. The last-named gentleman called special attention to a memorial stone, upon which is recorded the death of a member of the Surtees family in 1360. It is the oldest English inscription of the kind in stone relating to the family, according to Mr. Hodges. Haughton-le-Skerne Church contains much of Saxon or Saxonized architecture, and within its walls the party spent a delightful half-hour. Recent renovations and alterations have, in the case of Eryholme, deprived the edifice of not a few of its attractions. Much of the handsome old woodwork, however, remains, the pews, pulpit, stalls, &c., being conspicuous in that respect. Mr. Hodges's references to these were received with evident gratification, as were also his observations upon the general architecture of the church.

Upon their return to Darlington the party dined at the North-Eastern hotel.

## CUMBERLAND AND WESTMORELAND ARCHÆOLOGICAL SOCIETY.

THE first meeting of the season of this Society was held last week in the Gosforth district. The party assembled at Sellafield on Wednesday, the first day, and there took coach to St. Bridget's, Beckermeth, where Mr. W. G. Collingwood described two very old crosses and a stone altar slab. He said the inscription upon one of the stones was at one time supposed to be Runic, but that idea had now been abandoned. It was probably Manx of the eleventh or twelfth century. Dr. Parker described the bells of the church, which were of the pre-Reformation period. From St. Bridget's the party drove to Beckermeth, where after luncheon they had an opportunity of inspecting the relics collected by Mr. J. D. Thompson, of Warwickstead. They had mostly been found in the neighbourhood a few years ago during the draining of Gib Farm. Among them were stone hammers, axes and other implements, middle-clubs, a sword club, a canoe and various other subjects of interest.

The Rev. W. Gabbot afterwards received the party within St. John's Church, Beckermeth. Here six ancient crosses, four slabs, many grave slabs and two pitchpipes were inspected and observations were made with regard to some of them by Mr. Collingwood and Dr. Parker. Mr. Collingwood, referring to one of the crosses, said he had been told that in all pre-Norman dragon crosses the eye instead of being nearly circular comes to a little point at one side, and when that little point looks forward the carving is Irish, but if it looks the other way it is of Danish origin. If that was so, then in this case the little point on the eye showed this cross to be of Irish origin. That was very interesting as indicating the close connection of early Irish Christianity with the missioning of this part of the country, and the coming over of the Irish in the tenth and eleventh centuries. The interlaced crosses began with the Newcastle Cross, 681; the Irish introduced later forms in the tenth and eleventh centuries, and in the twelfth century there are still interlaced works done.

Dr. Parker made some remarks on the fonts and some other features of the church. There was a thirteenth-century font, the finest in Cumberland, traditionally supposed to have come from the chapel situate where Caernarvon Castle used to be, but it was far more rational to suppose it was from the site of the earlier church there. That no doubt was an Early English church, and some of the remains showed that it was of very great beauty. There was a pre-Reformation font which could hardly be later than 1500. Outside was an enormous grave slab, which no doubt covered the grave of a Fleming, of Caernarvon Castle.

The coaches proceeded to Calder Abbey. The weather aided by this time got out fine and warm, and for the remainder of the day was most genial and enjoyable. Stopping just outside of Beckermeth Dr. Parker pointed out the site of Caernar-

von Castle, and gave a lengthy account of what was known of it. It never was a castle in the proper sense of the word. All trace of it would have been lost but for an account of it written over 200 years ago in the Le Fleming pedigree and elsewhere. As the name is British there can be little doubt that a tribe of Britons or "Welsh" had their caer or encampment on or around this hill from a very early period. It was probably a stronghold of the post-Roman Britons.

Proceeding to Calder Abbey, the party viewed the ruins and had them explained to them very lucidly and with great detail by Dr. Parker. Everyone was highly pleased with this part of the programme. Mr. Rymer received the visitors personally and with the greatest cordiality and kindness, and every facility was afforded for seeing these noble ruins and their beautiful surroundings. The abbey was founded in 1134 by the second Ranulph de Meschines (son of William de Meschines, the founder of Egremont Castle) possibly during his last illness, for the health of his soul, for he died shortly after. The abbey was a church, hospital and school in one. The ruins were plundered of their stone and changed hands through a succession of modern owners. The abbey was finally purchased by the late Mr. Thomas Rymer, who spent a large sum of money in repairing it and preserving it against further dilapidation.

After viewing the ruins, the party was entertained to refreshments by Mr. Rymer, who afterwards accompanied them on foot by way of the Long Walk to Calderbridge, where the coaches were regained at 5.30.

The next visit was by coach to Ponsonby Church, which was restored in 1874. It has a thirteenth-century chancel arch, and in the windows are some fragments of old stained-glass probably brought from Dalegarth Hall. The church was given to Conishead Priory in the thirteenth century, and at the Dissolution fell to the Crown, from whom the Stanleys bought it about 1689.

Coaching back to Seascale, the party arrived for dinner at 7.30, after which the annual meeting of the Society was held, and the evening was spent in the reading of a number of papers.

The programme of the second day included a visit to the Danish Camp on Windhall Farm, Gosforth; and visits to Gosforth Hall, Gosforth Church and Irton Hall and Cross.

## JOHN RUSKIN.

A LECTURE on "Ruskin as I knew him, and as he has impressed me," was given by Sir W. B. Richmond, R.A., at a meeting of the Ruskin Union. It was longer ago, he said, than he could definitely remember when he first saw John Ruskin at the house of his (the lecturer's) father, George Richmond, R.A., who met him in 1838. Ruskin contracted a close friendship with the family. His masterful and engaging personality, so magnetic and stimulating, acting on the minds of children, could not fail to impress on them an indelible stamp. Whether one agreed with all the master thought or not, his influence on one's mind stuck fast and inspired the desire for beauty, not only in art but in life. The position of Ruskin was now assured, and the great master stood out for ever as a shining light to this century. The first impression he produced on one's mind was that he was immensely opinionative, which was true; but he had a good right to his opinions. He prided himself on his critical powers, but he was distinguished by great modesty. No one was more critical of himself, and the style was so convincing that his criticism of himself added strength to his inspiring power. He was characterised by great kindness, consideration and nobility, and there was not the least vanity or snobbishness in his nature. He suggested that the Ruskin Union would do well to organise an exhibition of Ruskin's works, with the object of promoting a knowledge of the master's many-sided genius.

## EDINBURGH ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon a large party of members of the Association visited St. Monans, Balcaskie and Pittenweem. At St. Monans the fine old church was visited, and an historical account of it was given by the Rev. John Turnbull, Mr. P. Macgregor Chalmers, architect, afterwards describing the work he had recently carried out on the ancient building. Mr. Henry F. Kerr, president of the Association, congratulated Mr. Chalmers on the work of restoration he had accomplished, and also moved that Mr. Baird, of Elie, who defrayed the cost of restoration, be accorded a vote of thanks and appreciation for doing so much to preserve the old church. The party then drove to Balcaskie where, through the courtesy of Sir Ralph Anstruther, the house and gardens were visited and greatly admired. The drive was continued to Pittenweem, and the old church, priory and lane were inspected. The visits were full of interest, but the enjoyment was greatly marred by the rain, which fell in torrents towards evening. Sir James Graham, mayor of Sydney, was among the party.



## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE summer examination of the Scotch candidates took place in Glasgow in the School of Art Building, 167 Renfrew Street, by favour of Mr. F. H. Newbery, headmaster. The examinations were in charge of the president of the Glasgow Institute of British Architects, Mr. Horatio K. Bromhead, assisted by Messrs. John Hutcheson, T. L. Watson, A. M'Gibbon, Jas. Lindsay, Wm. Fraser, Jas. Lothead, and were concluded in the rooms of the Glasgow Institute of British Architects, 187 Pitt Street, on the 12th.

## THE NATIONAL GALLERY AND WOODEN STANDS.

THE First Commissioner of Works, says the *Times*, admits that the responsibility for the erection of wooden stands for Coronation Day in close proximity to the National Gallery rests primarily with his department; but he states that the Trustees of the National Gallery have been kept fully informed of what (following the precedent of 1897) has been going on, and that they have raised no objection. No pains have been spared to secure the safety of the Gallery, and the stands are watched at night by police stationed there for the purpose, such police being visited at intervals by the chief police officer in charge of the building. The hose is connected at six points, and all is ready for immediate use. Hand-pumps have also been supplied. By the courtesy of the County Council, Mr. Akers-Douglas arranged some weeks ago that all the stands should be visited by firemen periodically, and that Captain Wells should advise as to any steps which he might consider necessary, having regard to the adjacent buildings. His recommendations will in all cases be carried out, and in the meantime fire-buckets, hose and other appliances are kept in the utmost readiness at the National Gallery, and the staff are advised to be constantly on the alert. Similar precautions as to watching, and as to the provision of hydrants and fire-hose, have been taken in regard to all stands which have been erected by the Office of Works.

## THE STRAND CRESCENT.

THE report of Mr. Norman Shaw and Mr. W. E. Riley, the County Council's superintending architect, on the eight designs sent in for the erection of buildings proposed to be erected fronting the Strand and on the crescent road to be formed between Wellington Street and Clement's Inn, has been printed. After the public exhibition of the designs, and the receipt of the experts' report, the envelopes were opened and were found to be as follows:—No. 29, Mr. Leonard Stokes; 27, Mr. William Flockhart; 26, Mr. Henry T. Hare; 23, Mr. Ernest George; 21, Mr. Reginald Blomfield; 20, Mr. Mervyn Macartney; 19, Mr. Edward W. Mountford; 17, Mr. Ernest Runtz. Mr. Norman Shaw and Mr. Riley in their report and say:—

We have studied the eight sets of designs submitted for the proposed new streets from Holborn to the Strand with great care and with the deepest interest, and we are pleased to be able to report that in our opinion the architects invited by the London County Council have made a most admirable response to the invitation.

Throughout there is the strongest evidence that each architect has done his very best, and has left no stone unturned to produce a design which in his opinion would be worthy of this great opportunity, and though there may be a difference of opinion as to how some have succeeded, it is a great pleasure to be able to record the fact that not merely has a great effort been made, but that the measure of excellence attained is exceptionally high. Moreover, each one has endeavoured to present a commercial adaptation of his design for the consideration of the Council, and has carefully observed the instructions issued, so that we have no hesitation in reporting that condition iii. has been amply fulfilled. (Condition iii. provided that the designs should be in conformity with the Council's instructions.)

It would be both unnecessary and invidious for us to go through all the designs and to attempt to allot to each what we conceive to be its relative place. Mr. Norman Shaw desires personally to say that he would rather have limited his recommendation to one design only, but as we have been requested to select the three best designs, we venture to submit the following remarks:—

It is with feelings of unalloyed satisfaction that we observe that the authors have almost unanimously adopted a large

measure of restraint in their designs instead of the very full and varied developments to which we have been too much accustomed in our street architecture for some years. We have in these designs, mostly, quiet and dignified proportions more or less academic in character. We invite attention to this point as there can be little doubt but that the result of these great "Improvement Schemes" which the Council is carrying into practical effect will exercise immense influence on the architecture of London and also the country generally; and it is hardly necessary to dwell on the extreme importance of this being a good influence. It is much to be regretted that the eight architects were not given some indication of the style to be adopted, as we feel that time has come when the hesitation between the claims of the called Classic and Gothic treatments and the constantly disturbing influences of foreign architecture must cease if we are to make any real progress, and that we shall do better in the future if we adhere more closely to the great examples we have of the English Renaissance and follow on the lines bequeathed to us by such truly great masters as Inigo Jones and Christopher Wren.

It is remarkable, however, that with no limitation of style eight architects should have been found whose views and were so closely governed by the influences of the Renaissance, but if the limitations of English Renaissance had been adopted it would, in our opinion, have simplified the task and insured a more direct and probably a more satisfactory result. It is this absence of limitation of style which has necessitated the comparing designs which are in some respects not easily comparable, and our adjudicating on productions which we find difficult to approach without some tinge of prejudice.

After much deliberation and careful consideration of all circumstances and particulars of the conditions under which the invitation was issued, we have agreed on the following recommendations:—

We place No. 26 first. The author has dealt with the plan in a simple and ingenious way, and has overcome the difficulty of skill of treating the various street corners. The main lines of the setting out as originally approved by the committee are not materially departed from. Drury Lane and the corresponding street on the east side of the new road are shown to be arched over. Perhaps it may be considered that this would not be admissible, but it adds much to the artistic treatment of the façade. The architect of this design has dealt with the Strand front as devoted to a public building, but he shows thorough appreciation of artistically adapting other portions of the improvement to commercial purposes. On the whole, the treatment is such that the committee might reasonably expect lessees to carry out designs not inferior to these in point of cost.

We place No. 27 second. This architect deals with the commercial adaptation of the design quite as literally as No. 26. It is much to be regretted that he has adopted a decided French bias, as there is much skill and artistic feeling in the drawings, and we feel that if he had kept within the tradition of English Renaissance the result would have been much better suited to the grand site which is intended to be treated, but the skill and power shown in the design cannot be set aside on that account, as style was evidently not intended to govern the issue. This design would probably be more economically carried out than No. 26, and therefore has under that head, claims to attention; but we repeat the regret that the influence of French architecture has been so perceptible in a design which is intended for one of the finest sites in British capital.

We place the design of No. 20 third. In its artistic value it is very unequal. The arrangement on the plan for the circus at the south end of the new street to Holborn is a simple and dignified suggestion. The elevations for the north side of the curved streets are, however, feeble, but this appears rather to be due to the poorness of the drawings. Other portions of the design, especially the alternative design for a public building, possess great dignity and show scholarly perception of the importance of the site. It would, however, probably be more costly to carry out than No. 26. It may practically be considered the most expensive of the three.

We desire also to offer a word of comment on the very carefully thought-out block plan of No. 29, but the proposed amendments are, on the whole, not an improvement on the simple treatment of the Council's property suggested in the other designs, though the Somerset House extension is a conception which, if properly worked out, would add great dignity to the scheme.

It must be borne in mind that all the designs are little more than preliminary studies. We do not see how it is possible to suppose that they can be in any sense fully matured, as the governing conditions of plan, which are so helpful in designing elevations, are necessarily absent at this stage, and in selecting the above-mentioned designs we have been largely influenced by a feeling that they possess elements capable of being developed into works of great excellence.



## FOREIGN ART STUDENTS IN ITALY.

THE Foreign Office has received from His Majesty's Chargé d'Affaires in Rome the law regulating entry, without payment of the ordinary fee, to the national museums, libraries, excavations and monuments of Italy, which has been approved by the Royal Decree of April 13, 1902. The privilege of free entry is by the law accorded to foreigners who—(a) artists; (b) art students and art critics who have issued worthy publications; (c) professors of archaeology, history, literature and art; (d) pupils of archaeological, historical and institutions, students in the departments of literature and philosophy, and in schools of practical engineering. Applications for a general permit for free entry to all museums, &c., must be sent to the Ministry of Public Instruction on stamped paper of 1 lira 20c., with an unmounted photograph (of the applicant) not to exceed 5 centim. by 8 in size. Applications for free entry to archaeological and artistic institutes in a large town must be sent on stamped paper of 60c. to one of the heads of the institutes; and if the permit is required for more than a month a photograph must be sent of the size mentioned. The applications must be accompanied by the following documents: for persons under (a) and (c), by an academic document *visé* by the Italian diplomatic representative or consul in the country to which the applicant belongs, or by the diplomatic representative of that country in Italy. For persons under (b), by one of the publications which they have published. For persons under (d), by an official document showing that they stand on the books of the institutions mentioned under that heading, for the year in which they apply. The document must be *visé* as in the case of the documents furnished by persons under (a) and (c). As His Majesty's diplomatic representative in Rome is not always in a position to authenticate without previous inquiry documents issued by institutions in the United Kingdom, art students, &c., are recommended to have such documents countersigned by Italian consular officers in this country before leaving.

## GREEK ART IN TURKESTAN.

THE Royal Geographical Society on Monday Dr. M. A. Stein, of the Indian Educational Service, gave an account of his archaeological discoveries in the southern portion of Chinese Turkestan, and particularly in the region of Khotan, made during his journey expressly undertaken by him at the instance of the Indian Government for archaeological explorations in 1900-1. The plan of explorations had been suggested to him by the reports and evidences of a series of antiquarian discoveries made in and around Khotan which had been acquired by the political agents of the Indian Government in Kashuni, Liak and Kashgar, as finds made by native "treasure-seekers" in the distant desert region of Khotan. A curious feature of these discoveries was that they contained not only undoubtedly ancient documents in Indian and Chinese characters, but also a large proportion of manuscripts and "lock-prints" in a surprising variety of entirely unknown scripts, and antiquaries were greatly puzzled by them. Leaving Calcutta in April 1900 and passing through Kashuni and Ghit, Dr. Stein reached Kashgar at the end of July. There a month was spent in familiarising the provincial Chinese Government with the purpose and character of the expedition, and throughout his long journey Dr. Stein appears to have received most intelligent and sympathetic assistance from the authorities of the province. Fortunately he was able to quote them the records of Hinen Tsiang's travels in this same region early in our own Christian era, and he remarked that all educated Chinese seemed to have read or heard legendary accounts of the famous Chinese pilgrim's journey to the Buddhist kingdoms of the "western countries." On September 11 he set out for Khotan, which he reached a month later. Much surveying had been done on the way, but at Khotan the expedition settled down to exploration. No site in the Taklamakan desert had offered such yields to the local treasure-seekers as the one known to them as Dandan Uiliq, and a week's march through shrivelled and gaunt trunks of trees, long since dead, lying in the sandy waste brought them to the ruins that had been rifled by the treasure-seekers. But systematic excavation, with sufficient supplies to pursue the work, had their reward, and revealed large numbers of stucco images and reliefs, mosaics and painted wooden tablets, all showing representations of saints and legends of sacred Buddhist lore—long lost relics of that Indian art which had found a second home in Buddhist Central Asia before spreading further into the Far East. Leaves of paper manuscripts came to light in Sanskrit, and documents written in Indian Brahmi characters, and some were dated with years corresponding to our eighth century, showing that Dandan Uiliq must have been abandoned, probably gradually, about that time. But reports came of a more ancient site fifty miles further east, where a young adventurer from Niya had picked up wooden tablets in an ancient Indian script belonging to the first century of our era.

Concealing his delight, Dr. Stein went off through the jungle and found, on January 27, 1901, the site of buried civilisation eleven miles from north to south and over four from east to west. Diligent research disclosed articles of ornamental wood carving, elaborately worked chairs, broken pieces of arms, household implements, musical instruments, broken pottery and over 200 documents of wood of all shapes and sizes, with Chinese writing, and Indian Kharoshthi documents on leather. Each document was provided with a carefully fitted covering piece, on which was inscribed the "docket" mark and fastened with string and a clay seal to give trouble to the curious. A frequently recurring seal, probably that of an official, showed the figure of Athene with shield and aegis, and another fine seal was that of a well-modelled nude figure of pure classical outline, probably of Eros. Others, again, showed classical figure outlines but barbarian features. Here was a discovery, therefore, which showed that classical art had penetrated halfway between Western Europe and Pekin. The early speculation of Hinen Tsiang is thus confirmed—that the territory of Khotan was conquered and colonised two centuries B.C. by Indian emigrants from the North-West Punjab. Another 100 miles march through the desert to another ancient site yielded similar discoveries, and back again at Khotan. In April Dr. Stein set out to the North-West to find Rawak, where the excavations revealed a remarkable series of colossal statues in stucco representing Buddhas, and painted reliefs and frescoes. The supporting woodwork of this treasure of sculpture had rotted away, but some of the smaller sculptures were brought out in good preservation. Dr. Stein subsequently had the pleasure of wringing a confession from Islam Akhun, who had manufactured the "treasures" in "unknown" scripts, which he had imposed on British officers and had so bewildered learned archaeologists.

## TESSERÆ.

## The Sceptre.

AS an ensign of royalty the sceptre is of greater antiquity than the crown. It was more especially characteristic of Asiatic manners, so that among the Persians whole classes of those who held high rank and were invested with authority, including eunuchs, were distinguished as the sceptre-bearing classes. The sceptre descended from father to son, and might be committed to any one in order to express the transfer of authority. Those who bore the sceptre swore by it, solemnly taking it in the right hand and raising it towards heaven. The original wooden staff, in consequence of its application to the uses now described, received a variety of ornaments or emblems. It early became a truncheon, pierced with golden or silver studs. It was enriched with gems, and made of precious metals or of ivory. The ivory sceptre (*eburneus scipio*) of the kings of Rome, which descended to the consuls, was surmounted by an eagle. Jupiter and Juno, as sovereigns of the gods, were represented with a sceptre. With the kings of France of the first race the sceptre was a golden rod as tall as the king himself. One sceptre of Charlemagne is 7 feet long, and so is that of Clotaire II.; but there are short sceptres also contemporary. The Anglo-Saxon sceptres are surmounted with crosses, a fleur-de-lis or a bird. A king of the eighth century has a long staff with a plain knob, but the short sceptre also occurs in the ninth century. The sceptre was distinguished from the verge. The staff of Edward the Confessor formed part of the ancient regalia. The verge was the symbol of Government and administration; the sceptre the mark of Imperial dignity. Sovereigns not only concluded treaties by the reciprocal delivery of these verges, but further used them to invest their successors in the supreme authority. Aristotle says that the sceptre was the symbol of truth, by which kings swore to judge with equity. The sceptre and verge for the left hand both occur, says Selden, in Anglo-Saxon coronations.

## The Sphinx.

What the Egyptians signified by this symbolical figure seems not to be exactly decided. It was probably the type of womanhood in which power is engrafted on beauty and gentleness. This they represented by a woman's face, neck and bosom, terminating in the body of a lioness, not in fierce or violent action, but in eternal repose. This is the nature of the passive principle, which receives within itself the germs of life and quickens and brings them to perfection, without any external manifestation of energy. Possibly also the Egyptians meant to insinuate that though the female sex is placed as our companion upon earth, it is never understood by us, but will remain, like the sphinx, an enigma to the day of doom. However, this may be taken for granted that the approximation of sphinx and pyramids was not altogether accidental. The stranger and the traveller who approach might learn from the mystic figure beneath the rocks that around him all was symbol and allegory, and that if he could not read the riddle of its existence he could scarcely expect to interpret the most



abstruse of all symbols on the sacred mount. In all ages there has been an esoteric philosophy, a doctrine and language confined to the few, and even now they who as travellers journey over the surface of the earth must veil a portion of their discoveries behind an obscure terminology. When perfect the sphinx, in all likelihood, formed the crown of Egyptian art. There is something inexpressibly majestic in the dusky head, suggesting the idea of a buried goddess, emerging from beneath the sands; and if we contemplate the outline of the features, and restore what centuries have mutilated and marred, we shall probably have a perfect type of the beautiful as it existed in the mind of the Egyptians.

### English Crowns.

The first crown properly so called was that which appears upon a coin of Ædred, the son of Edward the Elder—a circle of gold surmounted with three small globes; but after the introduction of it a diadem or circle of gold was still worn. The Conqueror's crown was a circle or coronet of three rays, having pearls on the points crosswise, and between the rays fleurs-de-lis. William Rufus had a radiated or Eastern crown, with pearls on the points like an earl's coronet. In those forms they appear on their great seals. The coins have a diadem or circle, with a string of pearls in the middle and three rays with a pearl on each point. On some of Rufus's crowns arches of pearls appear. The crown of Henry I. shows three fleurs-de-lis, without any rays intermixed or pearls at the ears. Stephen's was an open crown fleuri. Henry II.'s crown consisted of points or pearls, commonly five, a cross in the middle of pearls; or a crown fleuri, three rows of pearls upon the circle. A crown fleuri belonged to Richard I. John's was similar; on his great seal rays like an Eastern crown appear. The great seal of Henry III. has a crown, with leaves like a ducal coronet; on his coins it has a thick line raised in each end, a large pearl in the middle, a fleur-de-lis, and three pearls or points below. The crown of Edward I. and Edward II. had also ducal leaves; on coins the crown has three fleurs-de-lis, with two rays or lesser flowers between. From Edward III. to Henry VI. the crown appears to have had leaves, three fleurs-de-lis and two rays between. On the great seal of Henry VI. an open crown fleuri with small pearls is introduced. The great seal of Edward IV. and Richard III. shows the double-arched or imperial crown; on the coins it is open. The crown of Henry VII. has crosses patée and fleurs-de-lis on the great seal; on the money a crown of one arch, with little crosses thereon saltirewise, surmounted with the orb and cross. The circle was composed of crosses patonce (the cross attributed to Edward the Confessor), a larger and smaller alternately. The seal has sometimes one arch, sometimes two; but from this time the arched crown, with crosses patée and fleurs-de-lis alternately, has been constantly used with very little variation, except upon the first money of Henry VIII.

### Freemasonry in England.

Nicholas Stone destroyed many valuable manuscripts belonging to the Society of Freemasons. Perhaps his master, Inigo Jones, thought the new mode, though dependent on taste, independent of science, and, like the Caliph Omar, held what was agreeable to the new faith useless, and what was not ought to be destroyed. In Malden's "Account of King's College Chapel, Cambridge," "Dr. Henry's History," and a "Treatise on Masonry," by William Preston, 1792, some account of the Freemasons, as relating to the subject of building, may be found. They appear to have been known in England about the beginning of the seventh century. They are said to have introduced the art of building in stone, and that the art of constructing walls to resist the thrust of a stone vault was their original mystery. It is more reasonable to suppose that the art of building stone walls is as old as stone quarries than that this society is as ancient as Solomon's Temple. About the beginning of the seventeenth century the art "de la coupe des pierres" was still held a secret, and the possessors of this mystery were called the "Cotterie." Maturin Jousse called his treatise from this circumstance "Secret d'Architecture."

### GENERAL.

The King has been pleased to give permission to Mr. Henri Favarger to accept and wear the insignia of the Third Class of the Imperial Ottoman Order of the Osmanieh, conferred upon him by His Highness the Khedive of Egypt, authorised by His Imperial Majesty the Sultan of Turkey, in recognition of his services to His Highness as Government Architect for the Prisons.

The King of the Belgians opened the exhibition of Early Flemish art in Bruges on Sunday. Many works have been obtained from English collections. The exhibition will not be closed until September.

Mr. F. W. Pomeroy has received the commission for a statue of the late Lord Dufferin to be erected at Belfast. It will be completed in two years.

The Court of Common Council have resolved to erect a crematorium at the City of London Cemetery at Ilford, at an estimated cost of about 7,000*l.*, subject to the approval of the plans by the Secretary of State.

The Act passed by the Prussian Parliament last session authorising the Prussian district authorities to prohibit the disfiguration of picturesque spots by the erection of open advertisements has been published in the official *Gazette*.

A Committee has been formed with the object of raising funds to establish cottage homes for disabled and deserving men of the 6th Inniskilling Dragoons. The homes will be established in memory of the fallen officers and men of the Inniskillings.

Messrs. John Barker & Co., Ltd., have arranged with the London County Council to erect a large block of buildings with a total area of about 21,600 feet, on the north side of Kensington High Street. The ground-rent will be 3,150*l.* per annum. There will be also a new building in Cromwell Crescent. The estimated outlay is 120,000*l.*, which will be raised by debenture stock.

Westminster Abbey is to be opened for a time after the Coronation, in order that the general public may have an opportunity of seeing the decorations and other arrangements carried out by H.M. Office of Works.

A Statue of Père Didon, the Dominican preacher, is to be inaugurated in the park of the Albert-le-Grand College at Arcueil. The work has been exhibited in the Salon, and is by M. Denys Puech.

Messrs. Merryweather & Sons, Greenwich, have entered into a contract with the London County Council for the supply of six new double-cylinder vertical steam fire-engines. These are to be fitted with all the latest improvements, including expansion gear and oil-fuel burners.

M. Charles Gérault has been elected member of the Académie des Beaux-Arts in succession to M. Coquart. He won the Prix de Rome in 1880. Among his works are the crypt and tomb of Pasteur and the Petit Palais in the Champs Élysées.

Mr. H. L. Storey has offered the sum of £10,000 towards the erection of a technical school in Lancaster which is to be in keeping with the Institute erected by the late Sir Thomas Storey.

The John Usher Institute of Public Health was formally presented to the authorities of Edinburgh University on the 11th inst., and an address was presented to the donor by the students.

The Directorate of the Universal Exposition, St. Louis, are offering a prize of 2,000 dols. (about 400*l.*) for an artistic design for a seal. The emblem or design must symbolise the history of the great Louisiana territory and its purchase by the United States from France in 1803. Fuller information may be obtained, by letter only, from the Resident Representative of the Exposition, Mr. George F. Parker, Sanctuary House, Tophill Street, Westminster.

A Request to the Council of the Society of Antiquaries to summon a special meeting to consider the question of afternoon meetings at 5 o'clock instead of evening meetings at 8.30 (as at present) is now being circulated amongst the Fellows. The request has already received 251 signatures, including five peers, eleven other persons of title, the Deputy-Keeper of the Public Records, the president of the Royal Academy, the director of the National Portrait Gallery, Norroy and Ulster Kings of Arms and seven other members of the Heralds' College, sixteen directors and officials of museums and libraries, eight cathedral dignitaries and four professors of universities.

The Corporation have made arrangements for the complete illumination of the City of London School, Victoria Embankment, and also Blackfriars Bridge. The Embankment from Westminster Bridge to Blackfriars Bridge will be illuminated by thousands of Japanese and ornamental lanterns, while Venetian masts, surmounted by gold spear-heads and bearing large national banners, will be fixed between the electric standards, each of the latter having a trophy of flags with a shield in the centre bearing the Royal monograms E. R. and A. R. Each mast and standard will be connected by festoons of garlands. Blackfriars Bridge will be illuminated with prismatic gas globes arranged in festoons, chandeliers of coloured globes being placed at equal distances.

Mr. James Brown Lord, who was one of the prominent New York architects, died on the 1st inst. His latest work was the marble Court House in Maddison Avenue, New York, which is the most remarkable of the modern public buildings of America. He was born in 1859.



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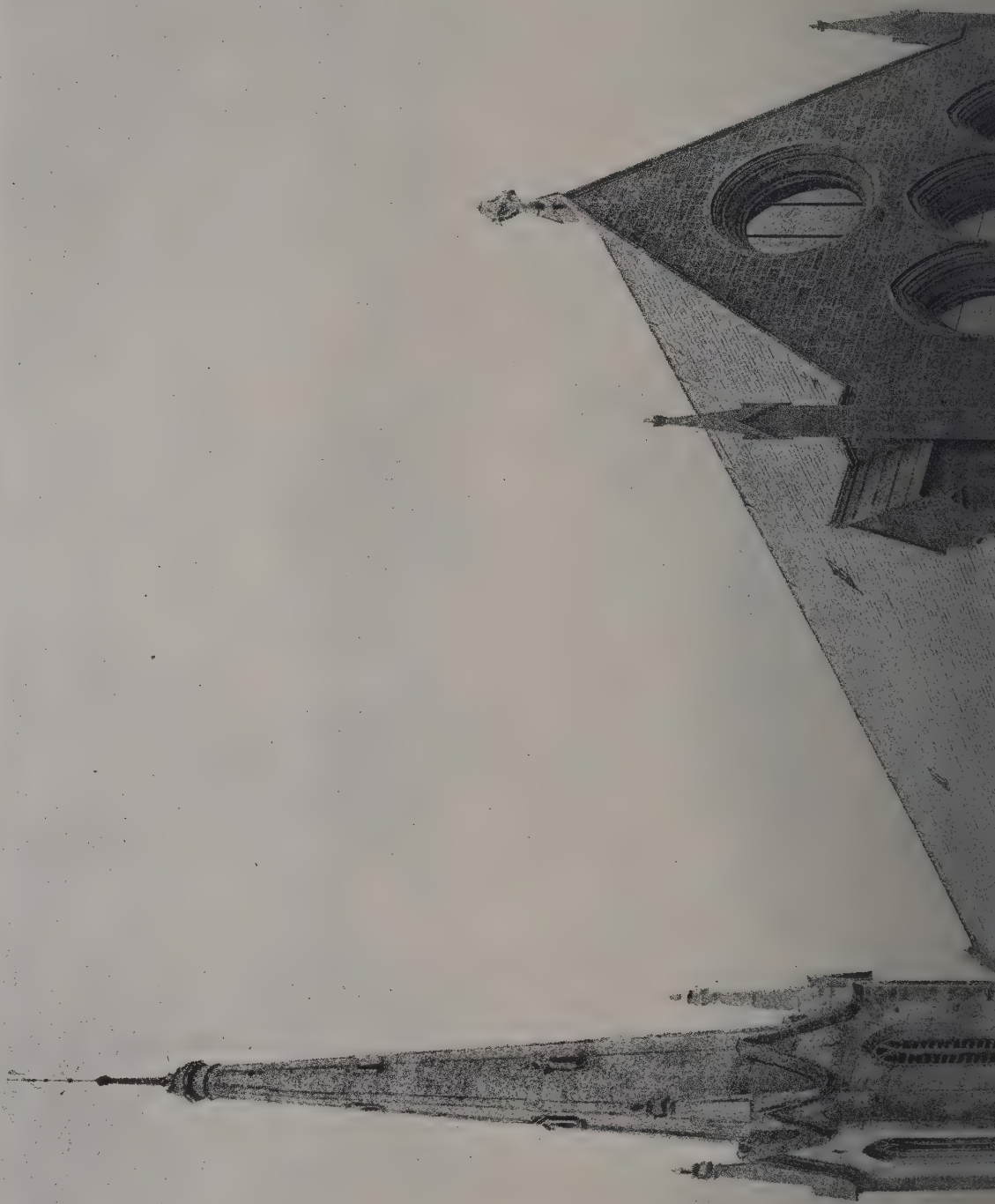
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The Architect, June 20<sup>th</sup> 1902.







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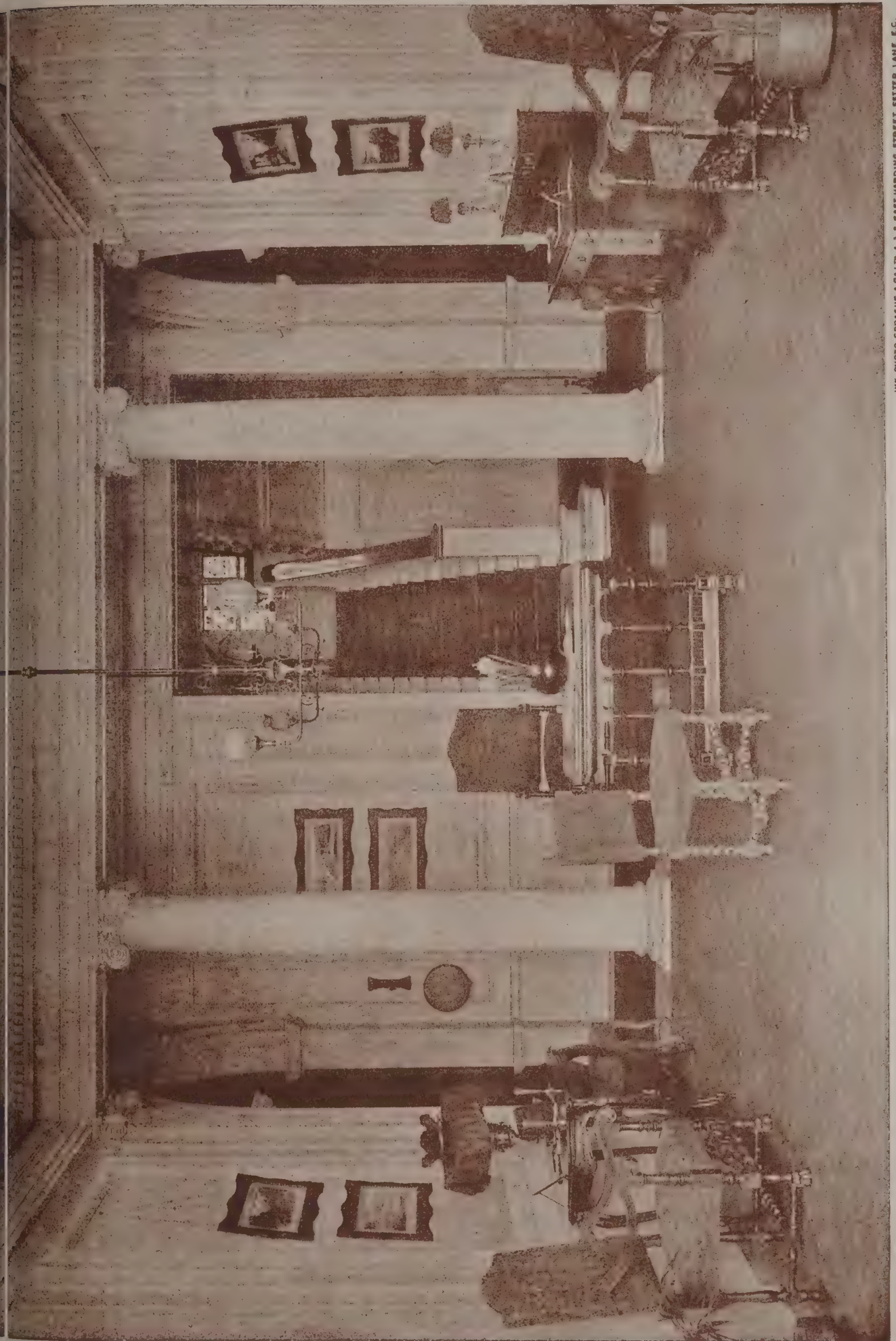
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Messrs. BUTLER WILSON, F.R.I.B.A., and OGLESBY, Architects.



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THE

**Architect and Contract Reporter.****EDITORIAL NOTICES.**

*In view of the many difficulties which are certain to arise in connection with the law, practice rules and procedure under the Workmen's Compensation Act, we have added to our staff A VERY EMINENT BARRISTER, who has made the subject a special study, and will be glad to answer in the columns of this paper any questions relating to the complicated matters arising from the provisions of this difficult Act. Our LEGAL ADVISER will further answer any legal question that may be of interest to our readers. All letters must be addressed "LEGAL ADVISER," Office of "The Architect," Imperial Buildings, Ludgate Circus, London, E.C.*

*The Editor will be glad to receive from Architects in London and the Provinces results of Competitions and Tenders and other particulars of Works in progress in which they may be interested.*

*The authors of signed articles and papers read in public must necessarily be held responsible for their contents.*

*No communication can be inserted unless authenticated by the name and address of the writer—not in every case for publication, but as a guarantee of good faith.*

*Correspondents are requested to make their communications as brief as possible. The space we can devote to Correspondence will not usually permit our inserting lengthy communications.*

**TENDERS, ETC.**

*\*\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.*

**THE CORONATION.**

**THE ARCHITECT** will be published on **WEDNESDAY, JUNE 25.** All Advertisements, Tenders, and Contracts Open intended for insertion in that issue must be received at the Office, Imperial Buildings, Ludgate Circus, not later than **3.30 p.m. on Tuesday, June 24.**

**COMPETITIONS OPEN.**

**COOMBE HILL, NEAR AYLESBURY.**—July 19.—Designs are invited for the Bucks War Memorial (a stone monument 50 feet high). Mr. R. J. Thomas, M.I.C.E., County Hall, Aylesbury.

**DEPTFORD.**—Aug. 30.—Competitive designs are invited for a town hall and municipal offices. Premiums of 100*l.*, 75*l.* and 50*l.* are offered for the three selected designs. Mr. Vivian Orchard, town clerk, Municipal Offices, 20 Tanner's Hill, Deptford, S.E.

**INDIA**—Nov. 1.—Competitive designs are invited for the erection of a memorial to Her Majesty the late Queen Victoria at Allahabad. A premium of 2,000 rupees will be awarded to the design selected by the committee. Mr. H. Nelson Wright, Indian Civil Service, honorary secretary, Queen Victoria Memorial Fund Committee, Allahabad, India.

**LIVERPOOL.**—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

**LIVERPOOL.**—Sept. 15.—Designs are invited or new labourers' dwellings to accommodate about 2,500 persons, to be erected on the Hornby Street area. Premiums of 250*l.*, 150*l.* and 100*l.* respectively are offered for the first three selected designs. Particulars will be supplied by the Town Clerk.

**SOUTHEND.**—Sept. 7.—Designs are invited for a church to accommodate 500 persons, a clergy-house, and a parochial hall or parish-room about 50 feet by 30 feet. Mr. C. H. J. Talmage, Kathleen Villa, Southchurch Road, Southend-on-Sea.

**SUNDERLAND.**—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100*l.*, 50*l.* and 25*l.* are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

**TOTTENHAM.**—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200*l.*, 100*l.* and 50*l.* are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

**WEST HARTLEPOOL.**—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75*l.* and 35*l.* respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

**CONTRACTS OPEN.**

**ACTON.**—June 24.—For erection of public baths in Salisbury Street, Acton. Mr. D. J. Ebbetts, surveyor, 242 High Street, Acton.

**BARNARD CASTLE.**—For erection of a small detached residence, Green Lane, Barnard Castle. Messrs. Pegg, De Burgh & Farrow, architects, 7 Market Place, Barnard Castle.

**BARNLEY.**—June 23.—For erection of two dwelling-houses and outbuildings in Pogmoor Road, Barnley. Messrs. Wade & Turner, architects, 10 Pitt Street, Barnley.

**BARNLEY.**—June 23.—For pulling-down of existing cottages and fire-escape house in St. Mary's Place and Westgate, Barnley, and erection thereon of seven firemen's cottages and outbuildings; also for erection of new shop fronts to shops in the Harvey Institute. Mr. J. H. Taylor, surveyor, Manor House, Barnley.

**BASFORD.**—June 30.—For alterations and additions at the warehouse. Mr. W. V. Betts, architect, Bank Offices, Old Basford.

**BEXLEY HEATH (KENT).**—July 4.—For erection of an electric generating station. Messrs. Morley & Dawbarn, 82 Victoria Street, Westminster.

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**BODMIN.**—June 28.—For alterations, reconstruction and repairs of business premises. Mr. W. J. Jenkins, architect, Bodmin.

**BRIXTON.**—June 23.—For converting the baths in Ferndale Road into a technical institute. Particulars at the General Section of the Architect's Department, London County Council, 18 Pall Mall East, S.W.

**BROWNHILLS.**—July 2.—For erection of additional stabling to the Brownhills dépôt. Mr. W. B. Chancellor, town surveyor, Public Buildings, Brownhills, Staffs.

**CARLISLE.**—For erection of premises, English Street, Carlisle. Messrs. Oliver & Dodgshun, architects, Carlisle.

**CHESHUNT.**—July 9.—For erection of twelve cottages for workmen, in blocks of six, within one mile of Cheshunt railway station. Mr. A. Collingwood Lee, clerk, Manor House, Cheshunt.

**CHOPWELL.**—For erection of a butcher's shop and house and two four-roomed cottages, Westview, Chopwell, co. Durham. Mr. J. G. Burrell, architect, Market Place, Durham.

**CRAWSHAWBOOTH.**—For erection of Conservative club at Crawshawbooth, Lancs. Mr. John H. Spencer, architect, Crawshawbooth.

**DARTMOUTH.**—June 23.—For erection of a residence near Deadman's Cross, Dartmouth. Mr. E. H. Back, architect, Dartmouth.

**DEVONPORT.**—June 28.—For construction of about 1,400 lineal yards of bridge culvert, 3 feet by 2 feet, from Ford Valley to the Fish Pond at Camel's Head, and about 210 lineal yards of 3 feet 6 inches diameter culvert on the Fish Pond site at Camel's Head. Mr. A. B. Pilling, town clerk, Municipal Offices, Devonport.

**GUILDFORD.**—June 23.—For enlargement of the bandstand in the Castle pleasure-grounds. Mr. F. S. Miller, town clerk, Guildford.

**HEMYOCK.**—June 25.—For rebuilding the vestry and re-roofing portions of the church. Mr. S. Dobell, architect, Queen Street Chambers, Exeter.

**HENSALL.**—For erection of new Wesleyan church and Sunday schools, Hensall, near Snaith, Yorks. Messrs. Garside & Pennington, architects, Pontefract.

**HERNE.**—June 23.—For cleansing, repainting and general repairs of the isolation hospital wards and offices at West End, Herne, Kent, and for laying about 580 feet of 4-inch and 160

feet of 6-inch stoneware pipes, the building of inspection-chambers, fixing of gullies, ventilation shafts and the building of cesspools for the drainage of the said hospital. Mr. W. D. Statham, architect, Eddington, near Canterbury.

**HEYWOOD.**—For erection of a house in Rochdale Road, Heywood. Messrs. Openshaw & Gill, architects, Heywood, Lancs.

**HEYWOOD.**—For erection of new pavilion at Pot Hall Grounds. Messrs. Openshaw & Gill, architects, Heywood, Lancs.

**HOLSWORTHY.**—June 24.—For erection of a new infirmary in the grounds attached to the workhouse. Mr. John Rowland, clerk, Union Offices, Holsworthy, Devon.

**HUDDERSFIELD.**—June 25.—For erection of four dwelling-houses in Brook Street, Marsh. Mr. J. Berry, architect, 3 Market Place, Huddersfield.

**ILFORD.**—June 23.—For erection of a boys and girls' school for 880 children, with latrines, play-sheds, &c., at The Horns, Ilford, Essex. Mr. C. I. Dawson, architect, Bank Buildings, Ilford.

**IPSWICH.**—June 25.—For erection of stables at the sanitary authority's yard, Wolsey Street. Mr. E. Buckham, borough surveyor, Town Hall, Ipswich.

**IRELAND.**—June 23.—For erection of a creamery at Ballyarton. Mr. M. A. Robinson, architect, Richmond Street, Londonderry.

**IRELAND.**—June 24.—For alterations, &c., at the Glengall Street, Rumford Street and Springfield Road dispensary stations. Messrs. Young & Mackenzie, architects, Belfast.

**IRELAND.**—June 24.—For erection of retort-house, coal and lime stores, &c., at the Riverbank gasworks, Kilmarnock. Mr. William Fairweather, Corporation Gasworks, Kilmarnock.

**IRELAND.**—June 24.—For erection of two dwelling-houses off Ferguson's Lane, Londonderry. Mr. J. P. M'Grath, architect, 28 Carlisle Road, Londonderry.

**IRELAND.**—June 26.—For erection of sanitary conveniences, Cork. Mr. F. W. M'Carthy, town clerk, Municipal Buildings, Cork.

**IRELAND.**—June 30.—For erection of five single one-storey cottages at level crossings between Moira and Belfast, also one single-storey cottage near Belturbet, for the Great Northern Railway Company of Ireland. Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

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**KEYMER.**—For alterations and additions to Wentworth House, Keymer, Sussex. Mr. Clayton Botham, architect, 128 Queen's Road, Brighton.

**KINGSTON-ON-THAMES.**—June 30.—For erection of an ambulance and hearse shed. Mr. Jas. Edgell, clerk, Union Offices, Coombe Lane, Norbiton.

**KIRTON-IN-LINDSEY.**—For alterations to the boys' Board school at Kirton-in-Lindsey. Mr. H. H. Dunn, architect, Silver Street, Lincoln.

**LANGLEY MOOR.**—June 27.—For erection of St. Patrick's (Roman Catholic) schools at Langley Moor, Durham. Mr. H. T. Gradon, architect, 22 Market Place, Durham.

**LEEDS.**—June 23.—For erection of warehouse premises in Dickinson's Court, off Trinity Street, Leeds; erection of cloth warehouse, blacksmiths' shop, &c., at East Street Mills; alterations at the Sutcliffe inn, Burley Street, Leeds; and alterations to the Junction hotel, Commercial Street, Shipley. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

**LEEDS.**—June 23.—For erection of south aisle and other works at St. James's Church, Woodside, Horsforth. Mr. James B. Fraser, architect, 8 Park Square, Leeds.

**LEWISHAM.**—June 23.—For converting Manor House, Old Road, Lee, into a branch public library. The Borough Surveyor, Town Hall, Catford.

**LITTLEPORT.**—June 30.—For erection of a chapel at the new cemetery, Littleport, Ely. Mr. Heber G. Martin, surveyor, Littleport.

**MIDDLESBROUGH.**—June 23.—For additions and alterations to the Green Tree hotel in Gilkes and Baxter Streets. Messrs. J. M. Bottomley, Son & Wellburn, architects, 28 and 30 Albert Road, Middlesbrough.

**MORLEY.**—June 30.—For erection of span-roof greenhouses at the cemetery in Bruntcliffe Lane. Mr. W. E. Putman, borough surveyor, Town Hall, Morley.

**MOULTON.**—For alterations and additions to premises at Moulton, Northants. Messrs. Brown & Mayor, architects, 63 Abington Street, Northampton.

**NEWCASTLE UPON-TYNE.**—June 30.—For erection of public conveniences for ladies and gentlemen at St. Nicholas Street. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

**PLYMOUTH.**—June 26.—For two additional boiler-seatings and engine-bed at the electricity works, Prince Rock. Mr. James Paton, borough engineer, Town Hall, Plymouth.

**PONTEFRAC.**—June 30.—For erection of schools at Tan-shelf, Pontefract, to accommodate 300 children. Messrs. Tennant & Bagley, architects, Pontefract.

**PURTON.**—July 3.—For alterations at Purton workhouse, Wilts. Mr. R. J. Beswick, architect, 35 Regent Street, Swindon.

**REDBOURN.**—June 25.—For alterations to urinal and closets and erection of a coal-shed at the Redbourn Boys' school. Mr. W. Collyer, secretary.

**ROCHFORD.**—June 30.—For erection of a laundry at the workhouse, Rochford, Essex. Messrs. Greenhalgh & Brockbank, architects, Bank Chambers, Southend-on-Sea.

**ROTHERHAM.**—June 25.—For erection of tramcar sheds, with workshop, offices, men's rooms, &c., in Rawmarsh Road. Mr. J. Platts, architect, Rotherham.

**RUGBY.**—June 27.—For erection of a boundary wall on the south side of the Lodge estate, Rugby. Mr. J. T. Franklin, architect, Regent Street, Rugby.

**SALFORD.**—June 24.—For erection of stables, mortar-mill shed, engine-house, offices, &c., at Carey Street, Agecroft, and Willburn Street depôts. Messrs. Walter R. Sharp & Foster, architects, 28 Deansgate, Manchester.

**SALFORD.**—June 24.—For joiners' work in furnishing store-keeper's office, fittings for tramways stores and erection of two timekeepers' offices. Mr. L. C. Evans, town clerk, Town Hall, Salford.

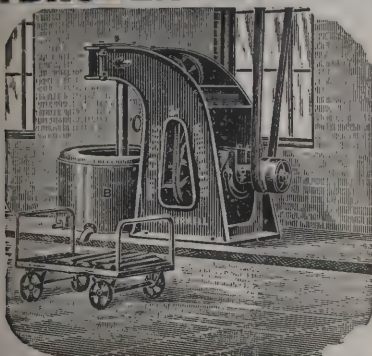
**SALFORD.**—June 25.—For construction of a river wall at the Carey Street depôt. Mr. L. C. Evans, town clerk, Town Hall, Salford.

**SCOTLAND.**—June 23.—For minor alterations in connection with the schools of the Edinburgh School Board. Mr. Carfrae, 3 Queen Street, Edinburgh.

**SCOTLAND.**—June 25.—For work on the Fintray Estate, Aberdeen, viz. additions and alterations to office-houses at Moss Side and additions and alterations to cottar-house at Tillykerrie. Messrs. Alexander Stronach, jun., & Son, advocates, 20 Belmont Street, Aberdeen.

**SCOTLAND.**—June 25.—For erection of tenement dwellings. Messrs. Johnston & Baxter, architects, 49 Meadowside, Dundee.

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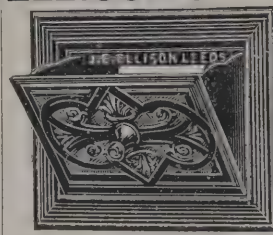
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SCOTLAND.—June 27.—For erection of a new central higher-grade public school in School Hill and Belmont Street, Aberdeen, and for removal of the buildings now on the site. Mr. Thomas Hector, clerk, 22 Union Terrace, Aberdeen.

SCOTLAND.—June 27.—For erection of a new school, Leadhills. Messrs. Traill & Stewart, architect, 1 Castlegate, Lanark.

SCOTLAND.—July 5.—For erection of a college in George and Montrose Streets, Glasgow. Mr. H. F. Stockdale, secretary, Glasgow and West of Scotland Technical College, 38 Bath Street, Glasgow.

SCOTLAND.—July 5.—For erection of buildings for a college in George and Montrose Streets, Glasgow. Mr. H. F. Stockdale, secretary, Glasgow and West of Scotland Technical College, 38 Bath Street, Glasgow.

SEACOMBE FERRY.—June 30.—For erection of new waiting-rooms, &c., the conversion of existing waiting-rooms into ferry offices and the erection of tramways cash office, at Seacombe Ferry, Cheshire. Mr. W. H. Travers, surveyor, Public Offices, Egrement, Cheshire.

SHEPHERD'S BUSH.—June 23.—For erection of a work-house and infirmary adjoining Wormwood Scrubs. Messrs. Giles, Gough & Trollope, architects, 28 Craven Street, Charing Cross, W.C.

SHIPLEY.—June 23.—For alterations to the Junction hotel licensed premises situate in Commercial Street, Shipley, Yorks. Messrs. Thomas Winn & Sons, architects, 92 Albion Street, Leeds.

SOUTHMINSTER.—July 4.—For erection of coastguard buildings, consisting of quarters for an officer and six men, with watch-room, &c., at Bradwell, near Southminster, Essex. Particulars may be obtained at the Coastguard Stations at Bradwell and Burnham-on-Crouch.

SOUTHWARK.—June 25.—For erection of additional buildings at the rear of the town hall, Walworth Road, S.E. Mr. J. A. Johnson, town clerk, Town Hall, Walworth Road, S.E.

SOVERBY BRIDGE.—June 23.—For erection of oxide floor and steel superstructure, also concrete retaining wall, boundary wall, foundation for columns, forming concrete oxide floor, &c., in connection with proposed extensions at the gasworks, Sowerby Bridge. Mr. A. W. Bissell, engineer, Gasworks, Sowerby Bridge.

SPALDING.—June 26.—For erection of a minister's house at Stepping Road, Spalding, Lincs. Messrs. Calthrop & Leopold Harvey, solicitors, Spalding.

SWINDON.—July 5.—For erection of infant school, Clarence Street. Messrs. Bishop & Pritchett, architects, Swindon.

THORNTON.—June 27.—For erection of twenty-nine houses, &c., at Thornton, Yorks. Mr. Medley Hall, architect, 29 North Gate, Halifax.

ULVERSTON.—June 23.—For alterations and additions to premises lately occupied by the Bank of Liverpool. Messrs. J. W. Grundy & Son, architects, Ulverston.

WALES.—For additions to the Clive Arms hotel, Cowbridge Road, Cardiff. Messrs. Jones, Richards & Budgen, architects, 95 St. Mary Street, Cardiff.

WALES.—June 23.—For erection of an infants' school, to accommodate about 210 children, at Aberavon. Messrs. Thomas & James, architects, Port Talbot, Wales.

WALES.—June 23.—For extension of the premises of the Ynshir and Wattstown Co-operative Society. Mr. J. Rees, architect, Pentre.

WALES.—June 24.—For making roads and erecting fifteen to thirty houses at Blackwood, Mon. Messrs. James & Morgan, architects, Charles Street, Cardiff.

WALES.—June 26.—For a villa residence at Maesycwmmmer. Mr. Geo. Kenshole, architect, Station Road, Bargoed.

WALES.—June 28.—For erection of fifteen or more dwelling-houses at New Tredegar. Mr. Geo. Kenshole, architect, Station Road, Bargoed.

WALES.—June 28.—For erection of a vicarage-house at Llanbedr, Painscastle, Radnorshire. Mr. R. Wellings Thomas, architect, Llandrindod Wells.

WALES.—June 28.—For alterations and additions to the Bedwas Bridge school, Bedwas, Mon. Mr. John H. Phillips, architect, Clive Chambers, Windsor Place, Cardiff.

WALES.—June 30.—For erection of a gallery and glass screen at the Abersychan Board schools. Mr. Henry Bythway, clerk, Pontypool.

WALES.—July 1.—For altering and remodelling the Clarence hotel, Pontypool. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

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**WALES**—July 3.—For erection of a chapel, Cymmer, Port Talbot. The Rev. D. Jones, Congregational minister, Cymmer, Port Talbot.

**WALES**—July 4.—For extension of schools at Gilfach Goch, Llantrisant. Mr. Jacob Rees, architect, Pentre, Rhondda.

**WALES**—July 4.—For extension of schools at Gilfach Goch. Mr. Jacob Rees, architect, Pentre Rhondda.

**WALES**—July 7.—For erection of sixty workmen's cottages at Gellifaelog, Penydarren. Mr. T. Roderick, architect, Aberdare.

**WALSALL**—June 28.—For alterations and additions to carshed and repairing and painting shed, and the construction of workshops, stores and outbuildings at rear of same, the construction of manager's office and caretaker's residence, and erection of boundary walls and entrance gates and piers. Mr. Richard Henry Middleton, borough surveyor, Walsall.

**WALTHAMSTOW**—June 24.—For erection of a watch-room at the Council's fire station, High Street. Mr. G. W. Holmes, engineer, Town Hall, Walthamstow.

**WENDRON**—June 28.—For erection of a stable, cattle-house and root-house at Boderluggan Farm, Wendron, Cornwall. Messrs. Pearse, Jenkin & Son, Trewirgie, Redruth.

**WEST BROMWICH**—June 23.—For erection of schools in Oak Lane and Lodge Road, West Bromwich, to accommodate 1,150 children. Mr. Alfred Long, architect, 21 New Street, West Bromwich.

**WIGAN**—June 23.—For alterations and additions to the Wesleyan church, Standishgate, Wigan. Messrs. J. B. & W. Thornley, architects, Library Street, Wigan.

**WINCHESTER**—July 1.—For additions to the High School for Girls, North Walls, Winchester. Mr. Thomas Stopher, architect, 57 High Street, Winchester.

**WOOLWICH**—July 3.—For erection of twenty-five houses in Barge House Road and Woolwich Manorway, North Woolwich. Mr. Arthur B. Bryceson, town clerk, Town Hall, Woolwich.

**WORKINGTON**—June 23.—For erection of a dwelling-house in Napier Street, Workington. Messrs. W. G. Scott & Co., architects, Victoria Buildings, Workington.

**YARDLEY**—July 3.—For taking-down and rebuilding Greet Bridge, on the Warwick Road, over the river Cole, in the parish of Yardley, Worcs. Mr. J. H. Garrett, county road surveyor, Shire Hall, Worcester.

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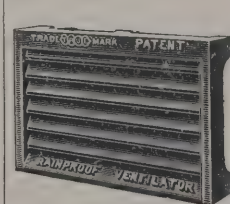
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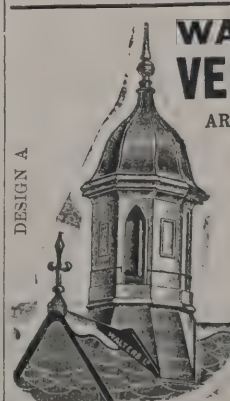


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ing Work. All communications to  
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**BELPER.**

For reconstruction of 241 feet lineal of surface-water brick culvert, 2 feet 6 inches diameter, at Kirk Langley. Mr. R. C. CORDON, surveyor, Hazelwood, Derby.

J. Holme	£194	17	6
J. Cooper & Son	188	12	9
J. & J. Warner	175	18	8
A. Hingley	173	17	8
W. Smith & Son	167	13	6
A. Cooper	155	18	9
C. F. Tomlinson	149	14	6
W. Fletcher	141	11	9
G. COOPER, Kirk Langley, near Derby (accepted)	121	1	10

**BRADFORD.**

For erection of Eastbrook mission hall and adjoining premises in Leeds Road. Messrs. W. J. MORLEY & SON, architects, 259 Swan Arcade, Bradford.

*Accepted tenders.*

J. Brown & Son, Bingley, mason.  
Greenbough & Murgatroyd, Keighley, joiner.  
G. Thompson, Leeds, plumber.  
T. Bolton, Bradford, plasterer.  
Hill & Nelson, Bradford, slater.  
F. Holdsworth, Shipley, painter.  
E & W. Haley, Bradford, cast-ironwork.

Total, 19,000/.

**BURTON-UPON-TRENT.**

For supply and erection of the following plant for the Corporation:—(Contract No. 4) three 100-kw. high-speed tramway generators and switchboard.

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**COVENTRY.**

For construction of about 250 yards of 12-inch pipe sewers, with manholes, &c., in Harnall Lane East and Freehold Street. Mr. J. E. SWINDLEHURST, city surveyor.

W. BOON & SONS, Chester Street (accepted) £242 17 3

**DUFFIELD.**

For extension to sewers. Mr. R. C. CORDON, surveyor.

A. HINGLEY, Duffield (accepted) £40 0 0

For under-drainage at the cemetery. Mr. R. C. CORDON, surveyor.

A. HINGLEY, Duffield (accepted) £48 0 0

**EPPING.**

For erection of new infants' school, St. John's Road, Epping. Messrs. HARRINGTON & LEY, architects and surveyors, 65 Bishopsgate Street Without, E.C., and Romford.

Stephens & Bastow	£4,282	0	0
General Builders, Ltd.	4,229	0	0
Thomas & Edge	4,217	0	0
J. Smith & Son	4,195	0	0
Wilson & Lamplough	4,103	0	0
Chessum & Sons	3,962	0	0
H. Wells & Son	3,950	0	0
Hawkins & Son	3,943	18	0
A. W. Robins	3,930	0	0
Oak Building Co.	3,902	0	0
C. S. Foster & Son	3,901	0	0
Hawkey & Oldman	3,820	0	0
A. Knight	3,812	0	0
Foster Bros.	3,749	0	0
B. E. Nightingale	3,748	0	0
J. Hammond & Son	3,729	0	0
T. Keen & Sons	3,620	0	0
E. West, Chelmsford*	3,592	0	0
Sims & Wood	3,582	0	0

\* Accepted subject to the approval of the Education Department.

**FENTON.**

For erection of an infants' school, Queen Street, Fenton, Staffs. Messrs. R. SCRIVENER & SONS, architects, Hanley.

P. H. Embrey	£3,843	0	0
S. Wilton, jun.	3,509	0	0
Tompkinson & Bettelley	3,470	0	0
C. Cornes & Sons	3,400	0	0
T. Godwin	3,366	0	0
J. Bagnall	3,359	0	0
T. R. Yoxall	3,260	0	0
Meiklejohn & Sons	3,249	0	0
Brain & Smith	3,127	0	0
P. H. BENNION, Longton (accepted)	3,091	0	0

**GRIMSBY.**

For alterations to King Edward Street police station.

T. R. WATERMAN, Grimsby (accepted) £149 9 11

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Houses, Glasgow,  
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HASTINGS.		
For erection of the workhouse boundary wall.		
Joseph Harvey . . . . .	£1,975	0 0
J. Simmonds & Co. . . . .	1,967	0 0
Thomas Paulson . . . . .	1,935	0 0
D. Snow . . . . .	1,850	0 0
A. H. White . . . . .	1,830	0 0
W. Piper . . . . .	1,785	0 0
J. Parker . . . . .	1,762	0 0
William F. Ditch . . . . .	1,687	0 0
Peerless, Dennis & Co. . . . .	1,688	0 0
A. E. Cruttenden & Son . . . . .	1,625	0 0
J. Piper . . . . .	1,533	0 0
J. Lester . . . . .	1,487	0 0
HENRY SMALL (accepted) . . . . .	1,458	0 0

HOVE.		
For constructing sewer works in Hove Villas, Albany Villas, Osborne Street, Osborne Villas, Hove Place and Medina Mews. Mr. H. H. SCOTT, surveyor.		
J. PARSONS & SONS (accepted) . . . . .	£1,869	0 0
For distempering walls, ceilings, &c, at the sanatorium, 1 North Road, Brighton.		
GATES & SON (accepted) . . . . .	£55	0 0
For cleaning, painting and decorating the interior of the town hall.		
WHITEMAN (accepted) . . . . .	£290	13 0

HULL.		
For laying about 330 lineal yards of 9-inch sanitary pipe sewer, complete, with manholes, &c, at Anlaby. Mr. WILLIAM W. WELLSTED, engineer, Prince's Dock Chambers, Hull.		
G. H. Wray . . . . .	£239	12 7
N. Stephenson . . . . .	196	5 0
H. Medforth . . . . .	187	10 6
Burrell & Stones . . . . .	146	15 9
R. FISHER & J. KIRKBY, 134 Hawthorne Avenue, Hull, and Swanland, East Yorks (accepted) . . . . .	125	10 0
For alteration to Hedon Road, Hull.		
J. & H. BENTLEY, Bradford (accepted) . . . . .	about £9,000	0 0

LIVERPOOL.		
For erection of a discharging block and porter's lodge at the City hospital, Fazakerley.		
MORRISON & SONS, Wavertree (accepted) . . . . .	£1,987	0 0

LIVERSEEDGE.		
For construction of retaining walls, drainage and road formation. Mr. ALFRED E. RHODES, architect, Cemetery Road, Heckmondwike.		
G. HORSFALL & SON, Station Road (accepted) . . . . .		

LONDON.		
For street works in Prince's Yard, Peckham Rye.		
W. Griffiths & Co. . . . .	£240	5 8
W. Pearce . . . . .	230	7 10
Fry Bros. . . . .	226	13 8
J. Mowlem & Co. . . . .	225	5 8
T. Adams . . . . .	223	6 0
J. E. Etheridge . . . . .	221	8 4
Lawrence & Thacker . . . . .	209	10 6
W. H. Wheeler . . . . .	207	15 4
G. J. Anderson, Poplar * . . . .	186	3 0
* Recommended for acceptance.		

For alterations and additions to the Royal Pavilion Hotel, Woolwich. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C. Quantities supplied.		
T. Osborn & Sons . . . . .	£4,354	0 0
Fred & T. Thorne . . . . .	4,329	0 0
Courtney & Fairbairn . . . . .	4,289	0 0
Todd & Newman . . . . .	4,217	0 0
Thomas & Edge . . . . .	4,197	0 0
Green & Smith . . . . .	4,196	0 0
SHEFFIELD BROS. (accepted) . . . . .	3,987	0 0
For alterations at the Prince Alfred, Poplar, E. Mr. HERBERT RICHES, architect, 3 Crooked Lane, King William Street, London, E.C. Quantities supplied.		
Thos. Osborn & Sons . . . . .	£850	0 0
Fred & T. Thorne . . . . .	825	0 0
Courtney & Fairbairn . . . . .	765	0 0
Harris & Wardrop . . . . .	707	0 0
Sheffield Bros. . . . .	670	0 0
SAMUEL SALT (accepted) . . . . .	649	0 0

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## LONDON—continued.

For erection of a lean-to and for tar-paving work in the garden of 16 Elm Grove, for the Metropolitan Asylums Board.

W. Coates	£349	13	0
T. J. Hawkins & Co.	300	0	0
Barlow & Roberts	275	0	0
J. C. Mason	258	12	0
Gardner & Hazell	249	0	0
W. Hooper	232	0	0
E. Wall	218	0	0
W. H. Coote	215	0	0
E. H. Cripps	209	0	0
H. LINE, Peckham Rye (accepted)	177	0	0

For decorative and sanitary work, 1 Hyde Park Terrace, W. Messrs. HUNTER & HUNTER, surveyors, South Kensington.

Douglas	£867	17	0
Kinnimont & Sons	852	13	0
Years & Co.	826	18	0
PORTER & CO. (accepted)	805	2	0

## LOW MOOR.

For erection of a house at the junction of Abbe Lane and Common Lane, Low Moor, Yorks. Messrs. WALSH & NICHOLAS, architects, Museum Chambers, Harrison Road, Halifax.

## Accepted tenders.

- J. Brook, Wyke, near Bradford, mason.  
S. Andrews, Great Horton, Bradford, joiner.  
J. H. Chapman, Bowling Old Lane, Bradford, plumber.  
J. Smithies, Great Horton, Bradford, slater.  
J. & W. Bates, Manchester Road, Bradford, plasterer.

## NORTHUMBERLAND.

For construction and erection of sewerage and sewage-disposal works, Dinnington. Mr. HARRY W. TAYLOR, engineer, Newcastle-on-Tyne.

J. W. Robson	£2,808	0	0
J. Robson	2,259	0	0
J. Bewley	2,253	0	0
G. K. Waghorn	2,095	0	0
J. Carrick	1,876	0	0
J. THOMPSON, Gosforth, Newcastle-on-Tyne (accepted)	1,818	0	0

## READING.

For street works in Connaught Road and Downshire Square North. Mr. JOHN BOWEN, borough surveyor.

## Accepted tenders.

## Connaught Road.

T. Free & Son.

Downshire Square East and Downshire Square North. W. Lee & Son.

## ROCHDALE.

For painting seats and railings at the cemetery. Mr. S. PLATT, borough surveyor.

J. KEAN, 21 Whitworth Road (accepted).

## SCOTLAND.

For supply of three boilers at Barnhill poorhouse, Springburn, Glasgow.

W. Arnot & Co.	£1,200	0
W. Wilson & Co.	1,164	0
Babcock & Wilcox, Ltd.	1,160	0
J. Marshall & Co.	1,095	0
PENMAN & Co, 64 Strathclyde Street, off Dalmarnock Road (accepted)	1,120	0

For construction of about 3,200 yards of 9-inch and 2,100 yards of 6-inch stoneware and cast-iron pipe sewers, manholes &c., with retaining walls, flushing tank, bacterial beds and straining tank, &c., at Tirphil and Troedyrhiwfwuch, in the parish of Gelligaer. Mr. JAMES P. JONES, surveyor, Hengoed, via Cardiff.

J. E. Evans	£7,001	19
F. Davies & Co.	6,749	13
W. Lewis	6,238	18
A. G. Collins & Co.	5,910	10
Jones & Davies	5,817	14
E. Jenkins	5,527	10
W. Williams & Co.	5,876	7

## SOUTHAMPTON.

For manufacture and erection of Haines's patent plate filters, centrifugal pump and other work connected therewith.

J. Simpson & Co, Ltd.	£3,700	0
J. COCHRANE, Barrhead (accepted)	3,250	0

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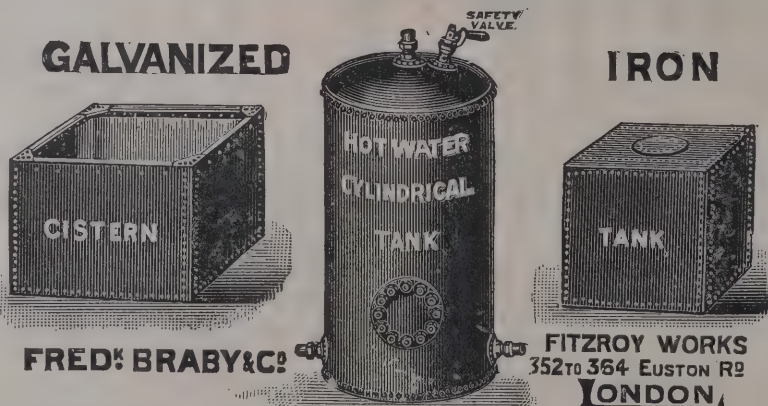
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**SHEFFIELD.**

For erection of covered yard, barrel-washing shed and cooper's shop at Hope Brewery, Mowbray Street. Messrs. HALL & FENTON, architects, 14 St. James's Row, Sheffield. Quantities by the architects.

Eshelby & Sons	£1,765	0	0
A. Moore	1,731	0	0
G. Webster	1,725	0	0
G. Malpas	1,658	0	0
T. Astbury	1,651	0	0
A. Bradbury	1,643	0	0
Longden & Sons, Ltd.	1,619	0	0
Mastin & Son	1,599	0	0
G. Allen	1,590	0	0
Martin & Hughes	1,583	0	0
T. Margerrison	1,545	0	0
DYSON, SON & GREGORY, London Road (accepted)	1,513	5	0

**SOUTHALL.**

For making-up Shrubbery Road. Mr. REGINALD BROWN, engineer and surveyor.

E. Plaistow	£238	0	0
Neave & Son	229	0	0
Meston & Hale	223	0	0
Mowlem & Co.	219	0	0
A. & B. Hanson	206	0	0
Wimpey & Co.	203	0	0
Felkin & Watson	185	0	0
W. H. WHEELER, Blackfriars Road, S.E. (accepted)	177	0	0

**SWINDON.**

For various street works. Mr. H. J. HAMP, borough surveyor.

*Accepted tenders.*

A. J. Colborne, Newport Street—Volta Road, £154 14s.; Lagos Street, £124 14s. 2d.  
W. B. Winchcombe, Wroughton Road—Armstrong Street, £171 10s. 10d.; Alfred Street (rear of Gooch Street to Manchester Road), £265 0s. 10d.; Ponting Street (rear of Gooch Street to Manchester Road), £244 4s. 6d.; Gladstone Street (Elmina Road to Manchester Road), £346 15s. 10d.; Graham Street (Elmina Road to Manchester Road), £322 13s.; Salisbury Street (Elmina Road to Manchester Road), £325 7s. 3d.; Rosebery Street Elmina (Road to Manchester Road), £323 14s. 4d.

**WALES.**

For erection of bakery at Ton, Pentre, Rhondda Valley. Mr. W. D. MORGAN, architect, Victoria Chambers, Pentre.

A. RICHARDS, Pentre, Rhondda Valley (accepted) £1,428 0 0

For erection of forty-one or more houses at Co-operative Street, Ton, Pentre, Rhondda Valley. Mr. W. D. MORGAN, architect, Victoria Chambers, Pentre, Rhondda Valley.

A. Richards £8,855 0 0

E. Jones 8,401 10 0

MORGAN BROS., Ton, Pentre, Rhondda Valley

(accepted) 8,035 0 0

T. Reynolds (withdrawn) 7,625 0 0

For replastering, &c., the front of the Bethania Baptist chapel, Cardigan.

J. Williams £82 10 0

E. JAMES & T. MICHAEL, Grangetown, Cardigan

(accepted) 63 0 0

J. Edwards 54 0 0

**WEST HAM.**

For erection of mortuary, Ordnance Road, Canning Town, E. Mr. JOHN G. MORLEY, borough engineer.

A. G. Symes £1,966 0 0

General Builders, Ltd. 1,777 0 0

Yates & Co. 1,689 0 0

Foster Bros. 1,597 0 0

Goodman & Sons 1,542 4 10

Horlock & Son 1,464 0 0

G. Wise 1,435 0 0

CALNAN & SON, 242 Commercial Road, E.

(accepted) 1,376 0 0

For street works in Berwick Road, Garvary Road (part), Throckmorton Road (part), Chesterton Road (part), Crows Road, Becton Road (part). Mr. JOHN G. MORLEY, borough engineer.

*Group 1.*

W. Griffiths & Co., Ltd. £2,926 15 0

Wilson, Border & Co. 2,594 0 10

T. Adams 2,578 7 7

J. Jackson 2,476 16 8

W. H. Wheeler 2,436 0 0

D. T. JACKSON, Barking (accepted) 2,389 18 0

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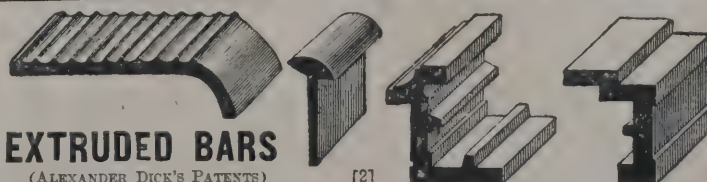
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## Group 2.

J. Jackson . . . . .	£2,509	1	9
W. Griffiths & Co., Ltd. . . . .	2,460	5	7
Wilson, Border & Co. . . . .	2,414	9	9
T. Adams . . . . .	2,395	6	6
D. T. JACKSON (accepted) . . . . .	2,285	3	6

## Group 3.

W. Griffiths & Co., Ltd. . . . .	5,715	9	7
Wilson, Border & Co. . . . .	5,593	11	0
D. T. Jackson . . . . .	5,458	17	6
T. Adams . . . . .	5,388	2	11
J. JACKSON (accepted) . . . . .	5,378	11	3

## WINGATE.

For enlarging covered reservoir, &c., Wingate, Durham.  
HARDY & ATKINSON, Brunswick Street, West Hartlepool  
(accepted).

## WITTON GILBERT.

For repairs, &c., at the Wesleyan Methodist school, Witton  
Gilbert, Durham. Mr. H. T. GRADON, architect, 22  
Market Place, Durham.  
G. T. MANNERS, Durham (accepted) . . . . . £88 0 0

Received too late for Classification.

## NEWTON ABBOT.

For erection of the Passmore Edwards Library and County  
technical schools. Mr. SILVANUS TREVAIL, president  
of the Society of Architects, Palace Chambers, West-  
minster, architect. Quantities by Mr. F. B. HOLLIS,  
17 Bedford Row, W.C.

Stephens, Bastow & Co., Ltd. . . . .	£7,802	0	0
Pethick Bros. . . . .	7,785	0	0
W. Brenton . . . . .	7,052	0	0
L. Bearne . . . . .	6,497	0	0
A. J. Richards . . . . .	6,260	0	0
Parker Bros. . . . .	6,200	0	0
F. A. A. Stacey . . . . .	6,179	0	0
Allen & Tozer . . . . .	6,116	0	0
J. Edwards . . . . .	5,880	0	0
H. C. GOSS, Torquay (accepted) . . . . .	5,833	0	0

## ST. ALBANS.

For erection of a Congregational church at the junction of Vic-  
toria Street and Beaconsfield Road, St. Albans. Messrs.  
SMEE, MENCE & HOUGHIN, architects, 14 London Road,  
St. Albans. Quantities by Messrs. J. B. COLWILL & SON,  
6 Alma Road, St. Albans.

Whibley & Jervis . . . . .	£8,862	0	0
Battley, Sons & Holness . . . . .	8,600	0	0
Boff Bros. . . . .	8,450	0	0
Wilmot . . . . .	8,300	0	0
Dunham . . . . .	8,181	0	0
Miskin & Sons . . . . .	8,173	0	0

## TRADE NOTES.

MESSRS. THE RATNER SAFE COMPANY, LTD., inform us that  
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THE inhabitants of Leven, East Yorkshire, have decided to  
erect a large hour striking clock as a permanent memorial of  
the Coronation of King Edward VII. The order has been  
placed in the hands of Messrs. Wm. Potts & Sons, clock  
manufacturers, Leeds.

A LARGE clock and chimes is now being erected in  
St. Mary's Church, Warwick, which chimes the Cambridge  
quarters, strikes the hours and shows time on four 6-foot 8-inch  
dials. It has all the latest improvements. The work is being  
carried out by Messrs. John Smith & Sons, Midland Clock Works  
Derby.

AT the second ordinary general meeting of R. Waygood &  
Co., Ltd., held at the Cannon Street Hotel on Monday last, a  
further dividend was declared at the rate of 10 per cent. per  
annum for the six months ending March 31, 1902, making  
with the interim dividend already paid, 7½ per cent. for the  
year on the ordinary shares, a balance of 3,698½ ls. 7d. being  
carried forward.

THE Lift and Hoist Company, engineers and revolving  
shutter makers, of Premier Ironworks, Deptford, draw our  
attention to the fact that they fitted the lift at Upton Cottage,  
Slough, of which we gave an illustration last week. They also ask  
us to state that architects are invited to inspect their "Premier"  
dinner lifts, which are absolutely noiseless in action. These

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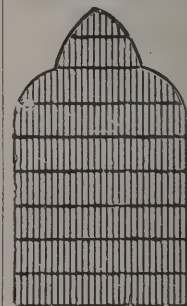
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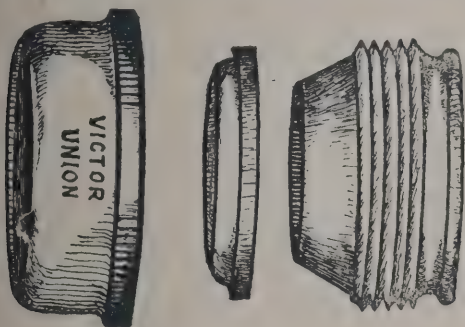


can be seen in all parts of London and the country, and can be arranged to work direct into the dining-room, and they guarantee that their service lifts are absolutely silent.

APROPOS of the recent deplorable conflagration in the city, Messrs. Merryweather & Sons, whose fire-extinguishing and life-saving apparatus are so well known, have prepared a series of illustrated descriptions of their various appliances which, as many of our readers are aware, comprise, in addition to fire brigade appliances as engines, escapes, &c., fire escape staircases in various forms, chutes, &c., some form of which should be compulsory in all institutions, factories, and, indeed, in all buildings of any size where large numbers of persons are congregated or employed.

### SANITARY JOINTS.

THE ordinary method of joining a lead soil-pipe to the nozzle of an earthenware water-closet is, to say the least of it, clumsy, and the result is not always reliable or satisfactory. We have



measured, therefore, having regard to the importance of the subject, in calling attention to an ingenious device for overcoming the difficulties hitherto attendant upon the operation referred to, which has been put forward by Mr. John Stewart, Merchiston Avenue, Edinburgh. This is a screw coupling

and socket, appropriately called the "Victor" union, by means whereof a lasting and effectual tight joint can be made for connecting lead pipes with earthenware closets, as well as fire-clay drain-pipes, with the expenditure of but little labour and in a very economical manner.

The joint is, as shown in the annexed illustration, made in three parts, and the main feature to be noted is the application of the screw in such a simple way as to enable plumbers to turn out more efficient work than by the ordinary method, while the cost is sufficiently moderate to permit of sanitary authorities adopting it for all classes of property. The *modus operandi* is for the plumber to hermetically secure the socket, with a hold screw cut on the outside, on the nozzle of the closet. The lead pipe is then fixed between the tapered part of the socket and the wedge-shaped collar by the outer coupling ring, which screws the whole together, so as to render it absolutely gas-tight.

To sum up the matter, the following are the advantages claimed for the joint in question:—In the first place, the objectionable solder and putty joints are entirely done away with; then there can be no breaking of joint through shrinking of woodwork. It is worthy of note also that the closet can be fixed up last of all, after the woodwork is fitted and painted, while it can be removed at any time without disturbing the pipes; and, lastly, the "Victor" union will, we are assured, stand any reasonable pressure test which may be applied to it.

### PATENT SEATING FOR PUBLIC RESORTS.

THE matter of economising floor space in connection with the seating accommodation in halls, concert-rooms, school-rooms and other public resorts is one of considerable importance, and to seat comfortably a considerable percentage more of an audience than is usual on a given floor space, as well as the provision at social gatherings of seating adapted for easy removal when required, with the minimum of storage room, are advantages that obviously cannot be overlooked in the present day.

In this connection we may call attention to the patent

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## TAYLOR'S PATENT JUNCTION "

No. 12662.

For WATER CLOSETS, WATER PIPES, ANTI-SYPHON PIPES, &c.

APPROVED BY ALL SANITARY AUTHORITIES.

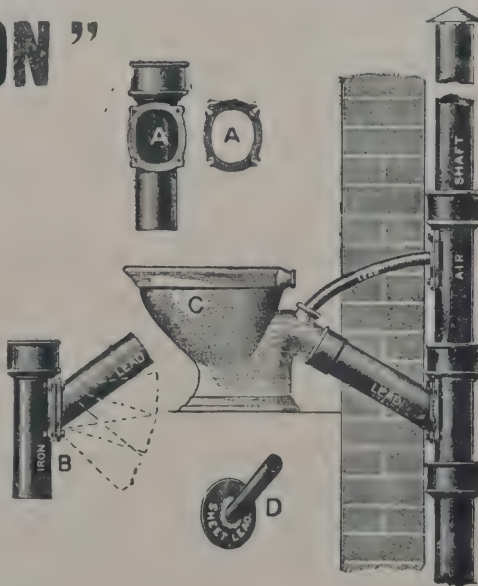
Junction has been invented with a view to enable anyone fixing closets overcoming the difficulty of the any angles required for the various makes, also to avoid the necessity of having joints inside the walls, which are not allowed by County Councils, Borough Engineers, Architects, &c. The 4 inch Junction can be adapted to any size from 4 inch downwards. Any plumber will see at a glance the great convenience of this as it only requires one junction for the many shapes and sizes. No Brass Thimbles or Calking required. The Gas and Watertight Joint can be made in a few minutes by any ordinary Plumber. In fixing this Joint, it is necessary to cut the Lead Pipe to the required angle, place on the loose Iron Flange, then flange back the Pipe 2 inch all round, coat the face of Flange with a little Red Lead Putty, bring the two Faces together and screw up with the Bolts, screwing up each Bolt a little at a time until they are all tight, then the Joint is made and will stand any test. Another great convenience is:—In case of any alterations or renewal of Soil Pipes, all required where this Junction is used is to unbolt the same, and the Closet and Pipe leading to it are left as with all other Junctions it is necessary to take down the W.C., break open the wall, damaging the Property and causing other inconvenience.

1—Is the front view of Junction and loose flange; the inlet being elongated, allows the lead pipe to be cut to any required angle.  
2—Shows the Joint fixed and ready for tightening up, and also a few of the angles which can be got.  
3—Shows the one size which can be adapted for 4 in. Soil Pipe, and a 4 in. x 1 1/2 in. Invert Junction for Anti-siphon Pipes, &c.  
4—Shows how to arrange for a small sized branch.

made in Three Strengths—Ordinary Rain Water, 1/2 and 1/4 Metal.

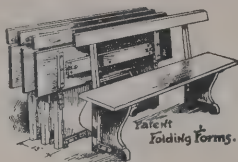
PRICES AND PARTICULARS CAN BE HAD AT ALL WHOLESALE MERCHANTS, OR FROM

CHARLES TAYLOR, R.P., Sanitary Engineer, ECCLES, MANCHESTER.





specialties in seating, designed with the express purpose of affording the facilities named, which have been put upon the market by Robertson's Furniture, Ltd., of Netherlee, Cathcart, near Glasgow. Their patent folding forms particularly, for



public halls, churches, schools, &c., possess the profitable advantage of being folded and packed into one-fifth of their open breadth; that is to say, five forms fold flat into the breadth of one open seat, and forty forms flat are, as regards space, only equivalent to eight open seats. They are, moreover, easy to fold and pack out of the way, thus giving freedom of floor space when required, as they can be stored under the platform or distributed round the walls inside.

Then, again, Robertson's patent automatic chairs are apparently of considerable value where space is limited, as the occupant rising tips the seat out of the way, and thus they afford greater facilities for seating or dismissing an audience than those ordinarily in use, while in time of panic, should that unhappily occur, they would cause no obstruction. Another advantage is that they afford greater economy in room, and give, it is claimed, fully 15 per cent. more of an audience in parallel rows over any other fixed or portable chairs



hitherto in use, so that they become a source of perpetual increase in revenue. It is also important to note that they permit of freedom of floor-space, as when not in use they fold and pack together into a remarkably small compass, and, moreover, an audience can be seated with these chairs spaced 24 inches apart, while ordinary Windsor chairs require 27 to 30 inches to seat with equal comfort.

### ELECTRIC NOTES.

OWING to the successful working of the Shoreditch electric lighting department it has already been found necessary to erect a new and much larger power station. This has been constructed in Whiston Street, on the banks of the Regent Canal, and on Monday afternoon it was formally opened in the presence of a large and interested assemblage.

At a meeting of the Birmingham Museum and School of Art committee on Monday, presided over by Alderman Right Hon. William Kenrick, Professor Frankland, of the University, submitted his report on the tests made by him with respect to the atmospheric conditions in the long gallery with and without artificial illumination. Substantially the report was to the effect that the incandescent gas lighting is not only not prejudicial to the pictures in the long gallery, but that it carries off through the ventilating shafts much of the impurities ordinarily present in the atmosphere. The report will be printed and circulated among the members of the Museum and School of Art gas and electric-light committees, but until they have had an opportunity of considering it no action will be taken in the matter.

### BUILDING AND BUILDERS.

THE plans have been passed for the new dispensary at Hartley Hill, Leeds.

THE memorial-stone of a new Presbyterian church, which is being built at Ilford at a cost of 5,300*l.*, was laid on the 13th inst.

MEMORIAL-STONES for the New Free Methodist church and Sunday school combined, now being erected at Worksop, were laid last week.

PLANS were last week laid before the Coatbridge Dean and Guild Court of a new church to be erected as one of the churches in the extension scheme of the Presbytery of Hamilton. The plans show accommodation for 700 sitters, and the estimated cost is about 9,000*l.* The application was continued.

THE foundation-stone of the new church of St. Luke's, which is to be erected on the site of the old building, which was razed to the ground in 1899, was laid on the 12th inst. The new church has been designed by Mr. Edward Mansell, of Temple Row, and it is estimated that the cost will be about 13,000*l.* It will be built in the Perpendicular style, of brick with stone



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## ILLUSTRATIONS.

PARISH CHURCH, ARBROATH, N.B.

NEW STABLING, FOXHOLME, HARROGATE.

IVESON HOUSE, FAR HEADINGLEY, LEEDS: THE SALON.

DESIGN FOR PANEL IN CARRIAGE, SOUTH AFRICAN RAILWAY.  
DESIGN FOR INLAY.

CATHEDRAL SERIES.—RIPON: GENERAL VIEW OF THE TRANSEPT.  
PORTION OF THE NORTH SIDE OF NAVE.

ings, and a prominent feature will be the tower, at the corner of Bristol Road and St. Luke's Road. It will accommodate about 800 persons.

SEVERAL small homes, which have been erected at Tooting for the deserving poor, were opened last week. There is already in connection with the Wandsworth and Clapham Union a Home for Aged Poor at Tooting Bec, where, after certain number of years in the workhouse, certain inmates are drafted on. Here the system of granting rooms to old married couples has for some time been tried with great success, and now these cottages have been built in the grounds of the home, giving to twenty-three couples the comfort of a little home to themselves.

THE foundation-stones of a new Congregational church were laid on the 16th inst. at Small Heath, Birmingham. The site is situate in a thickly populated district at the corner of Watery Lane and St. Andrew's Road, and adjoins the present Congregational school buildings, in which for some time past religious services have been held. When furnished the new edifice will cost about 3,000l. It will be erected in red brick with stone dressings, and will provide seating accommodation for between 400 and 500 persons.

AT a meeting of the Hamilton, N.B., Town Council a report by the public libraries committee was submitted as to visits they had made to municipal buildings at Clydebank, Govan, Perth and Coatbridge, and they recommended that no definite resolution be come to to proceed at once with the municipal buildings, but that the library be erected without delay. The style of architecture and accommodation of the Sandeman Library at Perth had commended itself to the committee as being a suitable library for Hamilton, with such

alterations as might be necessary in order to have one entrance-hall for municipal and library buildings. The report was adopted.

A SOMEWHAT curious occurrence is reported from Aldershot. It appears that a number of builders were engaged on a new building for the commanding officer of the Army Service Corps. One of the labourers, named Pharo, was ascending a ladder with his hod full of bricks when he suddenly fell to the ground, a distance of 30 feet. Several men rushed to the spot and caught him in time to break the fall. It was then seen that he had been shot through the right arm by a Lee-Metford bullet. At the same time it was discovered that another man had been struck by a bullet, while a third man received a bullet through his waistcoat and had a narrow escape. No report was heard, and the affair is a mystery. Pharo is in the hospital, but the other man hit was only slightly injured.

THE memorial-stones were laid on the 14th inst. at Bradford of a new mission hall which is to supersede the Eastbrook Wesleyan Methodist chapel, which, owing to the dispersal of its original congregation, has recently been used for mission purposes, for which it had at last become quite unsuited. The new building will be in the form of an amphitheatre, octagonal in shape, and every seat will be in full view of the platform. There will also be a minister's vestry, a sisters' room, &c. It is further proposed to erect shops or offices facing into Leeds Road, at a cost of 7,000l., the rents from which, it is hoped, will more than cover the interest on the total outlay.

It is proposed to considerably extend the accommodation at Rugby School. Old Rugbeians and others are being asked to subscribe to the fund, and already a sum of nearly 8,000l. has been given and promised. Almost immediately the authorities intend to proceed with the erection of a chemical laboratory, near the racket courts, and the addition of three classrooms near the school chapel, and the larger scheme embraces the building of a new school on what is at present the school-house garden. Here there will be a natural history museum, classrooms, masters' rooms and offices, and the principal entrance will be from the Barby Road, at a point opposite the gate leading to the Close.

A GREAT impetus is being given to Wesleyan chapel extension in all parts of British Methodism owing to the anticipated early distribution of grants from the Million Fund. Within the past few days sanction has been given by the

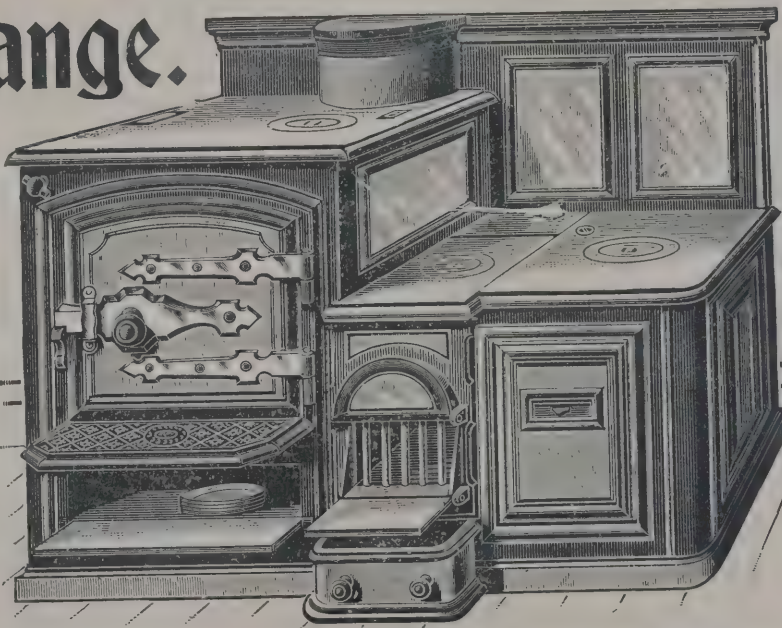
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PATENT 1331/01.  
M. F. Co. LD. R.

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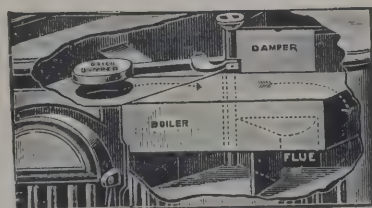
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A Fire Brick Dome and damper is fitted over the fire, which enables the heat to be concentrated at pleasure on the hot plate or boiler, the waste heat of either passing under the other, thereby utilising what is usually lost.



The above shows the heat of the fire concentrated on the hot plate and the waste heat passing under the boiler.

The above shows the heat concentrated under the boiler and the waste heat passing under the hot plate.

The casing and oven door are lined with slag wool and a third oven can be arranged if required.



general chapel committee for the erection of thirty-three new chapels, twenty of which are to be built in populous localities or rural districts where at present Methodism is unrepresented. The estimated outlay on these new chapels is 71,300*l.*; the sitting accommodation to be provided is for 10,300 worshippers. With the connexional aid to be afforded, the temporary debt on these new buildings will only be 12,500*l.* In addition there are forty cases of enlargements, also new Sunday and day schools and some ten new organs, bringing up the total estimated outlay to nearly 110,000*l.* In the list are the following local cases:—Leeds (Holbeck), a new chapel in Renton Terrace, to supersede the present wooden building; estimated cost, 1,100*l.*; sitting accommodation for 300. Rotherham, a new chapel at Clifton, to take the place of present school; the cost of the new building is 1,780*l.* At Grange-over-Sands, 750*l.* is to be expended on erection of hall and new Sunday school. New Sunday school at Idle, to cost 4,502*l.*, to provide for 300 scholars. At Waltham Street, Hull, 5,155*l.* is to be expended on vestries, church parlour, &c. The outlay on Doncaster (Oxford Place) schools is 1,000*l.*, leaving a debt of 200*l.* At Woodhouse Grove a new Sunday school is to be provided, at a cost of 2,036*l.*

### VARIETIES.

THE church at Cairndow, Argyllshire, which has been renovated, was reopened on the 12th inst.

THREE acres of land near the centre of Bury have been given by Lord Derby as a site for a new grammar school. He has made an offer of another gift of 1,000*l.* in addition.

THE new goods station of the North-Eastern Railway at Falsgrave, Scarborough, is now open for traffic. The warehouses and offices have cost about 9,000*l.*

THE foundation-stone of the new church of St. Ignatius, Stamford Hill, a mission founded by the Jesuit Fathers, was laid on Saturday by Cardinal Vaughan.

WE are glad to hear that Mr. Hawk, architect, Pontefract, who was seriously injured by a cycling accident near Scarborough, has regained consciousness, and is progressing favourably.

THE list of candidates for the town clerkship of Leicester has been further reduced. The choice of the Town Council now rests between Mr. Hiley, deputy town clerk of Birmingham,

ham, and Mr. Jarratt, town clerk of Southport. The final selection will be made on June 24.

A CROWDED ratepayers' meeting, convened by Llangollen Council, has been held to consider the proposal for strengthening Llangollen town hall, which is declared unsafe. The Council desired approval to expend 1,800*l.* to secure the building, with the addition of a convenient gallery. Councillor Pencerdd Williams, chairman, declared that the walls overhung 4 inches. After some lively passages, the meeting appointed four local experts to collaborate with the Council to solve the difficulty.

THE completion of the works in connection with the Whitechapel and Bow Railway has resulted in considerable spaces of ground being cleared in the vicinity of the stations. One of these sites, which includes the well-known Black Boy public-house at Stepney Green station, has come under the attention of the Stepney Borough Council, and a suggestion has been made that it should be acquired by the Council for the erection of workmen's dwellings. The cost, however, would be too great for the Borough Council to undertake, and it has been decided to bring the question under the notice of the housing committee of the London County Council.

THE parish church of St. Michael's, Dawlish, has been greatly enriched by filling in the niches with statuary. The series consists of four of the more prominent Old Testament preachers on one flank, and four of the New on the other, the central figure of St. John the Baptist forming the connecting link. A niche in the adjacent pillar has been repaired, and a figure of St. Michael placed in it. These figures, which are in Caen stone, as well as the graceful tabernacle work of the niche, are the work of Mr. Rogers, of St. Sidwell's, Exeter, who has succeeded admirably with respect to both the features and attitudes of the several statuettes. The low stone screen has also been adorned by the same sculptor with conventional carving, and a polished marble coping adds greatly to the dignity of its appearance.

THERE appears to be an almost general exodus of all excursion steamers down South for the Coronation Review, leaving Coronation week practically a blank so far as Londoners are concerned who wish to make trips. The Belle Steamers, however, in spite of tempting charters, have decided to run their largest steamers, *London Belle*, *Southend Belle*, &c., on their regular service as usual during Coronation week, and also on Friday, June 27, in addition, Yarmouth service and Husbands

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boat excepted. This will afford the public who have to start their holidays in that week the opportunity of making the journey by water as hitherto, and shows that so far as the Belle Steamers are concerned they can depend upon an uninterrupted service when making their arrangements ahead.

THE new Baptist church at Muswell Hill was opened on the 17th inst. It occupies a commanding position in Duke's Avenue, and is built of red brick with white stone dressings in a modified Gothic style. On the right of the main entrance rises a bold tower with a spirelet, and on the left hand a dwarf tower, both containing fireproof stairs to the galleries. The interior is very light and pleasing. The ceiling is vaulted in wood and supported by wide arches and surmounted by an octagonal dome. This is useful as well as ornamental, for it is ingeniously employed for the purposes of ventilation. The whole seating accommodation is arranged in a semicircular fashion, so that every one of the 800 or 900 persons can see and hear admirably. The acoustic properties have been tested and found very satisfactory. The architects were Messrs. J. A. Baines, of Clement's Inn.

DURING the recent excavations in clearing out the foundations of the old parish church at Forthingall a find of considerable interest to antiquarians has been unearthed. The relics were dug up from beneath the flooring of the church, and comprise a number of pieces of ancient sculpture, three or four cross-slabs with old Celtic sculpture. The slabs and other relics were shown to the Rev. John McLean, of Grandall, who suggested to the parish minister, Mr. Campbell, that they should be submitted for examination to Dr. Anderson, of the Society of Antiquarians, Edinburgh. The Doctor, having examined the stones, states that they are exceedingly interesting, showing characteristics of local art, and making Forthingall a centre of Celtic sculpture. These interesting relics, after being figured and placed on record by Dr. Anderson, will, it is understood, be preserved within the fabric of the new parish church now in course of erection on the site of the old church close by the famous yew tree, which is thought to be more than 2,500 years old.

At a meeting of the Ramsbottom District Council, on the 17th inst, the chairman (Mr. John Garnett) and several members replied to the strictures passed by the Local Government Board inspector at a recent inquiry held into an application for sanction for borrowing £14,850 for sewerage and sewage disposal purposes. The chairman denied that the

Council had been extravagant in the sewage scheme, and pointed out that the scheme had been sanctioned by the Local Government Board before the formation of the District Council, and that the Council had been tied hand and foot both as regards the design and designer. Therefore if there was any blame the department must take its share. He contended that the inspector did not give the Council the slightest credit for the work done in trying to remedy the mistakes of their predecessors from 1895 to 1898. Mr. Rostron said the matter referred to by the inspector at the inquiry was passed by the Local Government Board, who never raised a scintilla of doubt as to the feasibility of the scheme. When the present Council was formed they knew little about the treatment of sewage and placed almost implicit confidence in the advice of the Local Government Board.

### AMERICAN STEEL CONSTRUCTION.

SIR MARTIN CONWAY, professor of art in Cambridge University, does not share in the views of the president of the American University in Cambridge, Mass., regarding the architectural beauty—or lack of beauty—of New York city. President Eliot said recently that New York was about as ugly as they make them. Sir Martin Conway says, on the other hand, that Broadway from the Battery to Madison Square, and then Fifth Avenue on, is the most beautiful street in the world. But he admits that this beauty is found to no small extent in the promises for the future that the buildings along the street contain. He says that the skyscrapers of New York are just now of more interest than any other buildings in the world, because better than any other they hint at the style of architecture that will be the style to-morrow.

"The architecture of the future will be the architecture of steel," he said recently to a group of American callers. "It will be an entirely new style, and it had its birth in Chicago only a brief twenty years ago. There have been three great styles in the past—the simple uprights and the crossbeam style of the Egyptian and Greek temples; the rounded arch style, which the Romans worked out from a suggestion borrowed from pre-Athenian Greece; and the Pointed style of the Gothic builders. All other styles have been variants or combinations of these. The materials have been wood and stone, and the problems to be met in the past were the problems of construction. An entirely new style is now

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Water. METHOD OF  
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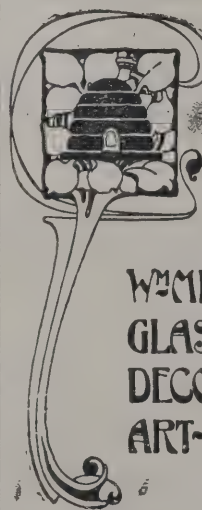
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"The style of the future will be most beautiful. Already in many of the skyscrapers you seem to think so ugly I see hints of this beauty. To those who have seen the buildings of Greece and Rome the churches of the Middle Ages must have seemed ugly, but in those very churches were being worked out and developed the structural principles which resulted in the cathedral of Paris and the perfect spire of Chartres. Now such of those churches as are left us we find beautiful by the light reflected back on them."

"There is no reason why the steel skyscrapers should not stand the vibration for a thousand years, so no doubt the day will come when Americans will look back on many of the buildings now going up in lower Broadway and find them beautiful, just as we now see beauty in the early Gothic churches. Let us look forward and see in them a style in the making."

"Structurally this style will be the simple square principle of the Greeks, the Girder style, for that is the cheapest. But as the general proportions of the skyscraper are different from the low buildings of the Greeks, the style of ornamentation cannot be made the same, nor can it be the style of the Gothic, which was adopted for pointed buildings, and, moreover, ecclesiastical. Many attempts to use these styles are seen on the towering structures in New York, and too often the result is unhappy. These square steel buildings might be covered with wall-paper if one desired. Neither stone nor brick nor wood is essential to the structure. How shall the steel skeleton that is the real building be concealed and ornamented and made beautiful to look upon? The proportions are like nothing before built in the world, unless it be the Tower of Babel. They are reared for use. How make them lovely?"

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storeys, or groups of storeys, the windows and cornices of tall buildings of steel in entirely new and beautiful ways. I shall not be surprised myself to come back to New York thirty years and see your tall buildings covered with tiles arranged in patterns or even in pictorial design. Think of a forest of sky-scrappers on lower Manhattan Island all standing up in shining colours and sending back the sun."

Sir Martin paused to allow the conception to come home to the men with whom he was talking. Spoken very quietly, his words did not at once carry the wild, Babylonian splendor of the picture.

"The theory of a level skyline on a city street does not appeal to me," he said. "I know of no more beautiful sight in the world than lower Manhattan viewed from Jersey City at sunset. That wilderness of towers of Babel, each with its roll of smoke, is a sight so majestic, so genuinely beautiful that it can never be forgotten. It is a pity that the splendid idea of a triumphal arch of entrance on the Battery was not carried out. The finest street in the world should have the finest entrance. There should be a fitting door to the land that holds the future of architecture in its keeping."

### CLINKER BRICKS EXPERIMENT.

THE conversion of clinker refuse into a commercial product of value is the problem which the Corporation of Brighton, with laudable ambition, have set themselves to solve. They are already making a profit, says the *Sussex Daily News*, out of the conversion of some portion of the refuse into mortar, and they desire to transform a large proportion of the residue into bricks. Their earnestness and public spirit will no doubt be rewarded. Only on the 5th inst. did they appoint a deputation to visit the Netherlands, to see the brick-making-from-clinker-refuse works of Mr. A. Kahl, at The Hague, and since then the deputation have inspected the establishment, seen some of their own clinker-refuse shaped into bricks, and have returned to Brighton. This they did on the 13th inst. Here is an example of commendable celerity in public work, and the achievement is very creditable to the deputation. It was necessary for them to go to Holland for the desired information. Several municipalities, it is true, make paving-slabs from clinker-refuse, but the surveyor does not favour this mode of its utilisation. The slabs would be unsuitable for use in Brighton, whereas he could largely consume the bricks, and those he did not want would

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no doubt be readily purchased by builders of the town. The deputation's rapid visit to Holland must have left them little time in which to inspect the fine buildings of that handsome city, The Hague, and their journey to Gloucester to witness the slab-making works of Messrs. Fielding & Platt will, no doubt, turn out to have been effected with similar expedition.


For a full appreciation of this important matter, it is well to recall the facts. The destructor at Hollingdean, then, dealt with 27,061 van loads of house refuse in 1901, the residue representing 9,000 cartloads of old tin, clinkers, and ashes. The tins were flattened, and sold at 2s. 6d. per ton, and 1,285 of the loads were made into mortar, and freely sold (the demand being in excess of the supply) at a profit of 87d. 10s. Road and pavement foundations took 1,544 loads, 1,177 loads were given away, and 4,994 (say 5,000) loads were carted to Black Rock, as playthings for the wild waves. The point is, what is to be done with these 5,000 loads? Upon this, the expert advice of the surveyor is the guiding element. Prior to the visits in question, he indicated that a clinker-crushing plant might, at an outlay of 855*l.*, be installed for dealing with 1,500 of the 5,000 loads, thus smashing the large, hard clinkers into such small pieces as to render them suitable for the formation of moulds for concrete, in lieu of beach. After allowing for interest on, and repayment of, the amount of the outlay, spread over fifteen years, together with 52*l.* per annum for labour, the surveyor values the broken clinkers at 187*l.* 10s., or 61*l.* 4s. 1d. net profit, to which would have to be added 225*l.*, the present cost of cartage to the devouring and profitless sea. Now we come to the main body of the refuse—the 3,500 loads, described as fine clinker and ash. Mr. Kahl would provide a plant capable of turning it into 8,000 bricks a day—less carriage, but including an engine, the necessary machinery with belting and shafting—for 2,720*l.*, Messrs. Fielding & Platt, of Gloucester, estimating for a brick-making and drying plant of the same capacity for 1,630*l.* A slab-making plant by Messrs. Fielding & Platt, capable of turning out twenty to twenty-five slabs per hour would cost 1,150*l.* These estimates do not include the cost of buildings, foundations, or the erection of the machinery, and the surveyor puts this cost at about 800*l.* So much for the outlay.

As to revenue, Mr. May was advised that the 3,500 loads of clinker-refuse would yield 1,000,000 bricks, at a cost—including interest and repayment of capital—of 13s. per 1,000, or a total of 650*l.* If the bricks were sold at an average of 8s. per 1,000, the clear profit would be 750*l.*, to which would

have to be added the saving of 525*l.* on cartage; or 3s. per load, including wear and tear of carts. The total profit would be 1,275*l.*—an appreciable sum, and worthy a struggle to obtain. The slab-making would, apparently, yield a greater profit. If 34,240 yards sup. of slabs could, as had been said, be realised from 3,500 loads of clinker-refuse, and sold for 4s. per yard sup., then slab-making would show a net profit of 1,809*l.* per annum; but, for reasons stated above, the surveyor prefers the brick-making, and brick-making will no doubt be undertaken. It might be advantageously stated here that the members of the Corporation of Birmingham are among the dozen or so municipalities that have engaged in slab-making. They commenced in October 1897, spending (exclusive of foundations) 2,000*l.* on hire plant. A similar plant could, of course, be bought to-day for less money. The plant was paid for out of revenue. In 1899 the production of square yards of slab amounted to 8,860; in 1900 to 12,106, and in 1901 to 9,582. The slabs, used chiefly for footpaths, were 2½ inches thick, faced with granite, and the cost of producing one such slab was 2s. 2d., the selling price ranging from 2s. 6d. to 3s. 3d. These particulars may help the surveyor to give the *coup-de-grace* to the disfavoured idea of slab-making. So what probably has to be faced is the outlay of 855*l.* 10s. for clinker-crushing plant, yielding an already explained profit of 286*l.* 4s. 1d., and an expenditure of, say, 2,430*l.* for brick-making and drying plant, producing a profit of 1,275*l.* The total outlay on the Council's enterprise is, then, 3,315*l.*—unless they go to Holland for their plant, and then it will be 1,140*l.* more—and the total profit yielded will amount to 1,561*l.*, or 286*l.* 4s. 1d. on crushing-clinkers and 1,275*l.* on converting clinkers into bricks. A complicated representation is thus reduced into a form enabling "all who run to read."

#### ELECTRIC APPARATUS AT NORTH STAFFORDSHIRE INFIRMARY.

THE opening of the electric department at the North Staffordshire Infirmary has taken place. The equipment provides for continuous and alternating current baths, and has been designed and carried out by Messrs. Marshall & Woods, 2 Gray's Inn Road, Holborn, on lines suggested by Dr. Armstrong, of Buxton. The necessary power is taken from the mains of the Potteries Electric Traction Company to charge a large storage battery, which is capable, when fully charged, of



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working the baths for fifteen hours before it requires recharging. The battery is controlled by a switch which completely isolates it from the bath apparatus when charging, and so avoiding any possible connection between high-pressure tramway current and the baths. A pair of wires are run from this switch to a board, where they are divided up into six pairs; one pair of these is for the machine that converts the continuous current from the battery into alternating or sinusoidal current; one pair go to the controlling board for the large bath, two other pairs go to two arm baths, and the remaining two pairs are in reserve. The machine consists of a motor and a dynamo coupled together and running at 3,000 revolutions per minute, this high speed being necessary in order to obtain the requisite number of alternations per second of the current. A pair of wires carry the alternating current from this dynamo to a board where they are divided into five pairs, one pair being for the large bath, two other pairs for the two arm baths, and the remaining pairs for spare. We thus have four wires going to each controlling board, two carrying continuous and two alternating current. By means of a switch on these boards, which are of polished marble, either kind of current can be turned on to the bath as required. A regulator is mounted on the boards for adjusting the current to the proper strength; and on the controlling board for the large bath are two instruments—a voltmeter for measuring the electrical pressure between the ends of the bath, and an ammeter for measuring the strength of the current flowing through the bath from which the strength of the current flowing through the patient can be calculated. The current is passed through the water in the bath from two tin plates, one at the head and one at the foot, a third plate like a paddle being provided to concentrate the current on any particular portion of the patient's body. The Röntgen rays are worked from an induction coil, capable of giving a spark 10 inches long in the air, which is driven by a separate set of portable batteries, controlled by a similar switch to that used for the large battery. This apparatus, which has been supplied by Mr. Leslie Miller, of Hatton Garden, London, is in a separate room from the baths, and partitioned off by heavy curtains to exclude all light. Two voltmeters mounted on a slate panel are fixed in the battery room for measuring the electrical pressure of the two batteries. It will be noted that provision has been made to allow of two more baths being installed, the only additional apparatus required besides the bath being a controlling board; and by these arrangements more baths can be electrically provided for

at a very slight extra cost—from which it will be seen that, in the apparatus at present installed, the governors of the North Staffordshire Infirmary have an equipment capable of considerable expansion, should its success create a demand for additional accommodation.

### BATHS AT NORTHAM.

At the last meeting of the Southampton Borough Council report was presented with regard to the condition of the bath at Northam, which were the gift of Mr. Tankerville Chamberlayne, M.P. In the report of the baths committee were the following observations by the borough engineer (Mr. Crowther) with reference to the Northam Baths:—"I have had this bath under close observation for the past two months. There is a very decided movement at the end of the bath nearest the river; as the tide rises this end of the bath floats, and as the tide recedes this end of the bath settles down; this continual motion has broken the bath completely across. I have had bore-holes made, and from the nature of the ground I am of opinion that it is not possible to make this bath watertight without reconstructing the same on a pile foundation. The Ferro-Concrete Constructions Company (Hennebique's patents) have submitted a scheme for the construction of a swimming bath in accordance with their patents and are prepared to guarantee the durability of their work for twelve months on the payment by the Corporation of 5 per cent. on the cost price. The company propose to construct this bath on a foundation composed of thirty-six ferro-concrete piles each about 25 feet long and 12-inch square. On the heads of these piles ferro-concrete beams 6½-inch square will be laid both longitudinally and transversely in such a manner as to bind the whole of the foundation into one mass. It is proposed to lay on these beams the flooring to form the bottom of the bath; this floor and the sides will be 5½-inch in thickness. The bath has been calculated to withstand any movement of the existing bath, and in the event of any further subsidence in the old bath the new one will remain in position. If this work is put in hand at once, the company's representative informs me that the bath will be ready for use in September. I estimate that the whole of this work will cost about 1,100/." It was resolved by the committee to adopt the scheme submitted by the borough engineer, and, subject to the approval of the finance committee, to recommend the Council

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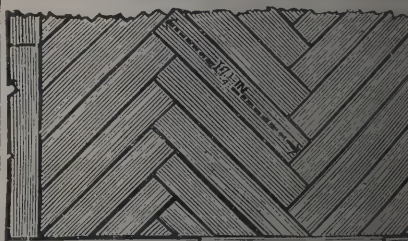
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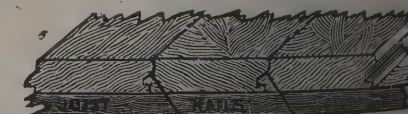
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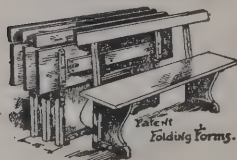
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try out the same, and to apply to the Local Government for sanction to borrow the estimated cost of the proposed. The recommendation has yet to be adopted.

### "GALILEO FERRARIS AWARD."

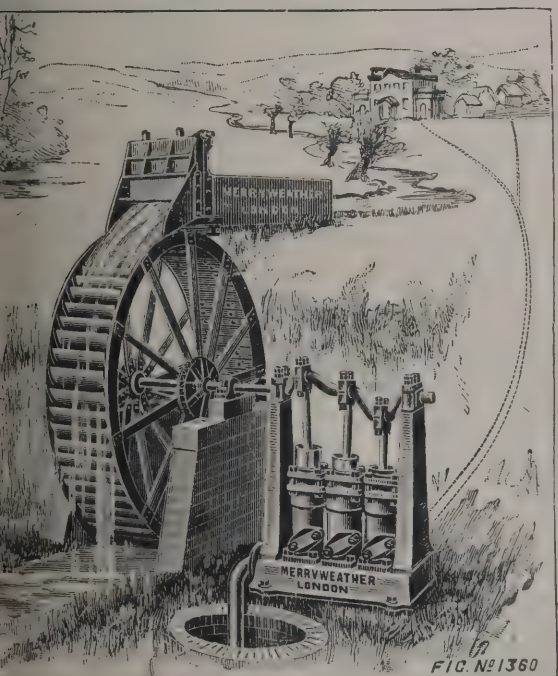
A committee for the "Galileo Ferraris Award," which was formed in 1898, being composed of the representatives of the five committees for the General Italian Exhibition held in 1898, of the Chamber of Arts and Commerce, of the Academy of Science and of the Royal Industrial Museum in Turin, have determined to open an international competition for the award of the prize on the occasion of the unveiling of the monument to that illustrious scientist in Turin in the latter part of the month of September next. The award is of 15,000 lire (600*l.*), together with the compound interest accumulated since the year 1899 up to the day of the award, is to be granted to the inventor of some practical application of electricity from which some noteworthy progress may be made. Competitors may produce either pamphlets, schemes, drawings, or machines, apparatus and contrivances concerning their invention. The jury, composed of the committee, has full power to cause practical experiments to be made of the inventions entered for competition and upon the results of the apparatus, contrivances and machines. Competitors are to file their application and deliver their machines, apparatus and whatever appertains to their invention not later than six o'clock P.M. on September 15, 1902, to the office of the secretary of the committee, care of the administrative committee of the First International Exhibition of Modern Decorative Art in the buildings of the Chamber of Commerce and Art, 28 Via Ospedale, Turin, Italy.

### AN AMERICAN MODEL CITY.

The *Galveston News*, Mr. B. Gillette writes:—Through the proposed model city to be exhibited by Mr. A. Kelsey at St. Louis during the Exposition of 1903, attention will be forcibly called to the possibility of building modern cities upon vastly improved lines to those which have been heretofore in vogue. Centuries past man, with his apelike propensity, has been building cities without any possible suggestion of a plan,

cumbering the earth with vast aggregations of shops and dwellings thrown together at random, as the exigencies of the situation demanded. It now seems to have occurred to at least one individual that it is time to call a halt to this methodless action, and to draft plans for a city before building it as men have been doing for ages past. The subject is one well worthy of attention by the forthcoming convention of architects, which will be held next year at St. Louis, according to the present plans. Jules Verne recently remarked that all the things he had dreamed a quarter of a century ago had been realised by scientists of the twentieth century. In like manner the apparently extravagant imaginative ideas of the poet and novelist have been realised over and over again. The "aerial navies grappling in the central blue," "the parliament of men—the federation of the world," and other projections of the immortal author of "Locksley Hall" now are all on the point of being realised. Bellamy, in his "Looking Backward," does not formulate any definite plan for building a city, but in "The Story of the Millennium," by Arthur Field, a plan is given by means of which the ideal city may be built. This plan consists of streets formed of moving platforms in the shape of ellipses, the ends of which rotate from a common centre, where the public hall and a universal emporium is situated, all supplies being carried by means of pneumatic tubes to the houses, and all refuse expelled in the same manner. Such luxuries as electrical hurricanes for cleaning the houses, ozone zephyrs and telepathic news waves are, of course, quite a few years ahead, as is also the millennium, but the idea suggests a radical change in the scheme of housing the future populations of the earth, which may be either embodied or suggested in Mr. Kelsey's model city. The novel lines which are selected by Mr. Kelsey for innovation will deal more with the grouping of the buildings of a city with regard to the convenience of the public than with radical changes suggestive of improvements based upon a wider grasp of future needs. So far as these will go there will be much improvement of the regular kind demonstrated. In the first place there is to be an official centre, in which each building will contribute to general unity and utility. Police, fire and hospital buildings are all to be contiguous, as their relations to each other naturally suggest, and there is a hint given that this idea of grouping will be carried out in ways that will mean the centralisation of the forces of municipal life in a way not hitherto dreamed of. There is also to be a grouping of all the intellectual utilities, meaning the formation of a centre for

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schools, town library, museum, lecture hall, art and technical schools and other features of an educational character. There can be no doubt that such a grouping would be conducive to the intellectual development of the people. The atmosphere of such surroundings could not fail to tell upon the student, who would be able to find that co-ordination of enjoyment and toil from intellectual pursuits which forms the perfect mind. There will be models of the most perfect institutions in the world in the way of asylums and hospitals, complete systems of transportation, subterranean, aerial and surface. There are to be models of harbours, wharves and vessels of the most up-to-date character and of distributory systems much in advance of the pneumatic facilities now in existence.

### SCOTTISH ASSOCIATION OF MUNICIPAL ENGINEERS AND SURVEYORS.

THE first general meeting of the Scottish Association of Municipal Engineers and Surveyors was held in the City Chambers, Edinburgh, on the 14th inst. There was a large attendance, and Mr. William Dyack, Aberdeen, one of the vice-presidents of the Association, was called to the chair.

The Chairman said it was very gratifying to learn that the endeavour to promote an Association of Scottish Municipal Engineers had been attended with so much success. He had no doubt the Association would be the means of promoting a more extended knowledge of municipal work among the individual members, and it would also result in a distinct advantage to the various towns and burghs throughout Scotland and to the municipal rulers thereof.

Bailie Telfer said that in the absence of the Lord Provost it was left to Bailie Waterston and himself to tender to the members of the Association a cordial welcome to the city. An Association such as that, he said, would not only be of immense importance by way of the mutual improvement and support it gave one to another, but it must prove of immense value to the Corporations of Scotland.

Mr. A. B. McDonald, M.Inst.C.E., city engineer, Glasgow, thereafter delivered his presidential address. He began by thanking the members of the Association for their kindness in conferring on him the honour of being their first president. The necessity, he said, that impelled the constitution of an Association of Municipal Engineers and Surveyors, to whose

meetings they could all without undue effort repair, had long recognised by members of the Institution of Civil Engineers and of the Association of Municipal and Sanitary Engineers as a matter involving neither disloyalty nor and it was hoped that the movement which that day a definite form might so augment itself that its permanence be effectually secured. Every one entrusted with the expenditure of public money must be animated by anxiety that the outlay was made to the greatest advantage; this feeling was of necessity accentuated year by year by the duties of a municipal engineer were continually widening, and the more varied extent of technical resource was needed for their fulfilment. Within recent years such a change had taken place in the aspirations of local government as obliterated the old going conditions that prevailed thirty years ago. The old rule regulated by rule-of-thumb had been replaced by methods of precision, and the opportunities that occurred for the contemplation of ordinary projects had disappeared in the enlightened recognition of the ever-increasing progress of sanitary science and the improved conditions that presented every department of municipal endeavour. This advancement, of course, entailed a corresponding enlargement in the technical equipment of all municipal officers, and every one must be conscious of the urgent necessity of enlarging his knowledge of civic work, and keeping himself in touch with the most recent developments of public activity, if he was to maintain his place in the arena. To do this it was imperative that he should possess the opportunity of frequent examinations of public works in course of execution, and that he trusted no one would for a moment suppose that he had estimated the value of a thorough scientific training as a preliminary necessity. On the contrary, it had always appeared to him that no engineer could possibly over-educate himself in applied mathematics and cognate branches of exact knowledge. But it must not be forgotten that the utmost extent of acquirements in this direction only put him in the possession of tools which he had yet to learn to use, and it was in the observation of the practice made use of by experienced engineers that he alone could derive such practical instruction. The information they all could obtain could be obtained only in the interchange of ideas and a frank communication of such special knowledge as they themselves had derived in the course of practice, such information as experience had placed beyond the range of speculation and empiricism, and was yet in complete harmony with the

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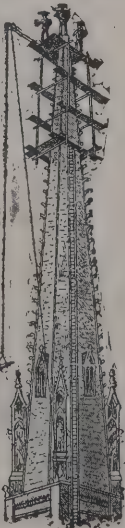
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For each of them, he trusted, still regarded himself as  
ent, and all of them must be conscious that in the  
of municipal enterprise there was much to learn, that  
rk of learning must be taken up while it was yet day,  
at in fulfilment of the aim of their new Association they  
unite in the earnest endeavour that this dissemination  
tical instruction should be as wide and as free as they  
le to make it.

ie Waterston moved a vote of thanks to Mr. M'Donald  
address, and concluded by wishing every success to the  
ation as a factor in the municipal life of Scotland.

e Corporation of Edinburgh having been thanked for  
the City Chambers at the disposal of the Association,  
rt of the proceedings terminated with a vote of thanks to  
irman.

er an inspection of the Museum in the City Chambers,  
mbers journeyed to Portobello by a special car, placed  
r disposal by the Tramways Company, and a visit was  
the cable power station and the baths.

### AUSTRALIAN TIMBER TRADE.

DING to the "Year-Book of Australia," forest conserva-  
likely to receive more attention among Australians in  
ure than in the past. Outside Western Australia its  
ance has not been generally recognised, and even in that  
he necessity for care in depleting the sources of jarrah  
ri timber supply has too frequently become overlooked.  
present time the Commonwealth imports of timber  
exceed in value the exports, despite the valuable ship-  
representing a total of 458,864/. during 1900-1, from  
n Australia; the bulk of the oversea imports represent-  
woods not grown in any of the Australian States. Had  
ural timber resources of the Commonwealth not been so  
atically neglected in the past, the necessity for imported  
would have been less felt, there being numerous districts  
h pine and other soft timbers can be readily grown.  
there has been a continuous waste of the more valuable  
of native woods. Had the commercial value of these  
arlier recognised, it is possible that their indiscriminate  
tion would have experienced a check. In most of the  
official inquiries have led to discouraging reports of the  
g conditions and prospects of the timber resources in  
nd proved beyond all question the necessity for drastic

measures to stay the work of destruction, provide for the con-  
servation of the scanty remaining supply of timber, and arrange  
for replanting the devastated areas with young trees of suitable  
character.

In a previous review it was pointed out that for many years  
to come Northern Europe, Canada and the United States  
must remain the chief factors in the world's timber supply;  
also that, respecting the timber resources of the United States,  
Mr. Henry Gannett, chief geographer of the United States  
Geological Survey, estimates the existing supply at 1,380  
billion superficial feet, sufficient to meet the present annual  
demand for the home market and export for fifty years. He  
also estimates the annual increment by growth at over 300  
billion feet, and reckons that one-tenth, or 30 billion feet,  
consists of merchantable timber. This is a little in excess of  
the annual demand of the American sawmills; but after allow-  
ing for the amount destroyed by fire and other sources of loss,  
it is considered probable that the yearly growth does not  
balance the annual drain on the forests of the United States,  
and the prospects of a continuous supply would be more favour-  
able if the waste were reduced to a minimum, which can be  
effected only by giving increased attention to the practical  
work of forest conservation. But even then it would take  
many years to repair the evil effects of former reckless pro-  
digality. Within the next few years America will find its  
surplus timber available for export continually diminishing by  
reason of the increasing home demand, especially for paper-  
making purposes.

British forests, until within a comparatively recent period,  
furnished large supplies of oak and other hardwoods, but with  
the gradual diminution of the British forest area there has been  
a growing scarcity of these classes of timbers, accompanied by  
a corresponding advance in prices, with the result that supplies  
of hardwoods from other countries, including Australia, have  
become an urgent necessity. British softwoods have always  
been limited in quantity, and the British market has for many  
years become dependent on supplies from Northern Europe  
and America, especially the kinds, mostly pine, suitable for  
flooring, shelving and similar purposes. There is little or no  
possibility of an increased supply of British-grown timber, the  
area available for forestal purposes in the United Kingdom  
being limited.

Dr. W. Schlich, inspector-general of forests to the Govern-  
ment of India, states that, after careful investigation, he has  
arrived at the conclusion that so far as pine and other soft

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woods are concerned, the danger of deficient supply is almost at hand. At present the great exporting countries are the United States, Canada, Scandinavia and Russia, and in each of these the signs of exhaustion have become so apparent that the work of forest conservation has become a pressing necessity. There may be no heavy falling off in the supplies as a whole during the next few years, but there will be little, if any, increase, and this, in view of the annually augmented demand, will virtually amount to a continually increasing shortage. This should prove the opportunity of the Commonwealth, with its wealth of spare land which, under scientific forest culture, would make a remunerative return, albeit the process would naturally be slow at the outset.

#### *New South Wales.*

The establishment of the New South Wales Timber Industries Association has been attended with good results in the State. The object of the organisation is defined as being the introduction of an improved method of forest administration, with a view to conserving the timber resources of the State, and making them a valuable source of revenue.

The labours of the new Association led to the State Minister for Lands convening a conference of the principal State foresters, at which recommendations were made for a larger measure of protection and care of immature timber, the imposition of a uniform royalty charge on timber obtained from the Crown estate, and for the subdivision of the State into eight forestry districts, each to be presided over by a forest officer and an assistant with local guards, whose duties were to be connected with forestry alone, and who should devote themselves to the protection of forests and the administration of the timber regulations, instead of such duties being entrusted to officials holding the dual positions of conditional purchase inspector and forester, and consequently unable to give the amount of attention required in connection with forest work.

This was followed by the reorganisation of the Forest Branch, which is to be created a separate department when the sanction of the State Parliament has been obtained.

Another step in the same direction has been taken by the State Minister for Public Works by the establishment of a branch of his department, which branch will have control of the whole of the timber supplies required for State purposes. The branch will also have the control and inspection of all timber intended for export. This will enable, apart from the question of departmental control, a considerable body of

practical information of value in future legislation obtained. Many of the New South Wales hardwoods of considerable commercial importance by reason of their size and exceptional strength. The grey iron-bark has been ascertained to possess a resisting power of 17,000 lb. per square inch, compared with that of 11,800 lbs. for English oak and 15,500 lbs. for teak. Several other kinds of New South Wales timbers have a resisting strength greater than English oak. The absence of branches for the greater part of the height of each tree enables timber of considerable length and free from knots to be obtained, the average of the trees being 100 feet, with girth of corresponding dimensions.

Although attention has repeatedly been directed to the beautiful nature and industrial value of many of the New South Wales softwoods, they remain less widely known than they should be. These timbers are found mostly in the forests of the State, and several of the least known kinds are wood beautifully marked and grained, and capable of taking a high polish. Not a few have a fragrant perfume. Some of these woods are admirably adapted for the finer and artistic kinds of cabinet work. Among the leading varieties are the red cedar, which is often found growing to an immense size, as much as 2,500 cubic feet being obtained from a single tree. Other kinds deserving mention are the white pine, white beech, myall, tulipwood, rosewood, yellow wood, red wood, mock orange, red bean, black bean, silky oak, coach oak, &c. "Besides their use for cabinet-making," says the New South Wales Government Statistician, "many of the timbers are of great utility for the rougher kinds of carpentry, while some, both hard and soft woods, are admirably adapted for coach-builders and coopers' work. The chief descriptive pine growing in New South Wales is the Moreton Bay pine, found in the coast districts as far south as the Bell River. It is soft, light and easily wrought, and suitable for interior woodwork of houses, as well as for cabinet-making. The red or black pine is extensively distributed over the Liverpool Plains, and in the Lachland and Darling river districts, as well as around Berrima. It is beautifully marked, the grain, takes a fine polish, and has an agreeable fragrance. Australian deal is an excellent timber, and is obtained in large scantling, the tree frequently reaching 120 feet in height. It is soft, close-grained, easily wrought and remarkable for its freedom from knots. Its use, therefore, is extensive for cabinet-making and fittings."

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*Queensland.*

Queensland the importance of timber conservation has recognised in a practical manner by the establishment of a timber branch in connection with the State Lands Department which commenced operations in August 1900. In his report dated February 12, 1901, the inspector stated that the total area of timber reserves in the State at the close of 1900 was 427,838,080 acres, a small proportion of the 427,838,080 acres reserved for the area of the State. The reserved area was subsequently increased to 1,871,974 acres, and a further reserve of 1,871,974 acres has been recommended. The chief reservation is in the Nanango and Bundaberg districts, where large areas of hoop pine and hardwood have been protected by wire fencing. It may appear that the reservation of large areas of land will interfere with selection, but most of the land reserved is of a rough country, of little value for selection, and in the country within the area reserved is found to be suitable for selection there will be no objection to its being surveyed and reserved, provided it does not interfere with valuable timber, and leaves sufficient grass and water for the use of stock-keepers who may hereafter work timber purchased off the reserve.

Efforts have been made from time to time to direct attention to the lesser known Queensland timbers, several of which are of a choice character, but in consequence of the lack of knowledge on the part of the timber-getters are ruthlessly cut down for the commonest purposes. Thus, in the Bundaberg district a valuable timber, a so-called rosewood, of considerable utility, by reason of the beauty of its colouring, for cabinet-making purposes, is largely used for building farmers' homesteads. A kind of forest oak, found at Laidley, is very red and shows beautiful markings. A specimen has been cut and polished presents a unique appearance. Common yellow wood is much used for building purposes, and white ant will not touch it. It is also used by carriage makers. Among the lesser known timber trees is the cockspur (Cudrania Javanensis), the wood of which is a rich dark colour. It would be much appreciated by cabinet-makers, for its extremely fine grain, and taking a high polish. Another timber is the common Eleaodendron Australe, which is pinkish or flesh-coloured wood, with a close grain, and takes a high polish. The ordinary Australian timbers are plentiful, but their industrial value seems to be very imperfectly understood. The black brigalow, for instance, should have a

good sale among cabinet and picture-frame makers, as it splits well, takes a fine polish, and when old closely resembles ebony.

The sawmill industry is represented by 160 mills, an increase of thirteen on the previous year, with an engine plant of 3,700 horse-power, machinery and plant valued at 239,349*l.*, land and premises valued at 146,450*l.*, and raw material in stock valued at 62,696*l.* The number of hands employed is 2,228, with 1,986 horses and 6,250 bullocks. The value of the rough timber purchased during the year was 305,740*l.*, producing 99,843,896 feet of marketable timber, valued at 511,357*l.* During the previous year the value of the rough timber purchased was 269,538*l.*, producing 90,520,076 feet of marketable timber of the estimated value of 452,524*l.*, an increase of 96,101*l.* on the value of the timber produced in 1898-99.

*South Australia.*

Rabbits and grasshoppers appear to be the great enemies of forest conservation in South Australia. According to the latest report of the South Australian Department of Woods and Forests, a loss of 58 per cent. of young trees at one of the leading forest reserves was occasioned by grasshoppers, while in others the rabbits, occasionally assisted by the insects, have been equally destructive. Most of the reserves have to be protected by wire fencing, which adds considerably to the cost of working the department. The total area of reserved forest lands in the State on June 30, 1901, was 203,114 acres, of which 13,339 acres were enclosed and being systematically replanted, the number of trees alive at the various reserves being 49,219. This is not a great achievement for a State possessing an area of 380,070 square miles, or, with the Northern Territory, 903,690 square miles, but it is better than nothing. The South Australian Conservator of Forests is apparently anxious to secure a fresh reserve of about 10,000 acres on the river Murray.

*Tasmania.*

Tasmania is essentially a fine timber-growing country, yet comparatively little has been done in the way of properly utilising its forest resources. About 4,000,000 acres, or one-fourth of the entire land surface of the State, is roughly estimated to be covered with timber forest, but of all this only 55,300 acres have been reserved by the State for timber-planting and growing purposes, consequently the work of forest conservation is yet in its infancy. Recently, however, the question of forest conservation has received considerable

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attention, and it is not unlikely that something will be done in the near future by the Department of Land and Surveys to secure a practical application, on an extended scale, of the principles of State forestry. In the annual report of the department it is stated the superior quality of the Tasmanian hardwoods, notably the blue gum and stringy bark, continues to be steadily recognised in the English and foreign markets, and will assuredly command greater attention as its strength, durability and worth for heavy constructive works, such as bridges, docks, breakwaters, railway sleepers, &c., become better known. The enormous growth and rich beds within comparatively easy access to shipping along the D'Entrecasteaux channel, are probably unrivalled in the world, and yet there has been hitherto a lack of the capital necessary for the solid and vigorous development of the industry upon a comprehensive scale. Allusion is also made to a paper read before the Royal Society of Tasmania, in which the writer, Mr. Heyn, a timber expert, representing the Dover Dock Works in England, said:—"You have in your forests a tree which combines the desiderata we require for our piling purposes—length, dimensions, solidity and high specific gravity, and less liability to attack by the terrida, in numbers sufficient for our wants for many years to come, and in situation near enough to the sea to allow of its being loaded on ships without too heavy a transport cost. This timber," continued Mr. Heyn, "is commonly called blue gum, and for size, strength and durability it would be difficult, in my opinion, to find any wood superior to it. The enormous size and height to which these giants of the bush grow enable us to hew out of them piles of 100 feet in length and 20 inches squared parallel from top to bottom. To do this, however, we require a tree 15 to 30 feet in girth 5 feet from the ground, and about 150 feet to the first branch. We found trees of the length and dimensions in Norfolk Bay, and also at Port Esperance, where there are at present several hundred logs lying ready to be sent off in the ships now on their way to load them."

In addition to the blue gum and stringy bark, Tasmania possesses an immense wealth of other timber trees, including the swamp gum, peppermint, blackwood, red pine, myrtle, King William pine, celery-top pine, and Huon pine, although the latter is said to be fast disappearing under the hands of timber cutters. A considerable area of virgin forest has been leased to a couple of English companies, subject to regulations with a view to conserving young trees and replanting where

necessary, and it is not improbable that a State nursery established in the near future.

#### Victoria.

The long-continued reckless waste of growing timber in Victoria, followed by the comparative scarcity of the valuable kinds of wood, have been fully described in a series of interesting and instructive reports by the Victorian Commission on State Forests, from which copious evidence has been given in previous reviews. The Commission has recently followed up its investigations by a report in which the questions of forestry, legislation, management and control are treated. The inquiries of the Commission began in June 1897. In the introductory remarks the commissioners state that, with the exception of those of Australia and New Zealand, the Australasian forests worked under laws primarily designed for the alienation and settlement of Crown lands, and the European policy of conservation has been lost sight of. Estimating the forest area of the Commonwealth at 184,557,000 acres, of which 11,797,000 acres are in Victoria, the Commission points out both the necessity for, and the enormous advantages derivable from, a proper system of timber conservation, and recommends the establishment of a forest conservancy board, which should consist of three persons, who should receive a moderate honorarium for their services, and hold office for a term of three years from the date of appointment, but be eligible for reappointment for a further term. In making these recommendations we need scarcely say that great care should be exercised in view of the important interests which it is proposed to place under their control. Their primary duties being in connection with the reserves, it is certainly advisable that men who possess practical knowledge of our indigenous timbers, with their habits of growth and reproduction, and of the configuration and distribution of the reserves and Crown lands generally, should be selected. The board should be responsible to the State Parliament for matters of general policy and administration, for the control of the staff, including appointments and removals, for all royalties, charges and fees (after approval by the Governor in Council), for timber, forest products, grazing and other purposes, for the collection of all revenue and the economical disbursement of all necessary expenditure, for the regulation of the distribution of trees from the public nurseries and the replanting of denuded areas, or their closure, to secure the reproduction thereon.

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# The Architect.

## THE WEEK.

A commotion about the danger of conflagrations in buildings has overcome official equanimity and is felt in museums and picture galleries. In the report of the trustees of the National Portrait Gallery, which has just been issued, the public are assured that a thorough survey of the Gallery was made in September 1901 by Commander WELLS, chief officer of the Metropolitan Fire Brigade, who expressed himself, in his report to H.M. Office of Works, as thoroughly satisfied with the precautions against fire which have been adopted both within and without the building. Commander WELLS states:—"There is apparently no external risk to these premises. The external protection I consider, very satisfactory. The Gallery is in direct telephonic communication with the Scotland Yard fire station, and under usual conditions not more than two or three minutes should elapse between the call being received at the station and the arrival of the fire-brigade. The water supply is quite satisfactory, having the same water system as the National Gallery adjoining. Every precaution appears to be taken for the prevention of a fire breaking out, and so far as I can gather a good system of fire control is kept." Several important suggestions for the improvement of the internal arrangements, made by Commander WELLS, have since been carried out by the Office of Works. The Trustees say they are gratified to be able to report to the Treasury their entire satisfaction with the arrangements thus made to protect the National Portrait Gallery and its contents from any possible outbreak of fire.

THE town of Altenberg, which is near Cologne, possesses a Cistercian abbey which, according to SCHIMMEL, presents the same system of design that has been admired in the cathedral of Cologne. The severity of Cistercian treatment could not be overcome even in Germany, where at all times, owing to the plenitude of carvers, there was a tendency towards redundancy of ornamentation. The building was commenced in 1255, and the beautiful choir was completed in the course of ten years. The church was consecrated until 1379; it therefore occupied a century and a quarter in erection. The building, like so many others in Germany, has its special Verein or society which is organised for preserving it in good repair. The annual meeting was held a week ago. It was reported that several important works had been undertaken, and especially the restoration of some of the windows in which the original details are exactly copied. It is intended to have an organ gallery and new choir stalls, but for the latter a model is to be placed in the building in order that the appearance may be judged. Most of the money for the work is raised by means of lotteries. To the end of May nearly 6,000*l.* was obtained in the present year. There is no decline of interest in the building, which is now accepted as a cathedral, and it is anticipated that within a measurable time the ancient church will be restored as far as is needed.

IN Düsseldorf the production of works of art attains so much importance, it can be regarded as the staple industry of the place. It is true a large amount of coal and iron is obtained, but that class of labour does not impress the popular imagination. The death of FRIEDRICH SCHAAFSCHMIDT, the conservator of the collections in the Royal Academy of Art, is therefore more of a loss than would be the case if any other high official had passed away from Düsseldorf. He had occupied the post during so many years, he had attained an almost encyclopædic knowledge, and was competent to answer the inquiries of artists on subjects however remotely connected with any division of art. He had prepared himself for the office almost from boyhood. He studied art not only in theory but in practice while in Italy, and with so much success he was appointed in his nineteenth year to the office previously held by Professor LEVIN. As became a German, he was occupied for a large number of years on a great work on the history of art in Düsseldorf, and especially describing the aid of the art unions of the Rhineland and Westphalia. Those institutions do not correspond with

the British art unions, for while with us they are restricted to the issuing of engravings and the purchase of paintings for the benefit of the subscribers alone, in Germany there is more disinterestedness, for the funds obtained are often devoted to large mural paintings which will benefit the community in general. Yet there is no country in Europe in which help of the kind is so much needed as in England. We have a great many new municipal buildings, but the corporations dare not employ the public funds on an embellishment of the walls. In a German town rival unions or guilds compete for the privilege of covering the empty spaces in a building with paintings that will commemorate the private history of the place. FRIEDRICH SCHAAFSCHMIDT'S work might therefore with advantage be translated for the assistance of Englishmen.

THE Municipal Council of Paris have concluded their arrangements for the purchase of works of art from the two Salons. As a rule a sum of 3,000*l.* is expended annually. This year it has been necessary to reserve out of that sum 600*l.* for engraving two important pictures by M. EDOUARD DETAILLE, which are destined for the Hôtel de Ville. As yet no complete list of the purchases has appeared. It is anticipated that disputes would arise over the selection of some of the works, and those who are responsible for the choice wish the debates to be deferred in the hope that time will bring more unanimity. Three thousand pounds may not seem a munificent outlay for pictures, statues and examples of art applied to industry; but the artists find it is an advantage to have their works selected, and endeavour to meet the municipal purchasers by a reduction of terms.

METALLIC construction appears to have had not the least power of resistance during the volcanic eruption at St. Pierre. Not only was it incapable of withstanding the weight of the burning matter, but some chemical action is likely to have taken place which transformed the particles. M. AMEDÉE KNIGHT, a senator of Martinique, was on the island at the time of the disaster, and he has been able to furnish details about the destruction which were not observed by others. He describes the effects shortly as corresponding with those which might be expected if some colossal Nasmyth's hammer had been employed in operation on the town. Most things have been reduced to a fine powder. One of the cases mentioned is the market of St. Pierre. After the cyclone of 1891 the authorities decided to reconstruct it in the most solid manner. Cast-iron was adopted. It is now impossible to find the slightest trace of construction which had an area of 2,000 metres square.

MESSRS. MATHER & PLATT, LTD., who have had a long experience in the manufacture of automatic sprinklers, have given the following particulars in reply to some criticisms on those appliances:—"A sprinkler installation is not an expensive fire-extinguishing appliance to install, provided adequate water supplies can be obtained. Further, a discount is granted by the insurance companies, varying with the class of risk from 20 to 40 per cent. when automatic sprinklers are fitted in a building, thus showing a good return on the outlay expended on the equipment. Sprinklers are not fixed in one particular room, but on every ceiling and in every cupboard and corner of a building—in fact, wherever a fire can occur there is a sprinkler ready to cope with it. Thus, though fixed and immobile they are always ready like a watchman night or day to deal with a fire in its infancy. From a practical point of view sprinklers are of more use than movable appliances, inasmuch as they are automatic, and operate and extinguish a fire without human agency before it has had time to become dangerous. This is proved by the fact that the insurance companies allow a minimum discount in their premiums of 20 per cent. for automatic sprinklers, whereas the maximum discount allowed for any system of non-automatic appliance is but 15 per cent." It seems extraordinary that so efficient an aid in the suppression of a fire is not universally adopted. As Messrs. MATHER & PLATT have pointed out, they have advantages of their own which have been repeatedly tested. Automatic as well as movable appliances ought to be found in all buildings in which the outbreak of a fire is likely to be followed by loss of life.



## ROYALTY AND ART.

IN England the majority of our kings were generally engaged in enterprises which allowed little time to be devoted to the arts. The artists, therefore, rarely attained royal favour. In the thirteenth century HENRY III. sent a mandate to the sheriff of Hampshire to the effect that a chamber in the castle of Winchester should be repainted, the pictures being identical with those which had existed there. From the order we can infer that in those days artists were of no greater importance than ordinary craftsmen. There is a recognition of an artist or master of works by the monarch, for EDWARD of Westminster was instructed to have the statues of the Apostles painted around the chapel of St. Stephen. We also hear of a command to FITZ-ODO to make a "dragon, in manner of a standard ensign, of red samite, to be embroidered with gold, and his tongue to appear as though continually moving, and his eyes of sapphire, or other stones agreeable to him, to be placed in this church [Westminster] against the king's coming hither." HENRY had the history of one of the Crusades painted, both in the Tower of London and in a chamber at Westminster known as the King's Jewry. The king appears to have been a lover of art, but he made little or no distinction between the artists. It is sometimes asserted that the money which he was said to have lavished on unworthy courtiers was in reality expended on works of art.

No artist ever attained more power than WILLIAM PEROT of Wykeham. The words of LELAND merit to be repeated:—

Edwarde the Third cummyng to Winchester Castelle lykid Perot and tookē him to service, and understanding that Perot had mind to be a preste, made him first parson of St. Martines, in London; then Archdeacon of Buckingham. Edwarde afterwards made him Surveyor of his buildings at Windsor and Queenburge in Kent and other places. Then he made him Bearer of the Privy Seal and Master of the Wards and the Forests. Then he made him Bishop of Winchester, Chancellor and Treasurer of England, as very manifestly appeareth by writing. The Black Prince scant favoured Wikam. Wikam procured to keep the prince in battle out of the realme. John of Gaunt, Duke of Lancaster, enemy to Wikam. Alice Perrers, concubine to Edwarde the Third, caused Wikam to be banished, and then he dwelled in Normandy and Picardy a seven years, Edwarde the Third yet lyving. Wikam restored about the second yere of Richard the Second, of whom he had a generale pardon.

In this extract we have a synopsis of the history of Court favour. The bishop rose and fell. Everything, writes FROISSART, was done by him, and nothing was done without him. But WYKEHAM must have known how precarious was his position. The martial vigour of EDWARD III. sank into dotage, and WYKEHAM found himself in a difficult position. The Duke of LANCASTER obtained sufficient power to have WYKEHAM banished twenty miles from Court, and in the Jubilee which celebrated the fiftieth year of EDWARD's reign it was announced "that Sir WYKEHAM, Bishop of Winchester, shall nothing enjoy of the graces, grants and pardons, nor in nowise be comprised within the same." In spite of all the plots of his enemies, WILLIAM OF WYKEHAM was enabled to reach his eightieth year, and to establish institutions which to this day bring advantages to the English people. The extent of his skill as an artist cannot be determined. Some investigators have believed that the Perpendicular variation of Gothic was due to his inspiration. He may have been simply a great administrator, and bore more analogy to the head of a contracting firm than to a modern architect; but he was recognised as an artist, and his career was the most remarkable of any in this country.

Another monarch who is recorded as being the slave of his favourites was RICHARD II., who, however, was friendly to the bishop. The portraits of the king suggest that able artists must have existed in England during his reign, but no mention of their names has descended to us. Both painting and sculpture were not entirely neglected under succeeding monarchs, but when we find in the time of HENRY VI. that one of the English nobles obtained the examples of painting which were to be employed during his embassy in France through his tailor, we cannot conclude that artists were highly valued. HENRY VI. was married

to the daughter of King RENÉ the Good, who was a painter as well as a poet; but the queen did not apparently exercise any artistic influence in England.

It must accordingly have been a great surprise to noble and gentlemen when HENRY VIII. declared it would be easier for him to create several lords than one HOLBEIN. As a similar saying is attributed to foreign kings, it is not possible to ascertain where it originated. CHARLES V. and FRANCIS I. were friendly to artists as well as liberal in chasing their works. King HARRY was always vieing with them. He was therefore obliged to assume a taste even when he were not endowed with one by nature. He did his utmost to allure RAPHAEL and TITIAN to England, but without success. There are records of several painters, among them were ANTONIO TOTO and LUCCA PINN TORREGIANO, the sculptor, might have succeeded beyond his predecessors if he cared to remain in England, but he was of too wayward a disposition to stay in one place. HOLBEIN was more easily acclimatised. He was recommended to Sir THOMAS MORE, and had been living with him for some time before his works were seen by the king. HENRY was delighted with the portraits, and at once took the painter into his service. HOLBEIN was not possessed of much imagination; he would now be called a realist, and his love of detail was carried to a marvellous extent. The eighty-nine drawings of courtiers convince us of their truth, and the character of CHARLES I. as an amateur would have gained if he had not bartered them for the *St. George of RAPHAEL*. There are few indications of the relations between the Bluff King and the painter. HENRY at times could not control himself, and then it was dangerous to be near him. It is commonly told that THOMAS CROMWELL was beheaded because HOLBEIN for once departed from his fidelity to appearances and idealised ANNE OF CLEVES in a drawing. But the painter did not suffer, and when he died in London in 1554 the plague, and not the headsman, was the cause. The value set on his works by HENRY is shown by the fact that the king presented FRANCIS I. with one of HOLBEIN's works in return for a *Virgin and Child* of DA VINCI. He had some of the versatility of the Renaissance artists, for he practised in sculpture and architecture, and took delight in designing objects to be formed of the precious metals. He must have received a large amount of money, but he was always impecunious, and there is an entry that his salary had to be paid in advance. His expenditure no doubt was based on that of an English courtier.

ELIZABETH seems to have cared little for art except in the form of portraits of herself. LUCAS DE HEERE painted several portraits of the queen and of other ladies. CORNELIUS KETEL was once allowed to paint a portrait of the queen, but he was better adapted to depict plebeians. It became known that he could dispense with brushes and painted solely with his fingers; that was enough in those days to gain notoriety and success. FREDERICK ZUCCHERO pleased ELIZABETH and is said to have depicted her in a Persian dress amidst a forest, and on one of the trees were several verses which it is presumed were Her Majesty's composition. MARC GARRARD was another Court painter, and the queen sat often to RICHARD HILLIARD, who was limner, jeweller and goldsmith. In fact, the crowd of painters in London during ELIZABETH's reign would suggest that the queen must have been a good patroness of art. It is doubtful whether the queen's portraits were not executed on reduced terms as advertisements. WALPOLE probably stated the case exactly when he wrote:—"It is certain, though the queen's economy or want of taste restrained her from affording great encouragement to genius, that the riches and flourishing condition of the country offered sufficient invitations to the artist."

JAMES I. was in a peculiar position when he came to England. Under favourable circumstances he would have made a place for himself among the seventeenth-century scholars, and he cared more for books than for pictures. He was not, however, altogether indifferent to painting. BUCKINGHAM, his favourite, loved pictures and patronised RUBENS. The arrival of INIGO JONES during this reign is ample evidence that there were favourable prospects for artists, while the devotion to collecting of Lords ARUNDEL and PEMBROKE indicated a rising interest in the works of antiquity. DANIEL MYTENS, as well as CORNELIUS JANSEN and others, seem to have been employed by the king.



BUCKINGHAM exerted his influence on Prince CHARLES, and instilled in him an admiration for painting. The inclination of the king was imitated by many of the nobles and other subjects. The Duke of BUCKINGHAM succeeded in obtaining RUBENS's own collection, and besides favourite works of the Flemish painter there were nineteen by TITIAN, thirteen by PAUL VERONESE, seventeen by TINTORET, three by LEONARDO DA VINCI, and three by RAPHAEL. The pictures acquired by CHARLES numbered 460, including nine by RAPHAEL, seven by TINTORET, eleven by CORREGGIO, four by VERONESE, and two by LEONARDO. Both CHARLES and BUCKINGHAM endeavoured to attract foreign painters to London. RUBENS came as representative of the Infanta of Spain, and at the desire of the king he displayed his talent by painting the apotheosis of King JAMES for the banqueting house at Whitehall. The year which the artist spent in this country was not without its effects on English art. VANDYKE followed; at first his powers were not recognised, and he departed in disgust. Then CHARLES sent for him, and he was at once the favourite painter of the king and Court. CHARLES was not sufficiently sincere to rule Englishmen, but there is no doubt that if he had been permitted to remain on the throne art would have become a necessity in the country. When Puritanism gained the upper hand vengeance was wreaked on CHARLES's pictures as if they were among the causes of his misgovernment. By a resolution of the House of Commons it was decreed that all the king's religious pictures were to be burnt, and all such pictures and statues as were without any superstition should forthwith be sold for the benefit of Ireland and the North. Fortunately the orders were not promptly carried out. The sales were held from time to time during seven or eight years, and produced 38,000*l.* The cartoons of RAPHAEL were secured by CROMWELL for 300*l.*; the *Mercury Teaching Cupid*, by CORREGGIO, which is now in the National Gallery, obtained 800*l.*, and MANTEGNA's *Triumph of Julius Caesar*, which is at Hampton Court, 1,000*l.* Several canvases in the Louvre once belonged to CHARLES I., and the majority of the Duke of BUCKINGHAM's collection fell into foreign hands. All hopes of art appeared to pass from England with the masterpieces.

The ideas of CHARLES II. about art and artists were more French than English. The king and his associates were supposed to be the most fitting subjects for a painter's pencil. If a higher class of character were desired, the favourites of the king were ready to pose as saints or heroes. To other eyes besides PEPYS one of them then made "a most blessed picture," and the honest Admiralty official probably would not have objected to see such works from his pew in church. Other painters toiled over acres of allegories which were only another aspect of the endeavour to go beyond nature, for abstractions took the place of saints and nymphs. The number of painters who were able to live in England under CHARLES II. was surprisingly large, and at least they helped to extend the employment of portraits. We have a tradition of that age in the big group which represented the Vicar of Wakefield's family, in which Mrs. PRIMROSE was seen as VENUS, her little boys as Cupids, one daughter as an Amazon and another as a shepherdess attending as many sheep as the painter could introduce without payment. It was accepted by high and low that art was to be remote from actuality.

To that spirit, however, we are indebted for one noble work. WREN, when he was asked to make designs for St. Paul's, avoided adopting any of the existing churches in England as a model. There were several designs from his hand, and the king declared he pitched upon one because he found it "very artificial, proper and useful." It was as much a departure from precedents as the portraits of the Court ladies in character. WREN was actuated by the expansiveness of the time, but in his case there could be no comparison with natural objects. Architecture is not to be judged by created forms. The mansion at Winchester would, if completed according to the architect's intentions, have surpassed anything of the kind in England. WREN had the unique experience of being on friendly terms with CHARLES II., JAMES II., WILLIAM and MARY and Queen ANNE. He, however, was made to suffer under the new or administrative power, which embittered the last years of his life and attempted to deprive him of his modest salary.

None could credit this, says a contemporary writer in referring to WREN's treatment, "but those who knew how the demop of politics, like that of fate, confounds all distinctions—how it elevates blockheads and depresses men of talents, how it tears from the mouth of genius, exhausted with toil for the public good, and bending under a load of helpless age for which it has made no provision, that bread which it bestows upon the idle and the selfish."

It has often been regretted that under GEORGE I. art enjoyed but scant favour from the Court. That was not entirely a disadvantage. In England the same course of events took place in respect of art which was afterwards witnessed in Germany. SCHILLER maintained it was a blessing for the German muse when she was repulsed from the throne, for then she turned to the people and assimilated herself to them. The art of England also sought to become popular. HOGARTH tells us that he was incited to abandon engraving by thinking over the big paintings in St. Paul's and Greenwich Hospital. In other words, he was ambitious to be a representative of high art which, in England at least, was associated with Courts. Even to the last, although Sir JAMES THORNHILL had opposed the marriage of his daughter to HOGARTH, the son-in-law was always among his admirers. HOGARTH's shrewdness soon realised that his mission was to hold the mirror up to nature, and his best patrons were the public. He speaks of the benefit which Parliament had conferred on artists by passing a Copyright Act in language which seemed to be drawn from the eulogies usually bestowed on sovereigns. By that Act he said genius and industry were prompted by the most noble and generous inducements to exert themselves; emulation was excited, ornamental compositions were better understood, and every manufacture where fancy has any concern was gradually raised to a pitch of perfection before unknown. The old reverence of artists for royalty is manifested by the obelisk of the church of St. George, Bloomsbury, with the statue of GEORGE I. on top. We must bear in mind, however, that HAWKESMOOR, the designer of it, was clerk of works for the royal palaces. GIBBS, COLIN CAMPBELL and other architects kept themselves independent of the Court. Sir WILLIAM CHAMBERS in the next reign gave lessons in architecture to the young prince who was afterwards GEORGE III., and in that way his professional success was prepared. But on the other hand, we find HOGARTH dedicating his *March to Finchley* to the King of PRUSSIA. REYNOLDS, although dedicating his discourses to King GEORGE III., of whom he spoke in terms of gratitude, declined for some time from taking part in the establishment of the Royal Academy, although it was the king's, and only joined when his objections were removed. WEST succeeded in gaining the favour of His Majesty, and for a long time he was able to count on royal commissions every year. He painted historical and scriptural scenes for GEORGE III., besides portraits of the king, queen, princes and princesses. Posterity has not endorsed the king's estimate of the painter's excellence, and by having always one judge in his thoughts he fell into a mannerism through which his art did not benefit. Since his time several painters have obtained royal commissions, but WEST was the last who enjoyed extraordinary favours, and owing to the changes in life it is probable he will long remain as the representative of a custom that was more common abroad than in England.

**Stepney Parish Church**, which was damaged by fire last year, was reopened on the 21st inst. It was in the middle of last October that a disastrous fire occurred at the church, and it has taken six months' work to make good the damage. Practically the whole of the roof was destroyed, only the chancel arch, two main beams in the chancel itself, and a few rafters at the west end of the nave remaining. Solid English oak has been used for the new roof. A new altar replaces the old one. Two-thirds of the east window is new, and the south chancel and north aisle windows and one of the windows in the clerestory are also new. The organ was entirely destroyed, but the new one, which is on order, will not be in position till next October. Of the vestry only the walls were left standing, and the stonework of the windows, the roof and the interior fittings have all had to be renewed. Opportunity has been taken to put in electric-light fittings, but these will not be in use till autumn. Altogether about 6,500*l.* has been spent in the work of restoration.



## JOSEPH JOUBERT ON ART.

IF there is truth in what SHAKESPEARE says about nature being a usurer and insisting on profit from the smallest scruple of excellence with which a man is endowed—"For if our virtues did not go forth of us, 'twere all alike as if we had them not"—then it must go hard with some of the best men who lived in this world. They considered the improvement of their own minds was worth their whole attention. They avoided doing anything which would gain the applause of contemporaries, and were indifferent to posterity. SHAKESPEARE himself, or the genius who was concealed behind the actor, was forced to lament the necessity by which he was compelled to reveal, or gore, his secret thoughts for the gratification of the curiosity of the groundlings.

Scarcely a century ago another poet of even greater productiveness, the German GOETHE, also spoke in self-reproof of the danger of neglecting himself and spending his powers on the instruction and entertainment of men who were strangers to him. A like thought embittered HEINE's sufferings on his "mattress-grave."

JOSEPH JOUBERT would be condemned by those who hold that fine spirits are like torches which are not lighted for themselves, but believers in self-cultivation will always esteem him as a wise man. If he could be conscious of what is enacted in this world of ours he would be amazed that critics who are competent to give decisions on all questions of literature have prized him, and have valued the thoughts which he noted on scraps of paper for his own use as if they were axioms which were worth acceptance for general use. It is doubtful whether he ever contemplated the production of a volume. When friends who knew his worth advised him to write, his excuse was, "Not yet," for he needed a long term of peace to prepare himself for authorship. Years rolled on, and when the same question was put he replied, "The time is past; any strength I received was only of temporary duration." His experience of life might easily be thought to have provided materials which "this PLATO, with the heart of LA FONTAINE," as CHATEAUBRIAND called him, could easily have turned to account. Born in 1754 he was able, in his twenty-fourth year, to gain the friendship of DIDEROT, and to mix with the encyclopædists. But his thoughts were with antiquity rather than with the coming revolutionary era. He became an admirer of SHAKESPEARE, and maintained that, in spite of occasional expressions of rebuke, VOLTAIRE bestowed more praise on the Elizabethan dramatist than any of the Englishmen of that time. During the Revolution, he contrived to stand aloof from the turmoil. When NAPOLEON had attained power and wished to establish order, JOUBERT was appointed one of the inspectors-general of education. He was not adapted for official life, and as soon as he could he resigned his functions and returned to his beloved studies. When in 1824 he felt his end was approaching, the last words he wrote in his journal were "*Le vrai, le beau, le juste, le saint!*" which afford a key to his aspirations after what he believed to be worthiest of man. Fifteen years later some of his "pensées" were printed for the benefit of his friends, for JOUBERT was unknown to the majority of his countrymen. It must be confessed he is still a stranger to most people, but there is no doubt he is now regarded as the representative of a school which, if confined in numbers, is not lacking in quiet enthusiasm.

As we have explained, his value must be determined by a number of detached remarks which were jotted down from time to time. Writing of that kind is not appreciated in England, and we have no rivals of LA ROCHEFOUCAULD, VAUVENARGUES, PASCAL, NICOLE and others. There might have been a work which would bear comparison with the Frenchmen's if EMERSON had preserved the original form of the records of his thoughts, instead of turning them into essays and lectures by means of connections that are generally loose. But he knew the bias of the English and American mind and endeavoured to accommodate himself to it. JOUBERT'S cogitations relate to an immense variety of subjects. He might say, "I think good thoughts whilst others write good words;" and what we have are but stray specimens of his thoughts, and probably not the best among them. As an untiring student of literature the majority have more or less relation to the books he read,

the qualities of writers ancient and modern, and doctrine affecting literature, such as those of religion, philosophy, ethics, &c.

He would not be considered a true Frenchman if he avoided reflecting on art. The period in which he lived was unfavourable to the studies of a man like JOUBERT, for the art of the eighteenth century was then in its decline. DAVID, who was inspired by the revolutionary movement, tried to bring into vogue a style that was false, although as a portraitist he was faithful to nature. Under NAPOLEON the artists cared only about pleasing him, and in the new monarchical era the commonplace prevailed. JOUBERT therefore may be considered to have drawn his ideas of art from himself, or have based them on the ancient statues and spoils of Italy which were for a time in Paris.

He recognised the supremacy of architecture. According to JOUBERT, there ought to be a relation between a building and its occupants. The stones, the marble and the arrangement should, he said, be eloquent and expressive. It was easy from this to see he was a gentleman of Périgord and was thinking of provincial families who endeavoured to uphold the character of their ancestors. A soldier who carried a bâton in his knapsack might in course of time when he became a marshal, erect a château and found a family, but that would be only imitating the early feudal lords. JOUBERT did not realise the invasion of country houses by the *nouveaux-riches*, who would forget their town breeding and strive to follow the ways of the old seigneurs. If he were living now he would find that a mansion announced what was desired rather than attained.

When he said that a public edifice, and especially a temple, should be elevated and stand as it were on an altar just as a statue is placed on a pedestal, he was revealing that he was a contemporary of the construction of the Temple of Glory which is now known as the Church of the Madeleine in Paris. NAPOLEON himself selected VIGNON'S plans from amongst those in the competition and one of the reasons which determined his choice was likely to be the success with which the low Classic building was dignified by the aid of a platform no less high. NAPOLEON thought only of the effect on vigorous people. He made no account of the difficulty which maimed soldiers must undergo in ascending the steps, and JOUBERT also disregarded the sacrifice. The pedestal theory has caused an incalculable amount of suffering. Hospitals have had to be approached by a great many steps, and churches also although it was known the majority of worshippers were infirm.

We see JOUBERT'S love of regularity and of the stately in what he says about the surroundings of a building. Everything within visible distance of it should have, according to him, a similarity of character, or, in other words, the centre should be in harmony with all the points of the circumference. Much as he admired English literature, he disliked the so-called English gardens, which at the time were becoming fashionable with the French people. So much irregularity he said demanded that the habitation should be a labyrinth. In all this can be traced the influence of French logic which demanded uniformity of principle in all things, preferring it to contrast. In works of art JOUBERT insisted there should be nothing arbitrary, and one character must be manifested throughout.

Although he was supposed to be a follower of PLATO, he would not banish the arts from his ideal kingdom, whether it was a republic or a monarchy. Instead of treating them as superfluities, like the pseudo-Spartans of his time, he declared them to be among the most precious and most important property of all human society. Without their aid it would be impossible, he said, for the sublime spirits to express the greater number of their conceptions. Without them the most perfect and most just man could experience no more than a part of the pleasure of which he was susceptible, and of the happiness for which nature designed him. There are emotions so delicate and objects so ravishing which can only be expressed by colours or sounds. We should, he declares, look on the arts as a special language, a means of communication between the inhabitants of a superior sphere and ourselves.

JOUBERT considered the doctrine that imitation was the foundation of the fine arts is more correct and more extended than is generally accepted. Man portrays himself



his works, and they can be only beautiful when they have corresponding proportions. But the portraying should not be confined to what is visible, but comprise things which are concealed, such as mental qualities. The most beautiful expressions in all the arts are those which appear to have been derived from an elevated contemplation. If the intelligence is not appealed to much is lost. An artist who excites no more than sensations and considers terror to be the source of sublimity prostitutes his art, for his effects can be as well produced by the public executioner. If there is only a body in the picture or the statue, it is evident the artist is nothing higher than a workman without a soul, whose ability is confined to his hands.

The foundation of all beauty was, in his opinion, to be found within fine lines. In architecture they are allowed to be visible; in sculpture they are carefully disguised; in painting they are veiled by colours. Nature herself conceals the bones and covers them in living beings; in the skeleton there are lines, but life is seen in contours. JOUBERT says that what is known as the line of life and of beauty must be realised in judging a work of art. But it is not always possible, owing to their elusiveness, to trace them with the finger. He means to say that in most forms which are beautiful no one section is adequate, and as we live in modern times, an effort is made by rotatory photography to overcome the shortcomings which follow from viewing a single point of view.

For that reason he was a great admirer of the works of JEAN BAPTISTE PIGALLE, who died in 1785, and might therefore have been seen by JOUBERT. He was a modest artist, of whom the story is told that when he heard a criticite in front of one of his works that the ancients never created anything more beautiful, he asked him if he had closely studied antique sculpture. JOUBERT says it was a peculiarity of PIGALLE to discover an infinity of parts in every part, or, in other words, he divined that in animated forms nature was always varying, and every curve was made up of a series of curves. Consequently there is more of detail in his work than in that of the majority of sculptors. He made it a law to restrict himself to truth. It was objected to him that in depicting the passions he used more modifications and differences of surface because he believed that was the only way to suggest the action of the mind upon the body. He became amorous of an excess in expression, and endeavoured to demonstrate as far as possible the two extremes of human life, viz. when the body is vigorously animated and all parts are prominent, and as a contrast the state of excessive fatigue when the parts seem to be without union.

With all his admiration, JOUBERT admitted that PIGALLE was inferior to the ancient sculptors. When they had to represent deformity they somehow were able to suggest what was absent. In the features of their old men we can recognise their former appearance, and those who are ill and dying are reminiscent of former life and health. PIGALLE's old men might have been always old, and his figures of weaklings might have never had strength. He showed old age in an extreme form, whilst the ancients sought to make it venerable; he was a sculptor, his predecessors were poets. In his monument of Marshal SAXE, which we can see in Strasbourg, the Warrior is a brave man in armour, who boldly marches towards the tomb. But to recall the living MAURICE he introduced a figure of HERCULES in mourning and a terrified woman as a symbol of France. JOUBERT did not approve of the composition, but the majority of visitors are pleased with the dramatic effect. Perhaps the severest criticism of the sculptor will be found in JOUBERT's words, that not one of his figures adapted to be placed in a school of art as a model. Possibly PIGALLE's monumental sculpture lessened his value in JOUBERT's eyes, for he could not be patient in front of the allegories, the figures of skeletons, the hour-glasses and the scythes which at that time were to be met with, as if affection and grief could only be expressed by their aid. In many respects he preferred BOUCHARDON to PIGALLE.

In painting his idol was RAPHAEL, but he insisted on the character of the subjects as an element of the painter's success. RUBENS, he says, was a *très-grand dessinateur*, but was incapable of showing Flemish forms by means of the pure line of the Roman master who avoided

common nature. Artists, he stated, when painting the moral nature should avoid exaggeration, and in physical nature they should be afraid of feebleness. He admired REMBRANDT for the skill with which he has infused interest into common subjects. He compared him with RUBENS: one is able to reign by the power of colour, the other by light; one could make everything striking, the other could illuminate all things; one is splendid, the other is magical, and if the mind is not always charmed by them the eye owes its most brilliant illusions to the two artists.

In estimating the character of a writer it is always an advantage to be acquainted with him. Although philosophers may imagine the mind to be independent of the body, there is no doubt that the condition of human organs seriously affects the views taken of life. Mr. PICKWICK's solicitor was very anxious to ascertain what kind of breakfast had been enjoyed by the foreman of the jury on the memorable day when Mrs. BARDELL's action was to be tried; a meal in which pork chops formed a disproportionate element was sure to make him use his influence against the defendant. What strange volumes owe their existence to Mr. CARLYLE's dyspepsia. JOUBERT, like most literary students, believed his organism to be deranged. CHATEAUBRIAND tells us the constant endeavour of his friend was to avoid emotions, because he feared they would upset his delicate health, and by a strange fatality he was always in a state of excitement about the joys and sorrows of his friends, never about his own. For hours he remained with eyes closed and without speaking, in the hope of regaining the desired calm. It is not difficult to understand how such a valetudinarian would prize repose in the arts. The leonine strength and exuberant animation of RUBENS must have inspired him with fear, for if one of those boisterous figures were to come down from the canvas and seize hold of him he dare not resist, and it would be fatal to fly. He may also have imagined before REMBRANDT's pictures the extent of his torment if he were made the subject of experiments in lighting by means of a reflector. RAPHAEL's gentle MADONNAS always suited his moods, and out of gratitude he praised them with all his heart. Representations of weakness or old age recalled his own condition with all its imaginative failings, and his thoughts therefore went back to the Greeks, whose works can always be made suggestive of perennial youth, vigour and beauty.

#### BEAUTIFYING LEEDS.

MR. G. J. FRAMPTON, R.A., the sculptor, visited Leeds last week, with a view to select a site in Victoria Square for the Queen Victoria Memorial, which he has been commissioned to execute. In conversation with a representative of the *Leeds and Yorkshire Mercury*, he explained what he intended to do in this respect, and also what he should like to see done.

In the first place, he regarded the town hall, which he had not previously seen, as one of the finest buildings in the kingdom, and he felt proud to be called upon to execute work in connection with it. The memorial he has in hand is to take the form of a bronze statue—bronze constituting the best material for withstanding the smoke of a commercial city—but whether the figure is to be a standing or sitting one is not yet decided. In any case, it will be about twice life-size, and with its pedestal will rise to something like the height of the buildings—or “sheds,” as Mr. Frampton termed them—to the south of the Square.

“And where do you propose to place the memorial?” “Well,” answered Mr. Frampton, “I should like to have the Square made level with the base of the town hall steps, and suggest placing the statue at the verge of the street there,” indicating Park Lane, facing down Park Cross Street.

To level the Square in the way suggested would cause it to be elevated several feet above Park Lane. The same would be the case on the Oxford Place side, where Mr. Frampton would like to see the present dangerous slope done away with—thus providing more room for carriages—and the footpath round the town hall effectually railed off. Carriages might enter and leave the Square at points near Calverley Street and East Parade.

To place such a memorial so near the shops and warehouses on the south side will inevitably tend to magnify the meanness of those buildings. Mr. Frampton is not blind to this. Rather does he rejoice in it. “Sooner or later,” said



he, "the town will realise its duty, and sweep those sheds away, extending the Square and widening that street" (Park Cross Street) "to thrice its present width."

Then it would be possible to keep the town hall in view from a distance without sight of painful architectural incongruities. Mr. Frampton had thought of placing the memorial on the landing of the town hall steps, but felt that this would be too near, and that it would darken the already dark vestibule. "I have to fight the building, you see," said Mr. Frampton, smiling. "I have to avoid getting so near to it that the memorial is lost, and I must not place it so as to suggest that it has dropped from above."

"I should like to get some colour into my memorial," continued he, "for it is colour that a town like this most lacks." And so he would make use of Ruabon brick or some kind of red marble for his pedestal—he does not care for red granite, whilst porphyry is too expensive. Green tubs containing rhododendrons or other shrubs might also be placed about the Square to enliven it and make it approximate to the Continental "Grand Place," where the people might be tempted to gather to a greater extent than they do.

Mr. Frampton is now about to make a model of the Square and memorial, which he hopes to have ready for public inspection and criticism in October or November. At present he is busily engaged upon a Victoria memorial for Southport.

Mr. Frampton is a great believer in the refining influence of art and beauty. "With so little of beauty about them," said the sculptor, "it is surprising to me that the people should conduct themselves so well." Leeds is, of course, slowly beautifying itself, and it is gratifying to have Mr. Frampton's assurance that Mr. Brock's equestrian statue of the Black Prince, which the City Square still awaits, will form one of the finest works of the kind in existence, worthy of comparison even with Verocchio's statue of Bartolomeo Colleoni at Venice. "I am only sorry," said Mr. Frampton, "that London can claim no such treasure. Leeds must be congratulated."

"Why is it no one's duty to look after the public property?" went on Mr. Frampton, indicating the grimy statues of Peel and Wellington in the Square. "A little water and a hose-pipe would have spared them this." These statues Mr. Frampton would remove, not because they are bad work—he holds the figures are good—but because they are out of keeping with each other and the Square.

Asked as to his general impression of Leeds, Mr. Frampton said he had been favourably impressed. He admired some of the banks in Park Row, and thought it rather a pity that St. Ann's Church should have to come down, as it gave a certain touch of character to the street. Bright brickwork he held to be the right thing, though he did not exactly wax enthusiastic over the new erections in Briggate. "Colour is what you want," he insisted, and as one glanced from the leaden sky to the muddy streets and soot-befouled buildings, one was only too ready to agree with him.

## RATING OF OXFORD UNIVERSITY BUILDINGS.

JUDGMENT has been given by the Hon. Alfred Lyttelton, Recorder of Oxford, in the appeals against the assessment by the city Council of ten of the colleges, a number of University buildings, Christ Church and the University Press, in the Quarter Sessions Court.

In the course of the judgment he said the case was one of great difficulty and was admittedly *sui generis*. It was impossible to rate the hereditaments in question by comparison with other similar subjects, for no similar comparable objects existed. It was equally impossible to rate them by methods analogous to those employed in the case of railways or other like undertakings by regard to the profits arising from occupation, for the University made no profits. Nor, again, was the "contractor's basis" available, for many of the buildings in question were raised out of the benefactions of pious founders, were inaccessible to the competition of the market, and some of them were used rather because they existed than because they were well adapted for University purposes—buildings, in a word, widely differing from those commercial structures with which the contractor's basis, in its ordinary sense, was invented to deal. Again, in his judgment the University was the only possible tenant of these buildings. The rental of the Parochial Assessments Act must be a business rental, to be obtained with reasonable probability. A method by which antagonistic opinions as to the value of these buildings was brought into some relation with actualities was adopted by Mr. Ryan for the assessment committee, and with slight variations by Mr. Eve for the University; and this he, for brevity, would call the "substitute building" basis. The method pursued was to measure up each existing building, to ascertain the purpose for which it was used, and then to estimate the cost of erecting an imaginary building in its place suitable for those purposes.

This method was one which appeared capable of leading to a just and reasonable conclusion as to the rental which it was his duty, under the Parochial Assessments Act, to endeavour to ascertain. Mr. Ryan estimated the cost of the substitute building on the average of 1s. per cubic foot, and Mr. Eve 9d. per foot. In his opinion the University authorities, regarded merely as managers of a business, were wise to consider within reason, architectural beauty as essential to their buildings. The beauty and stateliness of her buildings were of real value to Oxford, and, in this matter, that the University authorities should study sentiment without extravagance was to follow sound business principles. He was, fortunately, without the guidance of actual facts, as in erecting new schools the cost was at least 1s. 2d. per cubic foot, and he had no hesitation, therefore, in adopting generally Mr. Ryan's figure of the capital value of the "substituted buildings." He had made an exception in the case of the Sheldonian Theatre, which was, in his view, on the evidence, of little if any practical use to the University. It became necessary, in order to arrive at the rent which a tenant from year to year could reasonably be expected to give for these buildings, to consider what rate of interest should be applied to the figure thus ascertained, and he was of opinion that 3 per cent. was, in all the circumstances of the case, the proper rate of interest. The University had proved to be able to raise money at that rate. He believed that no higher rent than that which he had arrived at would be paid by the University as tenant for these buildings. As to the land or sites upon which the buildings stood, he failed to see any reason for taking it out of the ordinary rule, which he valued it by comparison with land used for similar purposes in the vicinity; and here again he was not without the guidance of actual facts. The University Court was not, in his opinion, rateable, as the purposes for which it was used were subsidiary to the use of it as a court of justice. As to whether the houses occupied by the curators of the museum and of the University Observatory should be separately assessed, the "occupation" was in each authoritatively prescribed, was necessary for the proper performance of his duties, and was under the control of the University; he was, therefore, of opinion that the occupation was that of the University, and that the houses should not be separately assessed. The result of the appeal was that the rate imposed by the assessment committee upon the University was substantially reduced, and if the University asked for costs he thought they were entitled to them.

With regard to the colleges, the Recorder said in the case of Magdalen College (which was taken as a test case) that the President and scholars appealed against a rate of 5,625l. gross and 4,500l. net, being an increase on the figures arrived at by compromise in 1895 of more than 50 per cent. As in the case of the University buildings, it was common ground between the leading witnesses on both sides that the ordinary "contractor's basis" could not be adopted without modification, and what he had before termed the "substituted building" basis was treated on both sides as the best available guide to the rental required by the Parochial Assessments Act to be discovered. It was urged at the conclusion of this evidence by Mr. Balfour Browne, for the assessment committee, that he should impartially disregard the whole of the evidence on this point, whether given on the one side or the other, and proceed by another method, viz. to value the buildings as they now were, and apply a rate of interest to the sum thus ascertained. The method adopted by the witnesses was, it was argued, wrong, because it withdrew from the "contractor's basis" its solitary element of precision, viz. the value of what existed, and imported into it an element of conjecture, viz. the value of what witnesses thought ought to exist. He was unable to accept this view. It was obvious to him that the application of the contractor's test led to results so extravagant that the judgment and experience of the practical witnesses compelled them to pronounce that this method brought them, not to the rent which a tenant from year to year might reasonably be expected to give for the hereditament, but to the rent which such a tenant could not be reasonably expected to pay. He certainly was not competent, unassisted by the evidence of practical men, to embark on an inquiry which they had rejected, not on legal principles, but on practical experience on a matter of fact. He arrived at 2,330,134 as the cubic contents of the building, and the cost of erecting it 87,413l. and added 3 per cent. to this figure. He omitted from the lump sum of 87,413l. the cost of substituting a chapel, and treated the building separately and put a rate on it as it stood. He did this because he was unable to believe that the college could reasonably be expected to give nearly 2,000l. per annum more rent because of the presence of the chapel, and he thought the college the only practical tenant. He was of opinion that the witnesses for the assessment committee had gone altogether wrong in putting a rateable value of nearly 2,000l. on the chapel, and he considered 200l. an adequate sum. In this case, also, the college was entitled to its costs. As to Keble College (the second test case), the Recorder said he was of opinion that in all the circumstances of the case



er cent. was a fair and reasonable rent to apply. As to the London Press, the appeal was also allowed. The counsel in each case applied for costs, and the application was granted. Mr. Lawrence asked for time to consider the judgment, in which it was considered necessary to ask for a special case. The Recorder granted the request.

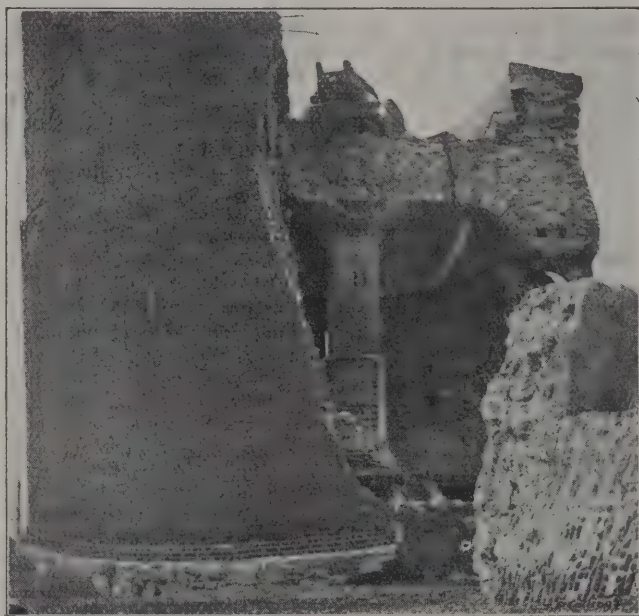
### WESTMINSTER SCHOOL OF ART.

THE annual general meeting of the supporters of the Royal Architectural Museum and Westminster School of Art was held on the 19th inst. at the Museum in Tufton Street, Westminster. Mr. William Emerson, the president, being in the chair. The report stated that during the past year the Council had been obliged to undertake the entire renovation of the glass roofs of the older portion of the building, together with the repair of the front parapet and other parts of the building. The total cost of the work was 700*l.*, and to assist in meeting the outlay the sum of 350*l.* had been advanced by the Technical Education Board of the London County Council, without interest, repayable in four instalments to be deducted in the annual grants made by the board to the school of art for evening classes, except the men's life class, had still further declined during the past year, owing doubtless to the increase in the number of drawing classes established in various parts of London at normal fees, and even without payment. On the other hand, the grants received from the Board of Education for the session 1900-1 amounted to 206*l.*, or upwards of 30*l.* in advance of the grant for the session 1899-1900. The financial statement showed an excess of expenditure over income for the year of 157*l.* The chairman, in giving the adoption of the report, said that deficit was largely accounted for by the repairs which were undertaken during the year. The school continued to be appreciated by advanced students and artists of high standing, and he was confident that it was doing a good work. Mr. W. Brindley seconded the motion, which was adopted. Mr. Emerson was re-elected president, and the vice-presidents, with the committee and other officers, were reappointed. Mr. J. P. Seddon called attention to the fact that provision was made for the free use, within certain limitations, of a number of students in drawing and modelling at the evening classes of the school. Candidates had to be workmen resident within the city of Westminster, or the sons or daughters of such workmen, and there was no actual limitation as to age.

### A RUINED MARTELLO TOWER.

IN Colonel Landmann's interesting "Adventures and Recollections" there is a report of a conversation with King George III. on the subject of Martello towers. The king was spending his holiday in old-fashioned style at his favourite watering-place Weymouth, where Landmann was at the time, when he was employed for the War Department in the erection of Martello towers. A French invasion was anticipated, and,

Bony single-handed, I'm sure I should. I should give him a good thrashing, I'm sure I should—I'm sure of it." The word Martello was believed to be derived from marine or maritime, but it is more probable the name should be Mortella towers, since it may have been derived from that of a fort in Mortella (Myrtle) Bay, Corsica, which after a gallant resistance was taken in 1794 by a British naval force. Several such towers were built on the coasts of this country, in Jersey, and elsewhere; but many of them have been taken down, from an opinion that the defence which could be made from them in the event of an invasion would not be adequate to the expense of keeping them in repair. They were generally two storeys high; the lower storey was divided into



chambers for the reception of stores, and the upper served as a casemate for troops; the roofs were vaulted, and that of the upper storey was shell-proof. The wall of the building terminated above in a parapet, and on the terreplein of the roof were placed pieces of artillery which rested on platforms of timber traversing on pivots, so that the guns were capable of being fired in any direction. The entrances were at a considerable height above the ground, and over these were machicolations. Outside were a ditch and glacis.

One of the examples which survived was Sandgate, on the coast of Kent. About two years ago it was undermined by the sea, and, as will be observed from the photographs, was as completely ruined as if an earthquake had occurred. It will be seen what an exceptional character was the construction. It would probably have been able to resist any of Napoleon's guns, but could not withstand the slow operations of sea-water.



According to the legend which Mr. Thomas Hardy utilised, the French emperor crossed to Weymouth in order to reconnoitre for a landing. King George was not scared by any apprehensions. He said to Landmann, "I should like to fight

The example is interesting, for it reveals the consequences which are to be expected when water once finds admission to foundations, and is able twice a day to repeat the process. For the photographs we are indebted to Mr. Norman Carew Dundas.



## NOTES AND COMMENTS.

THE memorable event of this week, by which Great Britain was to be endowed with a successor to the EDWARDS and HENRYS of the olden times, would have given as much gratification to architects as to any other class of Britons. They have therefore joined in the universal regret which has arisen in consequence of the postponement of the ceremony, and will also ardently desire that HIS MAJESTY'S strength will soon be renewed. No men can be found who exceed them in loyalty to the throne. Their work depends upon the stability of institutions, and they must rejoice at the prospect of the continuance of the same conditions which have made this country prosperous beyond all others. In a constitutional country like ours it is absurd to expect that any monarch would imitate LOUIS XIV. or the third NAPOLEON, when he transformed Paris. In his private capacity the KING has shown an interest in architecture which it would be well if all country residents would imitate. But architects must remember with gratitude that although from his boyhood he has had constantly to refer to subjects relating to art, HIS MAJESTY has never attempted to take any particular style under his protection and to promote it by the sacrifice of other styles. That, we believe, has been a distinct gain, for, although critics may dwell upon the shortcomings of English buildings, improvements will only be arrived at by the exercise of liberty and the conviction derived from experience of what is proved to be the best.

ONE of the results of the exhibition which has been held at Madrid to celebrate the KING'S accession has been the revelation of the power as a painter of DOMENICO THEOTOCOPULI, who is more popularly known as "El Griego," or the Greek. Many of the pictures by him were lent from private collections, and were therefore less known than those seen in the Prado, the Escorial and the churches at Toledo. He was a Greek by birth, and, it is believed, studied under TITIAN in Venice. THÉOPHILE GAUTIER says that GRIEGO'S *Interment* in the Madrid Museum has parts which are worthy of TITIAN'S pencil, but he also points out the work which represents the other extreme of the painter's skill, a picture showing monks about to perform penitential exercises, which in its funereal gloom exceeds anything to be found in the romances of Monk LEWIS or ANNE RATCLIFFE. This same critic found a like difference in the Greek's paintings in Toledo; there was either a marvellous resemblance to the style of TITIAN or the most bizarre composition and colouring; a depravity of energy was a sign that his genius was conquered by folly. Even in the worst of them, said GAUTIER, there is something which sets us dreaming. We have only a small work by him in the National Gallery—a *St. Jerome* in a cardinal's robes. THEOTOCOPULI died in Toledo in 1625. VELASQUEZ was then in his twenty-sixth year, and some have asserted that the Spanish master was a follower of the Greek. But it would be puzzling to trace any resemblance between their works. VELASQUEZ might seek humble subjects, but he never produced anything so fantastic as those which represent the second manner of EL GRIEGO.

M. HARDUIN, in the last number of *L'Art*, expresses his approval of the project of M. PAUL LEROI for the erection of buildings to accommodate the exhibitions of French artists. The latter proposes that a site should be purchased on the Boulevard des Capucines and a building erected which would serve not only as galleries for the display of pictures, statues and designs, but would supersede the inconvenient rooms of the Hôtel Drouot for holding auctions. It will be said that the artists already possess a palace in the Champs-Élysées for their exhibitions. But they hold it merely on sufferance, and at any time it could be taken from them. It will be remembered that during the operations connected with the international exhibition of 1900 it was necessary to construct temporary premises at a large expense. The purchase of the property and the erection of a building from the designs of M. VAUDREMER would cost about 15 millions of francs, which would mean an annual payment of 675,000 francs. The sum may appear to be large, but if the French artists had any enterprise it could easily be made up. The great obstacle is that Frenchmen have grown so accustomed to be under the

wing of the Government, they now hesitate before accepting the risks of independence.

## ILLUSTRATIONS.

## NEW BUILDINGS IN COBLENZ.

HOLY ROOD SANCTUARY SCREEN, ST. MARY, HOUGHTON, HANTS.  
NOT many years ago we published drawings by M. F. K. OLIPHANT, A.R.I.B.A. Since then he has been ordained, and is now rector of Houghton, near Huntingdon. His architectural training has not been a waste of time, for he has had opportunities to exercise his skill. The Rev. Mr. OLIPHANT, it should be understood, has no desire to compete with laymen who are architects; he accepts no fees, and a few months since it gave him satisfaction to hand over the restoration of a tower to a Cambridge architect. Having discovered indications in the church of St. Mary, Houghton, which warranted the conclusion that a rood-loft and screen once existed, he was asked to allow a screen to be erected by members of the ANSLEY and MARTELLI families, he decided to adopt the ancient form. Believing that the principal purpose of the screen should be the display of a rood, he has made the cross prominent in the design. Figures of St. MARY THE VIRGIN and St. MARY MAGDALEN, the patron saints, are also introduced. Between them are briars and roses, typical of the joys and sorrows of the cross. The cross itself is surmounted by a crown with a copper hood, beneath which a figure of CHRIST will, no doubt, be shortly placed as was intended, for without, the rood is incomplete. From the illustration it will be seen that while there is extreme simplicity, symbolism is respected and suggested. The rood-screen imparts increased solemnity to the interesting church. The work was carried out by Messrs. SKEELES BROS., of St. Ives. The carving is by a young artist, Mr. THOMSON, of Alconbury, and the pierced metal lock, plates and other metalwork by Mr. JUDE of St. Ives. The work is, hence, an example of local craftsmanship, and that enhances its Gothic character.

## CHURCH OF ST. PAUL, KINGSTON HILL, SURREY.

THE existing portion of St. Paul's Church, Kingston Hill, was built some fifteen years ago, and consists of a nave, north and south aisles and a north porch. The original design included a massive central tower, but the present building committee, under the advice of the architect, have decided to omit this, partly on account of the cost of its erection, but also that it rather hampered the plan for present requirements on a somewhat limited building site.

The additions now proposed to be erected are a chancel 42 feet long by 24 feet wide; a transept on the north side, 22 feet deep by 20 feet wide, specially arranged with its own porch for the use of school children, clergy and choir vestries, each 20 feet by 11 feet 6 inches, filling up the space in the north-east angle, with the heating chamber beneath them approached from the outside by a stairway in the north turret. The organ chamber is on the south side opposite the transept, and a parish-room 30 feet by 19 feet, east of the organ chamber, completing the south side. A substantial bell turret will be built over the chancel arch. The materials proposed to be used are similar to those in present building, viz. Box ground for quoins and weatherings, Corsham for moulded detail and random-coursed rag for facings, to be backed up with hard brickwork. The roofs to be covered with green slates and red ridge tiles. The approximate cost of the additions is a sum closely approaching 7,000£, and the work will be commenced so soon as the funds reach half that amount. The architect is Mr. THOS. GARRATT, of Kingston Hill.

## CATHEDRAL SERIES.—RIPON: SOUTH CHOIR AISLE, LOOKING WEST.

## LA ROCHELLE (HOTEL DE VILLE).

IN referring to the Queen's Hotel, Leeds, last week, it should have been stated that the ceiling is in plaster. The panels referred to as decorative are figure-paintings. The interest of the room as an example of Burmantofts faience is not diminished by the correction.



## ACOUSTICS OF AUDIENCE HALLS.\*

THESE are certain factors to be considered in the designing of a hall of audience which are of such vital importance that to neglect them in the slightest degree is to court failure. All things considered, the most essential requisite for a public hall is that it shall have good acoustic properties. The architectural design may be wholly lacking, the sight lines may be ignored, the heating and ventilation unmanageable, and the hall may yet be made of some use; but if the acoustics are wrong the hall is useless. It would seem, therefore, in this age of specialised knowledge, that there ought to be not only definite data as to what constitute a bad hall and the causes for its defective qualities, but there should be at the hand of the designer abundant logical means of determining in advance just what will insure good acoustic properties. As a matter of fact, however, there is no department of applied science to-day in which the available knowledge is so deficient as in acoustics. The problems have been studied over and over again, but they are so intangible, it is so difficult to rightly analyse, and it seems so nearly impossible to construct synthetically proper acoustic conditions that we are obliged in the present state of our knowledge to depend for guidance almost entirely upon experience. And even in this respect we are often led astray, for where we cannot deduct definite data from known conditions it is, of course, well nigh impossible to be sure of the results of the application of such facts as we can collect. The writer has from necessity made a considerable study of this particular subject, and while being utterly unable to arrive at any scientific deductions or to gather any generalisations which can be rigidly applied to the designing of new structures, there are at the same time a number of results derived from personal experience which are of certain interest, and which can profitably be considered in planning in advance for good acoustic properties.

There is a popular conception that the acoustics of a hall may be admirable for music while poor for speaking, or *vice versa*. I have yet to find this substantiated by facts. A hall without a certain amount of resonance, for instance, is good for neither music nor the voice, while the least particle too much resonance is just as fatal to correct musical effects as to speaking. It has sometimes seemed as though acoustic defects were made more manifest by music because the tones being purer in quality than the human voice, were more susceptible to interference, but, at any rate, investigation has thus far failed to discover a hall thoroughly satisfactory for music which was not equally so for the voice. Another popular fancy is that every structure has its exact note in a musical scale, and we are sometimes even told that a fiddler, if he only knew how, could fiddle down a building even heavier than London Bridge. As they say in the papers, this is important if true, but personally I do not believe a word of it. Nor can I find that a hall has an individual pitch to which a speaker must accord his voice. It would be a poor hall indeed in which a speaker would be at his best in only one pitch, and such halls practically do not exist. Up to a comparatively short time since it was my conviction that the most suitable shape for a hall of audience was one in which the width was considerably greater than the length. A wide auditorium has the seeming advantage of bringing the people closer to the stage, and it might readily be agreed that good acoustics would result. But I have not yet found an especially satisfactory audience-hall of this shape, and I have found several that were defective, in that the hearing was confused and the sound lost in fulness. When the Boston Symphony Hall was built by McKim, Meade & White, a great deal of attention was paid to acoustics, and most elaborate calculations were made by Professor Sabine, of Harvard (see *The Architect* of 1900), to determine a number of points in relation to both material and shape, and an elongated plan was decided upon following very closely the lines of the celebrated Music Hall at Leipzig, which is acoustically a great success. The Steinert Hall in Boston is an auditorium about sixty per cent. longer than the width, and the width increases somewhat towards the rear, the side walls not being parallel. This is one of the best halls for chamber music in the country. On the other hand, there is a hall recently built in Boston which is considerably broader than it is long; repeated attempts have had to be made to alter the effects of music in the hall, which is now very lacking in quality and volume. The hall of Tremont Temple in Boston is a rectangle approximately 70 feet wide by 120 feet long, and the acoustics both for speaking and for music are, as far as can be determined, perfect. So that consideration simply of acoustics seems to point to a rather elongated hall as on the whole safest. A better plan, however, in my judgment, considering both the acoustics and the lines of sight, is to make the auditorium practically a square, limiting the width to 90 feet at the most, as beyond that width the extreme sides are apt to suffer.

A rectangular auditorium whether concert hall or theatre,

should not have a rectangular proscenium. In theatres which seem to be the most successful acoustically it has been found that the walls immediately preceding the curtain opening, or what is known technically as the proscenium, are built at a slight bevel outward, and the ceiling over the fronts of these boxes and connecting the two sides is slightly arched on a bevel corresponding to the angle of the sides. An illustration of this is afforded by the Auditorium Theatre of Chicago, the acoustic properties of which are marvellously successful. In this building the bevelled walls on each side of the proscenium are carried far out into the auditorium, and there seems to be a reasonable ground for the theory that the sound issuing from the stage is in a measure directed and equalised toward the audience. Of course it is absolutely impossible to prove such theories, but we find the conditions of the bevelled sides and tops in nearly all theatres which are acoustically successful and we can reason safely from that that a theatre built on such lines is not apt to be a failure.

In my judgment it is essential that the main ceiling of any auditorium should be slightly varied in level, that is to say, not one unbroken surface, and with a sufficient number of distinct breaks either by beams, circles, or some other architectural device, so that any sound waves which might be supposed to impinge upon the ceiling would be scattered and dispersed rather than reflected to the audience. Any arrangement of domed surfaces, however, on a ceiling implies a certain risk. There are very few instances which have come under my observation of domed auditoriums which were wholly successful acoustically, while there are a number of instances in which a dome was presumably the cause of poor acoustic properties. The Paris Opera House is one striking instance.

The exact form of the balconies and galleries I cannot find has any special relation to the acoustic properties of a house. There is an idea that a wide overhang, with corresponding pockets, as it were, under the balconies or galleries, is liable to make trouble. This is not substantiated by facts. In Tremont Temple, which has a very deep pocket under the gallery, no difficulty was experienced with the acoustics. So it is only on the grounds of better sight-lines or more comfortable auditorium that there would appear to be any special necessity for avoiding deep overhangs.

While the ceiling should be broken, and the more the better, the same does not hold true of the walls. In the new Boston Symphony Hall the side walls are very much broken by pilasters and deep niches. It would hardly be fair to say the acoustics of this hall are poor, but there have been complaints, and personally I feel that a simple wall treatment would be safer. Musicians have said that Sanders Theatre in Harvard University is the best hall in the country for music. It has a broken ceiling and plain walls. Tremont Temple is the same. Successful theatres are invariably so. A slight cove between the wall and the ceiling line is usually an improvement, while a large cove, unless it is an irregular one which is considerably broken up in its horizontal dimensions, is often a source of trouble.

So then, from the foregoing, the ideal auditorium would seem to be one with a very elaborate ceiling, rather simple walls, a width of perhaps 80 or 90 feet, and a depth of perhaps 100 or 115, with projecting proscenium walls set at an angle to the centre line and an arched ceiling overhead. I do not know of a single theatre which follows these lines in which bad acoustic properties have developed.

There are several minor details of construction to which can be traced some elements of acoustic success. The stage level is best set at about 3 feet above the lowest portion of the auditorium. Every inch of increase over this height means a possible loss in the clearness with which the auditors can hear speaking from the stage. Furthermore, the height of the uppermost seat in the balcony should not be above the top of the proscenium opening. This does not imply that in order to get higher seats the proscenium opening can be raised, for the best shape of opening seems to be one in which the height is rather less than the width, in which the corners are at least slightly round, if not arched. So that the height to which the uppermost seat can be raised is, in a sense, a direct factor of the width of the proscenium opening.

The material of finish exercises considerable influence upon acoustic properties. In talking with a number of theatrical managers in various parts of the country I find a strong preference expressed for houses in which a good deal of wood is used in the construction, with wooden dadoes, or panelling, carried as high on the walls as possible, and wooden floor boards nailed to sleepers so as to allow a slight air space underneath. Wood is certainly far more resonant than hard plaster or metal. Our building laws oblige us to use a great deal of fireproof material, chiefly plaster. But it would seem advisable to cover this as far as possible so as to present wood rather than a hard surface to the sound. The balance of evidence is in favour of soft wood for finish rather than hard as far as it has any perceptible effect on acoustics, but this is a point extremely difficult to determine.

\* A paper by C. H. Blackall in the *Technograph* for 1901-2 of the University of Illinois.



In the case of a concert hall, in which the platform is slightly raised above the floor and recessed with finished walls on three sides, the recess should not be rectangular, but rather the wall should be set on a bevel, following out the idea of a theatre proscenium. A hall in Boston which has recently come under my observation was built with a rectangular recess for the platform. The acoustics were found to be very bad. The hall is now in process of being changed, the sides to be bevelled, and from the experiments that have been made so far it is believed that this simple change in the direction of the side walls will remove the acoustic troubles. There should be no window at the rear of the recess, and it is safer to have the walls of the recess constructed as partitions rather than that any of them should be part of an outside wall.

The height of the platform in a music hall has a very perceptible effect on the quality of the music. When Steinert Hall in Boston was built the original intention was that there should be no platform. This hall was intended principally for piano recitals, and it was thought the best results would be obtained by putting the piano directly upon the floor. When the instrument is set up at any height above the spectators the music seems to come from the bottom of the piano rather than the top, and the tone is very much impaired. It was found, however, in this case that the auditors objected to the performer being placed so low on account of sight, and the platform has been successively raised a few inches at a time, until now it is 2 feet above the floor. But musicians have expressed the opinion that the sound of the music would be better if the platform were omitted entirely.

Some curious observations were noted in connection with this platform. As at first constructed the top was of spruce boards, unfinished. As an experiment these boards were shellaced and varnished, and it was found that the quality of the music was very much improved thereby. The effect of varnish on wood is something that is difficult to rightly gauge. Our modern violin-makers are able to produce an instrument which in the raw wood is fully the equal in tone of the old historic violins, but the moment the wood is varnished the peculiar mellow tone of the instrument suffers a distinct loss. Violins can be made as well now as ever, but the secret of properly varnishing them so as to retain the tone is a lost art.

A factor in the acoustic properties of a house which is very often underrated is the quantity of moisture in the construction. Shortly after the Colonial Theatre was finished it was visited by Annie Russell's company, which included a number of actors who had been used to small houses and found themselves rather at a loss in the larger theatre, so that the management very soon began to receive complaints of the acoustic properties of the house. One of my friends specially took me to task for it, and declared that he could hear nothing at a performance. I investigated each complaint very carefully and could not find any distinct acoustic troubles. During the ensuing summer a few changes were made in the auditorium, and in the fall my friend met me and expressed great delight in the improvement we had made, and wished to know what it was we had done which had so thoroughly changed the acoustic properties of the house, which were now perfect. I assured him all we had done was to change the colour of the draperies, which amused though did not convince him that we had made no radical change. Thinking the matter over since, however, I am inclined to believe that a change was wrought in the auditorium during the summer, consisting simply in the thorough drying of the house, and it is a fact which has been quite amply demonstrated that an old building is less apt to give trouble than a new one, especially if the latter is of fireproof construction and necessarily very damp for quite a while after completion.

The effect upon the acoustics of the heating and ventilation of a hall is not always easy to measure. We know that sound-waves will travel with less distortion across a current of air than with it. When the sound-waves and the air are travelling in the same direction the sound is very apt to lose in clearness, and therefore the best way to heat an auditorium would appear to be to introduce the air from the bottom and take it out at the top, so that the currents would be at right angles to the sound-waves. By sound-waves I mean in this connection the portions which go directly from the source of sound to the average observer. Of course the waves are really spherical, and might be assumed to act and react from all directions. But the only waves which we can fairly consider are the direct ones. Theoretically, at least, it would appear safer to as far as possible suppress the action of all other waves, and in theory at least this can be done by rendering wall surfaces, &c., absorbent, but practically I do not know of its ever having been actually accomplished. Very elaborate attempts were made in connection with the large hall of the Trocadéro, at Paris, to absorb the superfluous sound vibrations, but the results were quite unsatisfactory. More recently, Professor Sabine has made some elaborate investigations to determine the coefficients of absorption of various substances and walls. These coefficients are aids, but are by no means infallible guides. In fact, one of the discouraging results of scientific investigations is that in most

cases where deliberate attempts have been made to scientifically solve in advance the acoustic properties of a house the results have been more or less failures.

A hall which has a slight echo when empty will very often be perfect when filled with people. Sound appears to travel with less distortion in a low temperature than in a high one, within certain limits, at least. A carpet on the floor tends to slightly lessen the fullness of sound in a room which is only partially occupied, but in a theatre, for instance, when the hall is crowded I fail to detect any difference with carpeted or uncarpeted floors.

There is no lack of confusing facts regarding acoustics, and echoes especially are by no means easy to locate. In the auditorium of the Colonial Theatre the acoustics are as nearly perfect as one could wish, but in the ticket office, a room about 6 by 17, and not over 8 feet high, with a hollow floor, and the walls lined with cases, there is a very pronounced and disagreeable echo which I have been utterly unable to either locate or stop. In the building of the Master Builders' Association in Boston there is a room about 20 by 30 and perhaps 14 feet high, in which it is very difficult to speak. Sound has no fullness and seems to keep back around one's ears. Immediately adjoining is a large room with probably twenty or thirty times the cubic contents, in which the acoustic properties seem to be perfect. The construction of the two rooms is identical. I have found it more often the fact that echoes or sound disturbances will occur in small rooms than in larger rooms. If any one wants a practical illustration of how difficult it is to speak and hear distinctly in a small space let him put his head under the clothes when he goes to bed and try to talk out loud, and he will realise the difficulties that sometimes arise in a small room. I had some experience a short time since with two rooms identical in construction, size, and finish, except that one had two chandeliers and the other one. The latter was abominable for acoustics, and the first was apparently perfect. We added a chandelier in the second room, and the trouble seemed to be entirely remedied. I am sure, however, that it would puzzle any one to explain why so slight a change would make so much difference.

I have made many inquiries among musicians as to the best construction for an ordinary small music room such as would be found in a private residence, and, summing up the consensus of opinion, it would seem as if the following would be pretty likely to insure good results: The floor should be of wood, uncovered, and laid over sleepers as small as possible, and spaced not less than 6 or 8 inches apart, much in the manner that the sounding board of an ordinary upright piano is reinforced by battens. The floor boards had best be of clear white pine  $\frac{1}{2}$  or  $\frac{3}{4}$  inch thick, thus leaving an air space underneath between the battens. The walls up to a height of about 7 feet should be panelled in soft wood and painted white. Above that the walls should be slightly broken by pilasters and the intervals cased with mirrors. The ceiling, which should not be less than 12 feet high, should be broken by beamwork in each direction, the beams being recessed 8 or 10 inches, and finally, if possible, there should be no outside walls. The room should be an oblong in the relative proportions of two to three, with a height a little less than the width. And the piano should be placed in the middle of one end of the room, in such position that no two of the legs or supports would rest over the same floor beam. This construction has been tried to my knowledge twice with admirable success, and as a result of experience seems to be justified.

All of the foregoing is, of course, entirely empirical, and is the result of personal observation. In time we will undoubtedly be in possession of exact knowledge with which we can determine the qualities of proposed halls as accurately as we now determine our construction, but at present there are very few rules that bear the test of application, and all the scientific data which I have ever seen published is nothing but the formulation of experience.

## DECORATIVE ART AT TURIN.

VERY little has been written as yet in English newspapers about the Turin Exhibition of Modern Decorative Art. Those who confine their artistic interests to the yearly picture shows will not, says the *Times*, consider this strange. Nor would such an exhibition appeal to critics who regard art merely as a branch of archaeology. To any one, however, in whose eyes art is closely related to life—to modern life as much as to life in past ages of the world—this first International Exhibition of the Decorative Art of our own time must suggest many thoughts, and must appear to be an event of profound significance. Especially should we in this country look with interest upon it, for the chief impulse towards the revolution of which the exhibition is a sign came undoubtedly from our island.

The strange and, to Englishmen, the humiliating thing is that in the galleries at Turin, England, the leader in the



movement, takes an insignificant place. One reason for this is not far to seek. Most of the other countries represented have had the spending of large contributions from their respective Governments. Austria, for instance, has had erected in the grounds two delightful buildings for the display of Austrian exhibits. One is a small palace full of miscellaneous wares, the other a beautiful little villa, with its rooms fitted up by different firms in perfect taste, illustrating all the latest ideas of domestic decoration. These buildings were designed by an architect in the service of the Austrian Government, and a large sum of money was granted in order to enable Austria to take a prominent place at the exhibition. Belgium, again, has a section designed by a Government architect. France, it is true, received no Government aid; but this is scarcely noticeable, so admirably has individual enterprise done its work. The English section alone is planned on the regular old-fashioned exhibition model. All the other sections are fitted up like spacious, sumptuous rooms—carpets, wall-papers, hangings, every accessory of adornment falling into an harmonious and ordered scheme. In the English section there are simply partitions, upon which the exhibits are mostly placed, with a few quite ordinary showcases down the centre. In themselves the exhibits do not compare, on the whole, at all unfavourably with those of other nations. There is a great deal of good and interesting individual work. But it is so placed and arranged that most of its effect is entirely lost. For example, there is a very fair collection of wall-papers, the work of Mr. Voysey, Mr. Vigers and other designers. But these are so arranged, with cases and pieces of furniture in front of them, that half of them cannot be properly seen. Again, there is a charming harpsichord, designed by Mr. Arnold Dolmetsch, which ought to be so placed that every detail of its decoration can be studied. It is, however, put against a wall, and certainly does not leave upon the mind the complete impression of beauty which its designer intended. Then there are in the English section too many pictures of things. The photographs of the principal works of distinguished architects of the last twenty-five years are interesting and well deserve their place. But the general effect left upon the spectator's mind is that of a section in which you are told what English artists and craftsmen are doing, but which does not show you sufficiently their actual achievements. There is a fine piece of Morris tapestry and a number of Ford Madox Brown's figure designs to show what were the ideals of an earlier generation. There is some good jewellery—too little of it, though; there is a case of Mr. Benson's copper wares for table use; there are a few pieces of furniture, mostly sent by the Guild of Handicrafts, and there is some interesting metalwork. But the show does not make it appear, as it ought to do, that the first enthusiastic rapture of the English school of artistic craftsmanship has of late years largely widened its influence. Mr. Walter Crane, who went to Turin to arrange the exhibits collected by the Arts and Crafts Society, has a large exhibition of his own drawings and designs. He was specially asked to show these by the organisers of the exhibition. It is unfortunate that Mr. Crane's work does not gain in effect by being seen in large quantities at a time.

The Scottish section is set out with a good eye to effect and decorative charm. Everything is made the most of, and the colour scheme against which the exhibits are shown up is attractive and interesting. Curious it is to notice how the Scottish nature, as soon as it is released from the bondage of severe form and colour, rushes to the opposite extreme. "Perfervidum ingenium Scotorum" once again. Mrs. Margaret Macdonald Mackintosh's panels demand and obtain a great deal of attention. There are some amusing chairs—amusing in their fantastic shape and in the insistent hues of their upholstery. They are mostly too strange to be acceptable in daily life.

The pleasantest furniture in the exhibition comes from Holland and Germany. There is a very charming room arranged by Professor Olbrich of Darmstadt, and filled by him with beautiful things of his own designing. In the Dutch section there is a delightful little bedroom that calls forth constant admiration. The quiet charm and dignity of the furniture in these sections forms a curious contrast to the violence and eccentricity of many of the sets of chairs and tables and sideboards and cabinets in the French, Italian and Hungarian sections. The sort of things that we see in these latter resemble the furniture which was exhibited last year, upon the initiative of a well-meaning but misguided enthusiast, at the South Kensington Museum. As a set-off, however, there is in the Hungarian section some charming jewellery; in the Italian many examples of exquisite and powerful modelling (notably the bronzes of Signor Bialelli); and in the French section numbers of beautiful things—stuffs, glass, pottery, reliefs, enamels and so on—all showing the French love of form and the French admiration for all that is exquisite and daring in design. America has a large but not very attractive section. There are some

good bronzes, of a size suitable to small rooms, and some interesting architects' designs. It is astonishing what an architect of resource and invention can do, even when he has to plan huge "sky-scrapers" fifteen and sixteen storeys high. A very pretty garden plan on the prim, formal model shows that the Americans are devoting some attention to this form of outdoor decoration, which has rather fallen out of favour in Europe.

Most of the nations have seized upon the opportunity to show not only what their art-craftsmen are thinking, but how commercial firms are carrying out their ideas. If this feature were pushed to an extreme, it would make the exhibition too much of a tradesman's show. But this is not the case. It is a pity that the opportunity was not offered to a few English firms to prove what they can do in the way of decorating houses. We have no need to fear comparison in this respect with the decorators from Paris, from Vienna and from other continental centres, whose wares obtain an excellent advertisement at Turin.

The exhibition remains open until November. Numberless English people on their way to Italy pass through Turin in the course of the late summer and autumn. It would be a pity that any one interested in the recent developments of decorative art should miss seeing an exhibition which offers so much food for reflection and so much stimulus towards a just appreciation of the attempt to bring more beauty into everyday life. They will see much that must seem odd and, at first sight, unattractive. But the sum of their impressions will be pleasant and of good augury for the future. As it is with the objects exhibited, so is it with the exhibition buildings. Some of these are restless and bizarre in effect, but the general appearance of the galleries is satisfying and even dignified, and they are set in the midst of a charming park, washed by the river, and filled with trees and green spaces. Especially good are the large figures in plaster which adorn the grounds and buildings. In this branch of art the Italians, who have lost the mastery of colour and composition, still excel.

#### ST. PATRICK'S CATHEDRAL, DUBLIN.

ALTHOUGH most people in Ireland have some feeling for their national cathedral, its true value from a historical and archaeological standpoint has never been apprehended. Without attempting to write its history in full, says the *Irish Times*, a few brief notes on its past story may fittingly lead up to the discoveries and achievements of the almost accomplished work of its restoration. The whole of the lands known as the Liberty of St. Sepulchre, near Dublin, were in 1190 possessed by the Archbishop of Dublin, and on them was the older Irish church of St. Patrick de Insula. The Liberty of St. Patrick's, as created by Comyn, was walled and fortified, and dignitaries' houses were built. They were, however, not maintained. We read of the unfortunate dignitaries in the sixteenth century that, "Being so daily and hourly preid and molested by their prowling mountain neighbours, they were forced to suffer their buildings to fall into decay, and embayed themselves within the city walls." Whether or not John Comyn, the founder, actually built the cathedral—indeed, only a superficial knowledge of the history of architecture is required to prove the ordinary guide-books wrong in attributing to that prelate a form of Early English architecture unknown in his day—the conception of a cathedral establishment formed by him and carried on by his successor is extremely noble and beautiful. The ground-plan, as a study on paper, shows a perfection of proportion and symmetry unexampled in England. It reveals itself, according to Sir Thomas Drew, as "the design of a mathematical mind which arrived at the proportions of a Latin cross by the placing together a number of absolutely uniform equilateral triangles." Through more than six centuries this design was obscured and inappreciable, since poverty and vicissitude had left it unfinished. Its north and south transepts were walled off in separation, and its lady chapel assigned to Huguenot settlers as a built-off church. It was reserved for the nineteenth century, when Sir Benjamin Lee Guinness began his munificent work of restoration, to reveal again to the citizens of Dublin how noble and impressive a church they possessed. And now in the twentieth century many will doubtless be surprised and gratified to learn of even fresh discoveries to heighten the national pride in the national cathedral. But first it may be asked, "If St. Patrick's was restored in 1865, how comes it to need further restoration in 1901?" The answer is a very simple one. When in 1865 Sir Benjamin Lee Guinness removed obstructions; restored the church to its original form and otherwise embellished it, the Early English Easter chapels, restored in 1845, appeared still perfect. Unfortunately a disastrous mistake had been made as to the stone used. Instead of the ancient wrought stone used in Mediaeval building, brought from the famous oolite quarries of Somersetshire, soft Caen



stone was imported, with which a brief fifty years of the Irish climate played utter havoc. As is well known, when Dean Jellett came to his deanery in 1892, he found the eastern end of his cathedral not merely in a dilapidated, but a dangerous state. So extensive was the damage, and so great the expense even of shoring-up, that, but for the timely generosity of Lord Iveagh, the cathedral would now be standing propped on a forest of timber balks, or perhaps not standing at all. In the course of restoring the choir aisles, the delightful discovery was made that under plasterwork of the time of William and Mary real and beautiful work of the thirteenth century had been hidden for many generations. Further, on June 18, as some will remember, the exact site of the original well of St. Patrick was discovered by Mr. Spencer Harty, within a few feet of the very place Sir Thomas Drew had predicted. The well itself was not in evidence owing to the diversion of the mischievous river Poddle; but the spot was marked by an ancient cross, of archaic type, pointing plainly to the old Celtic church, the far-off Irish St. Patrick's, before the Anglo-Norman cathedral. These two discoveries would in Italy, France or England evoke the liveliest interest and enthusiasm. But Lord Iveagh has done more. The great organ—no longer blocking the north transept—will be placed in a new organ chamber, 30 feet above the choir, reached by a lovely spiral staircase of stone, copied from one in Mayence Cathedral. The organ, while retaining its most famous stops, is provided with the newest system of hydraulic blowing; some of its pipes are 33 feet long and 6 feet in diameter. By an interesting coincidence the service of its dedication has been fixed to take place on June 18, the anniversary of the finding of St. Patrick's Well. Would it not be well that some sign, say, an Irish cross, should mark the spot of undistinguished corporation ground where it now lies unnoticed? One rejoices to learn that the ugly iron railings, suggestive of prison bounds, are to be removed, and green sward allowed to reach right up to the cathedral, after the fashion designed by its founder.

The manner in which the new flying buttresses and organ-chamber have been added, and the roof and transepts restored in complete harmony with their magnificent thirteenth-century character, and following their prototypes of Wells and Salisbury, reflects the greatest credit on Sir Thomas Drew, the architect; Mr. Ferrar, the clerk of the works; the builders, Messrs. John Thompson, of Peterborough, and their skilled workmen.

Irishmen and women will, we hope, awake before long to the great beauty of their restored inheritance.

### BRITISH COINS.

THE mode of coining in this country in 1289 was as follows. The metal was first cast from the melting pot into long bars. These bars were cut with shears into square pieces of exact weight; then with the tongs and hammer they were forged into a round shape, after which they were blanched—that is, made white and refulgent by nealing or boiling, and afterwards stamped or impressed to make them perfect money. This method continued till the screw was applied to coinage in the French mint in the sixteenth century, but not to ours before 1661, when it was used, together with the old method of coining by the hammer, until the latter was wholly laid aside in 1662. After the introduction of the mill the preservation of the outer edge of coins was first attempted by placing a grain, so as to form a regular circle on the outside of the legend, quite to the edge of the coin. The earliest specimen is of Elizabeth's reign; legends on the edge first occur in 1651; milling, with the strokes at right angles across the edge, in 1663; with diagonal strokes in 1669, with angular strokes in 1739, after which appears the method still in use.

Gold was first (except among the Britons) coined by Henry III.; silver through all the periods; copper, except James's farthing tokens, first in 1672; tin in 1684. Lead tokens, called Plumbei Angliæ, were in use as early as the end of the reign of Henry VII., and latten, tin, pewter, leather, &c., have been used by tradesmen, on the token principle, from the days of Elizabeth, perhaps earlier.

The cross upon Anglo-Saxon coins and in the Norman reigns is said to have been deeply impressed, that the coins might be divided into halves for halfpence and quarters for farthings, which practice, says Hoveden, continued till the time of Henry I. Leake denies this, but there is a passage in Whitaker's "Richmondshire" which shows that coins were actually halved and quartered for currency. The crosses were exhibited under almost every possible form before the 32nd of Henry III. Then, says Ruding, "The only difference between his earlier and later coinages is that in the former the cross is bounded by the inner circle and has four pellets in each quarter, whilst in the latter it extends to the outer circle and the number of pellets is reduced to three. To this de-

scription his gold penny forms the only exception. It kept entire possession of the coins until Henry VII. (*sic*, but armorial bearings first appear upon coins of Edward III., see Leake, iii.) introduced heraldic bearings. It then began gradually to give ground, but was not entirely lost before the latter end of the reign of James I."

The full face exclusively was adopted by John, and continued by all the succeeding monarchs until the side face was introduced 19 Henry VII. The last silver pieces upon which any of our princes have been represented with a full face are shillings of Edward VI.

The most ancient British coins are impressed on one side only and have no legend, only a device; those which have both an obverse and reverse are also without legend, except the coins of Sego[nax] and Cunobeline, with Camu[odunum] and Tascio. Ruding disproves all existing elucidations, and whether the following new remarks deserve attention shall be left to the decision of the reader. It seems to be generally allowed that the coins thus marked belong to Cunobeline, who was a Roman tributary king. It also appears from the coins in Ruding, which have this word, that their types are Roman. Melting pots or crucibles were made of an earth called *tasconium*, because that only would stand the fire:—"Catini fiunt (says Pliny) ex tasconio. Hæc est terra alba similis argillæ neque alia afflatum ignemque et ardentem materiam tolerat." L. xxxiv. c. 4. May it therefore be inferred that Tascio, like Augo for Augusto, is an abbreviation of *Tasconio*, and that the word may mean other coins melted down anew and stamped with Roman symbols to comply with their usual policy that the coinage should always recognise their dominion?

Some coins appropriated to the early Anglo-Saxons before their conversion to Christianity have either no legends or letters, the meaning of which has never been ascertained. The money of the Heptarchic kings has the name of the monarch on the obverse and that of the moneyer on the reverse, or after a certain period the place of the mintage. There also occur coins of saints and prelates with their names on the obverse, as STPETR. (*Sancti Petri*); SCEAD (*Sancti Eadmundi*); IAENBHRI. AREP. (*Jænbirht Archiep.*), &c. The sole monarchs have the same names of the kings with REX only, or REX ANGL. and the names both of the moneyer and mint on the reverse. The Norman kings continue the same practice, with very rare exceptions, Henry III. being the first king who has numerals after his name, though DVO follows the name upon a penny supposed of William I. DNS HYB first appears on the coins of Edward I., and in the same reign occurs the last instance of the moneyer's name upon the reverse. DVX AQT. first appears upon the coins under the three Edwards. Mottoes on the legends appear to have commenced with Edward III., and the first to have been POSUI DEUM ADJUTOREM MEUM, in allusion to the prosecution of his title to France, which motto was continued down to the union of the kingdoms, except upon the country mints of Henry VIII., the bad money of Edward VI. and the groats of Queen Mary. From this period to the time of Henry VIII. the mottoes are religious, but with that reign begin the *rosa sine spina*, conceits and classical phrases. These are very numerous and are detailed in Leake and Ruding. The *decus et tutamen* introduced temp. Charles II. still, or but recently subsisted.

The first named mint upon coins is Camu for Camelodunum (on coins of Cunobeline), and Ver. for Verulam. These on British coins, but the earliest instance among the Anglo-Saxons is that of Baldred, king of Kent, anno 805-823; nevertheless, the practice does not appear to have become general till the time of Athelstan, and was not entirely disused till the reign of Elizabeth.

Ruding says that the earliest specimens of mint-marks are to be found in the Durham mint of Edward I., that they first appear upon the regal coins of Edward III., that in the reign of Henry VI. they began to be varied, and that their number increased very rapidly in that of Edward IV. They were not entirely disused till the time of Charles II., a discontinuance ascribed to the introduction of the mill and screw.

Moneyers' names appear upon coins, usually on the reverse, but sometimes on the obverse (the name of the monarch being removed to the other side), as early as the seventh century. Sometimes the names of two moneyers occur on the same coin. This nomination of the moneyers is to be found no lower than the reign of Edward I.

*Numerals.*—1. Roman first appear on coins of Henry III.; 2. Arabic on those of Henry VIII.

The most ancient British coins are without busts and legends, having only a horse or hog (the most general patterns), an ox's head, rude lines, representations of the sun, &c., which are succeeded by barbarous human heads, figures with spears, riding, running or in chariots, &c. The Anglo-Saxon without busts and legends have the uniform obverse of a bird. Fillets of pearls and crescents distinguish the Anglo-Saxon kings of the Heptarchy, and rude kinds of crowns with rays and pearls are mixed with fillets among the sole monarchs. The sceptre



first appears on coins of Ethelred II. Edward III. in the ship is the earliest variation from a bust in the regal coins; the angel of Henry VI. has only the figure of St. Michael piercing the dragon, and succeeding sovereigns have coins with only the arms, badges, &c., for an obverse.

The most ancient British coins are convex, the obverse blank, and on the concave side are a horse, or rude figure, like the obverses before mentioned. Upon the coins with legends Roman devices are most numerous. The first Anglo-Saxon without bust or legend have no reverse, except in one instance probably a forgery, where we find Romulus and Remus with the wolf, a type repeated on the penny of Ethelbert, king of Kent. The reverses of the royal Anglo-Saxon coins are nearly all names of moneyers and mints, but monograms occasionally appear; and on a coin of Edward the Martyr is the hand of Providence, with the letters A and Ω, the only instance in which Greek characters are found on any coins of the Anglo-Saxon monarchs. The reverses of the Norman kings down to Edward I. consist of the names of the moneyer and mint, encircling crosses with pellets, fleur-de-lis, &c., and this favourite device of the cross and pellets occurs even so late as on the halfpenny of James I. After the reign of Edward III. his ancient pattern is, however, often superseded by devices connected with heraldry, as the royal arms, badges, crowns, fleur-de-lis, lions, &c., disposed within fancy rosettes, quarter-foils and other borders. The most singular reverse, in one sense a national insult, is that on the halfpenny of Charles II., where the portrait of Britannia is that of the Duchess of Richmond, the king's mistress.

From the time of Athelstan, with some few exceptions, the name of the town was added on the reverse, mostly to that of the moneyer, probably in conformity to his law, that the money should be coined within some town.

An uniform type of the coins was first adopted by Henry III. From the Conquest until this time, with the exception of the coins of Henry II. and the obverse of those of John, a great variety prevailed in the impressions both of the obverse and reverse.

There are no positive proofs of British coins contemporaneously with the time of Cæsar. The coins which are all attributed to the early British kings may belong to some other nation. The far greater part of them are without any legend, and in the rest are to be found only initial letters or at most single syllables, which are applicable to the names of Gaulish princes mentioned by Cæsar or Tacitus. It is possible that the coins which bear them might have been imported into Britain, and notwithstanding Borlase's denial of the assimilation between Gaulish and British coins, the horse and hog, the most common symbols of the earliest era, appear simultaneously upon the coins of both nations. After the Roman mintage was introduced the conformity may be reasonably supposed to have partially or generally ceased. If these coins are really British, their origin (says Ruding) must be referred to some period subsequent to Cæsar's second invasion, and prior to Cunobeline's improvement of his coins, in imitation of the Roman money. The earliest coin which can with any probability be attributed to any particular British monarch bears upon it the letters Sego, probably for Sego[nax], one of the four Kentish kings, who by the command of Cassivelaun attacked Cæsar's camp upon his second arrival in Britain. To his coin succeeded Cunobeline's money, evidently borrowed from the Roman model, but after his decease the second subjugation of Britain took place under Claudius, and the Britons were so completely subjugated that the edict ordaining all money current among them to bear the Roman Imperial stamp was strictly enforced, and no British money appears afterwards. Notwithstanding Verulamium, &c., in lists of Roman coins, Ruding says that no Roman coin bearing the name of a British town has yet been discovered.

The Saxons brought with them their coinage from the Continent. Sceatta are known of the early kings of Kent, some of which must have been struck within the sixth century, and there are others so similar to them in type as to justify their appropriation to the same people, but which, from their symbols, were evidently coined before their conversion to Christianity, and were therefore probably brought with them from the Continent. It is known only concerning the Heptarchic coins, that the money was of equal weight and probable fineness with the later Anglo-Saxon pennies, and that the moneyers stamped their names upon it, but that the custom of adding the place of mintage was of very rare occurrence, and almost solely confined to the ecclesiastical coins of Canterbury. There were no gold coins. The most ancient coin was of silver, and called Sceatta. The precise value is uncertain, but it was the smallest coin known among the Saxons at the end of the seventh century. The next coin in point of antiquity is the penny, which appears in the year 688, though the time of its introduction is unknown. It was of silver, and was probably not known to the Saxons before their arrival in Britain. Besides these, there was the half-ling, or hal-penny, likewise of silver,

as was probably the feorth-ling or feondvng, the fourth part, or farthing. Next to this were the stycas, of brass, two of which were equal to one farthing. These stycas are the minuta of Domesday Book, whence our mite; but all of the kind yet discovered are from the mints of the Northumbrian kings, or of the archbishops of York. Every one of these coins, except the farthing, is to be found in cabinets. Besides these, there was probably the triens, which divided the penny into three equal parts. The mancus, the mark, the ora, the shilling and the thrimsa were only money of account, not actual coins; and if the mancus was ever current it was of foreign mintage. The earliest Sceatta known is of Ethelbert I., king of Kent from 561 to 616. The first penny (though it is probably older) is that of Ethelbert II. between 749 and 760. The most elegant specimens of Anglo-Saxon coinage, supposed by Italian artists, are those of Offa, king of Mercia from 758 to 796.

## RUSKIN HALL, OXFORD.

A MEETING in support of the movement to place Ruskin Hall, Oxford, on a firm financial basis, has been held at the London residence of Lady O'Hagan. The Duke of Argyll, who presided, pointed out that Ruskin Hall did not aim at enabling its students to "get on." It did not wish to turn honest working men into superfluous journalists or school-masters. Each student was stimulated to seek knowledge in order to help his fellow men; and nothing had so greatly cheered its directors in their work as the splendid evidence which their students' letters had given that they were striving to realise that ideal. Their extension lectures emphasised the necessity of systematic and purposeful education on the part of reform forces everywhere. They adhered rigidly to the special ideal of Ruskin Hall, that not all knowledge was power, but only that knowledge which enabled a man to deal intelligently with the problems which confronted him. To carry out in a measure that ideal all the courses were arranged with relation to the social and industrial problems which were now agitating modern thought. They were endeavouring to follow out the ideal of Mr. Ruskin that there should be nothing meretricious or false in what they undertook, and that everything should be done in a spirit of truth and devotion to duty and to art. They were doing a great deal towards lightening the lives of their fellow-citizens. He congratulated them on their work, and hoped they would have a very useful and prosperous career. From the programme they had put before them they seemed to be following the right path, and not to have taken the name of Ruskin in vain.

Sir H. Campbell-Bannerman said that in Scotland universities had existed for generations, and they had succeeded in doing the very thing which Ruskin Hall was founded to accomplish, namely, to bring learning of the highest pitch and tone down to working men and those classes who in England had to a large extent been debarred from it. Anything which could induce the spread of the highest learning among the masses of the people, and do it, not in a patronising way, but in a way that would interest them and bring them into immediate sympathy with it, was of great value, and he could imagine nothing which could be more beneficial to the country. The old saying of a poet about a little knowledge being a dangerous thing had done more harm probably than any other twenty axioms of the sort that had ever been uttered. There was just enough truth in it to make it dangerous and mischievous. There could be no harm in taking people and teaching them what they did not know, as long as their heads were not turned by it and as long as they did not think they knew a great deal more than they really did. An institution like Ruskin Hall would give precisely the learning, and inspire precisely the sort of spirit which was desired, without having an undue disturbing influence on those who were subject to it. He trusted that an institution which was capable of doing so much good would live long and prosper.

Mr. Dennis Hird, the Warden, said that the Ruskin Hall was not connected with the University. They did not give classical, commercial, technical, or artistic education. Their main endeavour was to give a civic education. It had seemed to the founders that in this country the duties of the citizen had been rather overlooked and put in the background. They accordingly turned their attention to that subject. Their education did not equip a man to go out and make a living. They did not teach him anything which was marketable. They endeavoured to teach him the history of institutions, ideas and men, and so to make him an intelligent citizen in whatever branch of life he might be. Ruskin Hall was taking an important part in what they hoped was an intellectual awakening in the country. Their present hall had been bought up, and they would have to find headquarters elsewhere. They were accordingly making their first appeal to the public to aid them financially in securing a house of their own. Already they had received promises from two gentlemen of 1,000*l.* each,



and the Amalgamated Society of Engineers were going to make a levy of one penny a member in aid of their funds. A resolution was adopted expressing the hearty approval of the meeting of the work which is being done at Ruskin Hall, and a hope that it would receive all the financial support it so fully deserved.

### EDINBURGH SCHOOL OF APPLIED ART.

AN exhibition of work by students of the School of Applied Art has been opened. There is a remarkable collection of illustrations of old Scottish plasterwork and old furniture, of painting and mural decorations, a series of drawings of plasterwork from Scottish houses, and studies of stained glass. The students of the school have been successful this year in carrying off a large proportion of the prizes offered in London, together with the travelling bursaries presented by the school itself. The Lord Justice-Clerk, in declaring the exhibition open, said this school was started nine years ago, and filled what was felt to be a very great want in the city of Edinburgh. They had no proper school for the training of technical art, and it was felt that there was a want in the training of those who went in for applied art. It was not till the Board of Manufactures, who took a very great interest in these matters, moved that they were able to get this school. And the question was whether it was to be carried on or not. Like most questions in this world, it was a question of money. They had spent upwards of 9,000*l.*, and they had works of art for the purpose of instruction which were valued at 5,300*l.* For years they had had excellent assistance from the municipality, but lately the Council had felt inclined not to be so liberal as they had been in the past. But he hoped they would be roused to take a further interest in the school, which was doing a very great and important work. He thought there was no place in the United Kingdom which had more claim to have a school of technical art than Edinburgh. If they had had such a school some years ago in Edinburgh, they would not have had such a considerable number of monstrosities of architecture on the face of Edinburgh, which although they had failed to make her ugly, kept her from being as beautiful as she might be. He wished somebody would take 2 or 3 lbs. of dynamite and lay it beneath the monument which most people called "Nelson's Monument," but which he called "Nelson's telescope," and by blowing it up make it into a comfortable ruin. This school had been organised by voluntary effort, and he did trust it would be supported in the future as well as it had been in the past. A notion had got abroad that this was a school for architects. It was nothing of the sort. It was a school for all those who desired to be trained in technical art. This school must either go on flourishing or stop. There was no medium course, and unless the Corporation of the city of Edinburgh supported the school he did not see how it could be carried on at all. He felt sure that if the city would only show itself interested in this noble work they would be able to get some assistance from headquarters for the purpose of making it more efficient than it is now.

### TESSERÆ.

#### Coronation Records.

IN England, after the kingdoms of the Heptarchy had become united, we find the ceremony of coronation continually alluded to in the Saxon Chronicle, under the term *gehalzod*, by which is expressed that the king was hallowed or consecrated. Kingston-upon-Thames was the place where the Saxon sovereigns were crowned during nearly the whole of the tenth century. Edgar, who succeeded to the throne in 959, is said to have been crowned either at Kingston or at Bath. Edward the Confessor was crowned at Winchester in 1042. The copy of the gospels upon which the Saxon kings were sworn at their coronations is believed to be still preserved amongst the Cottonian Manuscripts in the British Museum, in the volume Tib. A. ii. Harold and William the Conqueror were crowned at Westminster. It was customary with the Norman kings to be crowned more than once. Henry II. crowned his eldest son and associated him with himself in the administration during his own life. In one or two instances in the Norman times we find the regnal years of our kings dated from their coronations only; the previous time, between the predecessor's death and the performance of the inaugural ceremony, was considered as an interregnum. This is a fact of no small importance to those who would accurately fix the dates of public instruments and transactions in the reigns of Richard I., John and their successors. The first English coronation of which we have any detailed account is that of Richard I., in the histories of Diceto and Brompton. An account of all the formalities observed at that of Richard II., taken from the Close Rolls, is to be found in Rymer's "*Fœdera*," the old edition, vol. vii. p. 157. Froissart has

given a short but interesting narrative of the coronation of Henry IV. The details of the English coronations of Henry V. and VI., and of the latter in France, are contained in the Cottonian Manuscripts, Tib. E. viii. and Nero C. ix. Hall and Grafton have described the ceremonies at the coronation of Richard III. The account of the coronation of Henry VIII. with the king's oath prefixed, interlined and altered with his own hand, is likewise preserved in the Cottonian Manuscript already mentioned, Tib. E. viii. The oath, with its interlineations, is engraved in facsimile in the first volume of the second series of Ellis's "*Original Letters illustrative of English History*." Fuller, in his "*Church History*," and Ellis's "*Letters*," 1st Ser., detail the particulars of the coronation of Charles I. Several editions of the Form and Order of Charles II.'s coronation at Scone in 1651 were published at the time in 4to at Aberdeen; reprinted at London in folio, 1660, and the entertainment of Charles II. in his passage through London to his coronation, with a narrative of the ceremony at the coronation, by John Ogilby, with plates by Hollar, folio, London, 1662. Sandford's "*History of the Coronation of James II.*," folio, London, 1687, illustrated with very numerous engravings, is the most complete of all our works upon English coronations published by authority. That of George IV., of which two portions only appeared, was far more splendid, with coloured plates, but remains unfinished. A very ancient MS. of the ceremonial of crowning the emperors at Aix-la-Chapelle was purchased at the last of the sales of Prince Talleyrand's libraries by the late Mrs. Banks, and is now among the manuscripts in the British Museum. Of foreign published coronations, that of Charles V. at Bologna as emperor, in 1530, is one of the most curious, engraved in a succession of plates upon a roll of considerable length. The "*Sacre de Louis XV., Roi de France et de Navarre, dans l'Eglise de Reims, Octobre 25, 1722*," is a work of pre-eminent splendour, full of finished engravings. The "*Description of the Ceremonies at the Coronation of Napoleon as Emperor of France, with his Consort Josephine, December 2, 1804*," is a work of equal size, but the engravings are chiefly in outline, folio, Paris, 1807. There is a volume, with engravings, of the coronation of the Empress Anne of Russia, folio, Petersburg, 1731, and many others might be enumerated. The formulary which has served as the general model for the English coronations since the time of Edward III. is the "*Liber Regalis*," deposited in the archives of the Dean and Chapter of Westminster, and kept with a religious care. It is supposed to have been written for the particular instructions of the prelates who attended at the coronation of King Richard II. and his queen. Copies of this manuscript, without its illuminations, are preserved in one or two libraries. The substance of the ceremonial directed in it is abridged in Strutt's "*Manners and Customs*," vol. i. p. 22-37.

#### Antique Crowns.

The earliest use of a crown is attributed to Janus Bifrons, the reputed inventor of ships and coinage, whence many coins of Greece, Italy and Sicily bear the head of Janus on one side and a ship or a crown on the reverse. Judging from Homer's silence, it does not appear to have been adopted amongst the Greeks of the heroic ages as a reward of merit, nor as a festive decoration, for it is not mentioned amongst the luxuries of the delicate Phæacians, nor of the suitors; but a golden crown decorates the head of Venus in the hymn to that goddess. The first introduction as an honorary reward is attributable to the athletic games, in some of which it was bestowed as a prize upon the victor, from whence it was adopted in the Roman circus. It was the only one contended for by the Spartans in their gymnastic contests, and was worn by them when going to battle. The Romans refined upon the practice of the Greeks and invented a great variety of crowns formed of different materials, each with a separate appellation and appropriated to a particular purpose. Golden crowns, without any particular designation, were frequently presented out of compliment by one individual to another, and by a general to a soldier who had in any way distinguished himself. The Greeks in general made but little use of crowns as rewards of valour in their earlier and better periods of their history, except as prizes in the athletic contests; but previous to the time of Alexander crowns of gold were profusely distributed, amongst the Athenians at least, for every trifling feat, whether civil, naval or military, which, though lavished without much discrimination as far as regards the character of the receiving parties, were still subjected to certain legal restrictions in respect of the time, place and mode in which they were conferred. They could not be presented but in the public assemblies, and with the consent, that is, by suffrage, of the people, or by the senators in their council, or by the tribes to their own members, or by the demotai to members of their own demos. According to the statement of Aeschines, the people could not lawfully present crowns in any place except in their assembly, nor the senators except in the senate-house, nor, according to the same authority, in the theatre, which is



however, denied by Demosthenes; nor at the public games, and if any crier there proclaimed the crowns he was subject to timia. Neither could any person holding an office receive a crown whilst he was *hypeuthunos*—that is, before he had passed his accounts. But crowns were sometimes presented by foreign cities to particular citizens. This, however, could not be done until the ambassadors from those cities had obtained permission from the people, and the party for whom the honour was intended had undergone a public investigation, in which the whole course of his life was submitted to a strict inquiry.

#### Leopold Cicognara.

After serving the State of Modena in many ways, Count Cicognara was in 1808 appointed president of the Academy of the Fine Arts at Venice; an office for which he was well qualified no less by the public-spirited zeal with which he discharged it than by his knowledge of art itself and the literature belonging to it. From this epoch in his life may be dated the commencement of his career as a writer, during which he enriched the literature of art by many important works. In 1808 he published a treatise on "The Beautiful" ("Il Bello"). This was succeeded by his great work, "The History of Modern Sculpture" ("Storia della Scultura dal suo risorgimento in Italia al Secolo di Napoleone"), an undertaking to which he had been urged by his friends Giordani, D'Agincourt and Schlegel. It is in three folio volumes, the first of which appeared in 1816 and the last in 1818, and contains about 180 outline plates, exhibiting a vast number of subjects from the earliest period—the age of the Pisani and Donatello—to that of Canova, to a notice of whose works the whole of the seventh or last book is devoted. Although fastidious criticism has taxed it with some defects, it is undeniably a performance of great research and erudition, bringing down to the present century the history of the art from the point at which it had been left by D'Agincourt, who himself had taken it up where Winckelmann had quitted it. Besides a vast body of information as to the professed subject, his work also embraces much subsidiary matter of great interest, particularly the descriptive and historical notices of St. Mark's at Venice, the cathedrals of Milan and Orvieto, St. Peter's and many other Basilicae. His next publication was a catalogue raisonné, in two thick 8vo volumes, of his own library, an immense collection of works in every department of the fine arts. This is a most valuable addition to bibliography, and shows that Cicognara spared no cost in the pursuit of his favourite studies. He likewise produced a work entitled "Memorie per servire alla Storia della Calcografia" and numerous articles relative to subjects of art and artists, printed in various journals, but never unfortunately given afterwards to the world in a collective form. Even had he produced none of the works above enumerated, the name of Cicognara would have been transmitted to posterity with honour by the two splendid architectural volumes, entitled "Le Fabbriche piùospicue di Venezia," 1815-20, of which the greater share of the literary part and the chief conduct of the work belong to him, although he was assisted in it by Diedo and Selva, who furnished the accounts of many of the buildings. It is illustrated with 250 engravings of the most interesting structures of Venice.

#### Saxon Building.

Our Saxon ancestors undoubtedly were far less skilled in architecture than those of succeeding ages; but it would be a mistake to suppose that their churches, even after the general adoption of stone and lime masonry, were mere rude, undorned structures. Those specimens of their workmanship which remain to the present day evince that they certainly paid some attention not only to ornament in general, but even to sculpture; witness the tower of Barnack Church, Northamptonshire, and Sompting Church, Sussex. We can scarcely imagine that while much intercourse was maintained with the continent, which assuredly was the case, art as then known and practised there was less cultivated in this country than at the same period in Ireland, and the researches of Petrie have efficiently established the fact that many of the ruins remaining in his country date much earlier than the Norman invasion of England, those edifices even now exhibiting much constructive skill, and in many instances proving the care and labour employed upon their adornment. But, in addition to any inferences we may draw, ancient writers actually bear testimony both to the opinion formed in their day of the early ecclesiastical edifices, and also to the attention and expense bestowed upon supplying them with whatever was considered necessary and appropriate for their sacred purposes. Thus Exham Church, built by Bishop Wilfrid, A.D. 674, is styled a "wonderful work, 'mirabile opus,'" and Ripon was indebted to the same munificent prelate for a highly commended church. His successor, Acca, is said to have added to his church various beauties and rare works: "ecclesiæ suæ edificium utilitatis decore ac mirificis ampliavit operibus." The following quotation of Professor Willis likewise will show the opinion upon this subject of a very competent judge:—"That

many of the Saxon churches were erected of stone, and on plans of great complexity, with crypts, triforia, clerestories, central towers, and other parts resembling in arrangement the Norman churches, can hardly be doubted from the descriptions that have been preserved to us."

#### The Etruscans.

The Etruscans in all civilising art were exceedingly in advance of the other nations of Italy. They belong, indeed, to the era of Phœnicia and of Egypt rather than of Greece, although in their later period they borrowed largely from the plastic skill of Corinth. Their tombs and their magnificent walls still testify to their luxury and industrial power. Their fleets commanded the seas, and their heavy-armed infantry were unmatched on the land before Rome existed as a city. Their nobles were priests, as often in Asia Minor; the ecclesiastical system was ancient and very peculiar, and the use of letters familiar to them in very early times. Their alphabet was a modification of the Phœnician, and what deserves remark, like all the people of western Asia, they wrote from right to left. Like the Egyptians, they loved to cover the inner walls of their tombs with painting, and besides, to stock them with valuable pottery and furniture to such an extent that the moderns, though knowing but a few words of their language, have recovered a surprising acquaintance with their daily life. "The internal history of Etruria," says Mr. Dennis, "is written on the mighty walls of her cities and on other architectural monuments, on her roads, her sewers, her tunnels, but above all in her sepulchres. It is to be read on graven rocks, and on the painted walls of tombs. But its chief chronicles are inscribed on sarcophagi and cinerary urns, on vases and goblets, on mirrors and other articles in bronze, and a thousand et cetera of personal adornment, and of domestic and warlike furniture—all found within the tombs of a people long passed away." We can have no doubt, therefore, of their high cultivation, and this gives zest to the question whether it was developed independently on Italian soil, or imported from Asia. Their alphabet, written from right to left, immediately suggests a direct transmission from the East, and the same conclusion follows the instant it is admitted that a place so near to the sea as Tarquinii is their mother city. That it was so all antiquity believed, and the very name is a strong attestation, for Tarquinii is merely another pronunciation of Turchina. Again, if the Etruscans had been a continental people who came from the North into Italy, they could scarcely have been confined to so very narrow an area, nor could they, while leaving infinite memorials of themselves within that small compass, leave none at all anywhere else. This consideration seems in itself decisive, if we are left to internal arguments.

#### Byzantine Painting.

It was in a century of decay and corruption that Constantinople became an imperial city; treasures for its embellishment were not wanting to its founder, but he could not prevent the bad taste of the period from leaving its impress everywhere; moreover the Greeks were indisputably the most degraded portion of his subjects, and the colonies of courtiers and adventurers attracted them from time to time by himself and his successors, could only have the effect of aggravating in a still greater degree the intellectual and moral evils of this wretched population. Christian art, it is true, became naturalised there, because the public belief created a popular demand for it; and we know that the walls of the churches and palaces were covered with paintings representing subjects drawn from the Old and New Testament, or the history of a martyr or some illustrious bishop, or even with landscapes, marine subjects and animals; we also know that in the reign of Honorius a Christian senator caused divers passages from the life of Christ to be painted on his toga, and that the number of figures distributed in the different groups amounted sometimes even to 600; and, lastly, we know that the youth of Antioch, who abandoned the schools rather than pay the smallest compensation to the philosophers and teachers of rhetoric, spent considerable sums in order to induce the painters, who passed their lives in the most scandalous excesses, to teach them the art of painting with rapidity. All these facts and many others of the same description, which at first sight seem to reveal a sort of enthusiasm for art in the Eastern empire, are, however, only deceitful appearances which vanish on an examination of the works which were produced from time to time by this miserable school. If, indeed, the Greek artist had known how to adopt and copy with fidelity the traditional compositions which came to him from Italy, and had thus shared with the latter a common existence, he might long have appropriated to himself all that distinguishes the paintings of the catacombs and early basilicas; but he seemed destined, on the contrary, to spoil all that he touched, and particularly the allegorical subjects so poetically invented by the pure imagination of the first Christians, and the abuse of allegory was carried so far that the Council of Constantinople held in 691, was obliged to interfere, in order to give a check



where the representation of Christ was concerned—a subject on which it was to be feared that the Greek mind would be tempted endlessly to refine.

#### Roman Villas.

There was no limit in the size and no regularity in the construction of a Roman villa. The opulent patrician indulged in many, spread over the fairest districts of Italy, in situations either adapted to the changes of the season and to the taste of the owner, or dictated by his caprice and the fashion of the times. The arcaded substruction of numerous ancient villas still remains, while the buildings above are in ruins, either by the depredations of those who in after ages demolished to erect other buildings, or by the silent waste of time on such as were erected of the soft tufa. On many of the Roman villas convents and monasteries were erected, as materials were at hand, and the arcades of the substructions formed conveniently storehouses and cellars. How long the Roman villas remained habitable after the many invasions of Italy is not easy to ascertain. One of the celebrated villas of Lucullus, formerly belonging to Marius, and afterwards an imperial residence of Tiberius, situated on the promontory of Misenum (Capo Miseno), existed in the year 480. To this retreat was sent, by the clemency of Odoacer, king of the Heruli Goths, the last feeble representative of the Roman emperors of the west, called in derision Augustulus. The villa had gradually been changed into a strong castle to protect it against the sea attacks of the Vandals. These invasions by sea of the Vandals, and subsequently of the Normans and Saracens, ruined probably the crowd of Roman villas on the Neapolitan shores. The villas on the fertile plains of Italy would suffer by the invasions by land; but many villa castles, or fortified residences, remained after the tenth century in the hilly districts of the Vicentine and Veronese territories, as their rural nobility descended into the cities of Padua, Verona, Vicenza and Treviso, and took part with the Guelph faction. In the thirteenth century 150 castles were computed to be in the Milanese. It was probably to a Roman villa that Avitus, lieutenant of the Emperor Maximus, and afterwards himself a short-lived emperor, retired in the year 460. It was situated near Clermont in Auvergne, on the margin of a lake, into which rushed a mountain torrent of cascades. The villa contained baths, summer and winter apartments and porticoes. Sidonius, the son-in-law of Avitus, has, in imitation of Pliny, given a prolix but obscure description of it.

### Correspondence

[The Editor does not hold himself responsible for opinions expressed by the writers.]

#### Building Trades Exhibition.

SIR,—I should be much obliged if you would mention in your journal that the next Building Trades Exhibition takes place at the Royal Agricultural Hall from Saturday, June 13, 1903, and closes on Saturday, the 20th. Already the main portion of the ground floor has been allotted, so that immediate application should be made by intending exhibitors. It is also my intention to hold a colliery exhibition to immediately follow the building trades.—Yours faithfully,

June 20, 1902.

H. GREVILLE MONTGOMERY.

#### GENERAL.

A Meeting of the Royal Institute of British Architects was held on Monday. Mr. Emerson presided, and spoke about the excellence of the work of Mr. T. E. Collcutt, to whom the gold medal was presented. In reply Mr. Collcutt referred in feeling terms to the death of Mr. Bentley, who was originally selected for the distinction.

The Total Amount of the two days' sale in Paris of the Humbert collection of pictures was 1,187,000 francs.

The Municipal Council of Dieppe have resolved to change the name of the Rue de la Grève, and to call it after Alexandre Dumas, whose centenary will shortly be celebrated in France.

The Commission of Old Paris have arranged a competition for photographs of those parts of the city which are considered to be the most picturesque. Amateurs alone will be allowed to take part in it. The order of merit of the photographs will be determined by a jury of artists to be selected by the competitors.

The Senate of the London University having obtained a grant of 10,000*l.* a year from the London County Council have made the following among other appointments:—Professor Ramsay, F.R.S., appointed teacher of chemistry at University College; Professor Capper, appointed teacher of mechanical engineering at King's College; Professor Unwin, F.R.S., appointed teacher of civil and mechanical engineering at the Central Technical College.

The Bishop of Rochester consecrated on Saturday the new church of St. Andrew and St. Michael, which has been erected on a site in Greenwich Marshes, near the opening of the Blackwall Tunnel. The church has been built at a cost of 15,000*l.* The money was provided by the sale of the site and property of the church of St. Michael and All Angels, Wood Street, E.C., the font of which has been removed to the new church. At the east end is a stained-glass window in the shape of St. Michael's cross, subscribed for by the people of the parish, and outside the west door are two statues in stone of the two patron saints. The designs were prepared by Mr. Basil Champneys.

The President and Council of the Institution of Electrical Engineers will give a conversazione at the Natural History Museum, Cromwell Road, on Tuesday evening, July 1, to meet the members of the Incorporated Municipal Electrical Association and the foreign delegates to the International Tramways and Light Railways Congress.

The Salon prizes in money have been announced. The principal prize goes to M. Tardieu, painter, who exhibited a picture entitled *Labour*. The other prizes were awarded to M. Grosjean, sculptor, and M. Boutrou, architect. The travelling bourses for architecture have been won by MM. Brunet and Billerey.

The Council of the Society of Arts offer the Fothergill prize of 50*l.* and a silver medal for a paper on "Existing Laws, By-laws and Regulations relating to Protection from Fire, with Criticisms and Suggestions." The paper should consist of about 8,000 to 10,000 words, and be written with a view to its being read and discussed at an ordinary meeting of the Society. Papers submitted for the prize must be sent to the secretary on or before October 1, 1902.

The Luxembourg Museum has obtained from M. Benjamin-Constant's widow *La Justice du Chérif*, one of the most impressive of his pictures, with which he never would part. It is destined eventually to figure at the Louvre with the portrait of his son André, purchased after the Salon of 1896, when he obtained the medal of honour.

The French Cabinet have vetoed a proposed loan of 200,000,000 frs. by the Seine General Council on the ground that the programme includes the completion of the Boulevard Haussmann and the widening of a large number of streets, undertakings which should be defrayed by Paris and not by the Department of the Seine. The Government have expressed the opinion that loans ought not to go on indefinitely increasing, but that taxation should be resorted to.

The City of London (Streets) Bill, which, *inter alia*, authorises the Corporation to make by-laws regulating the demolition of buildings so as to prevent a nuisance, was passed by the Chairman of Committees of the House of Lords after formal proof had been given of the preamble.

A Memorial of the late Professor Merriam, professor of Greek Archaeology and Epigraphy in Columbia University, to be placed over his grave at Athens by the members of the Archaeological Institute of America, has been completed. The monument was designed by Mr. E. L. Tilton, the architect of the Argos excavations, who gave his services gratuitously.

A site for the sanatorium for consumption, which is associated with the King's name, has been purchased in Midhurst, Sussex.

M. Zariñ, of Marseilles, has presented to the Musée Carnavalet a study of M. Detaille's *Distribution of Flags*, containing portraits of various celebrities, including President Grévy, Gambetta, Léon Say, &c.

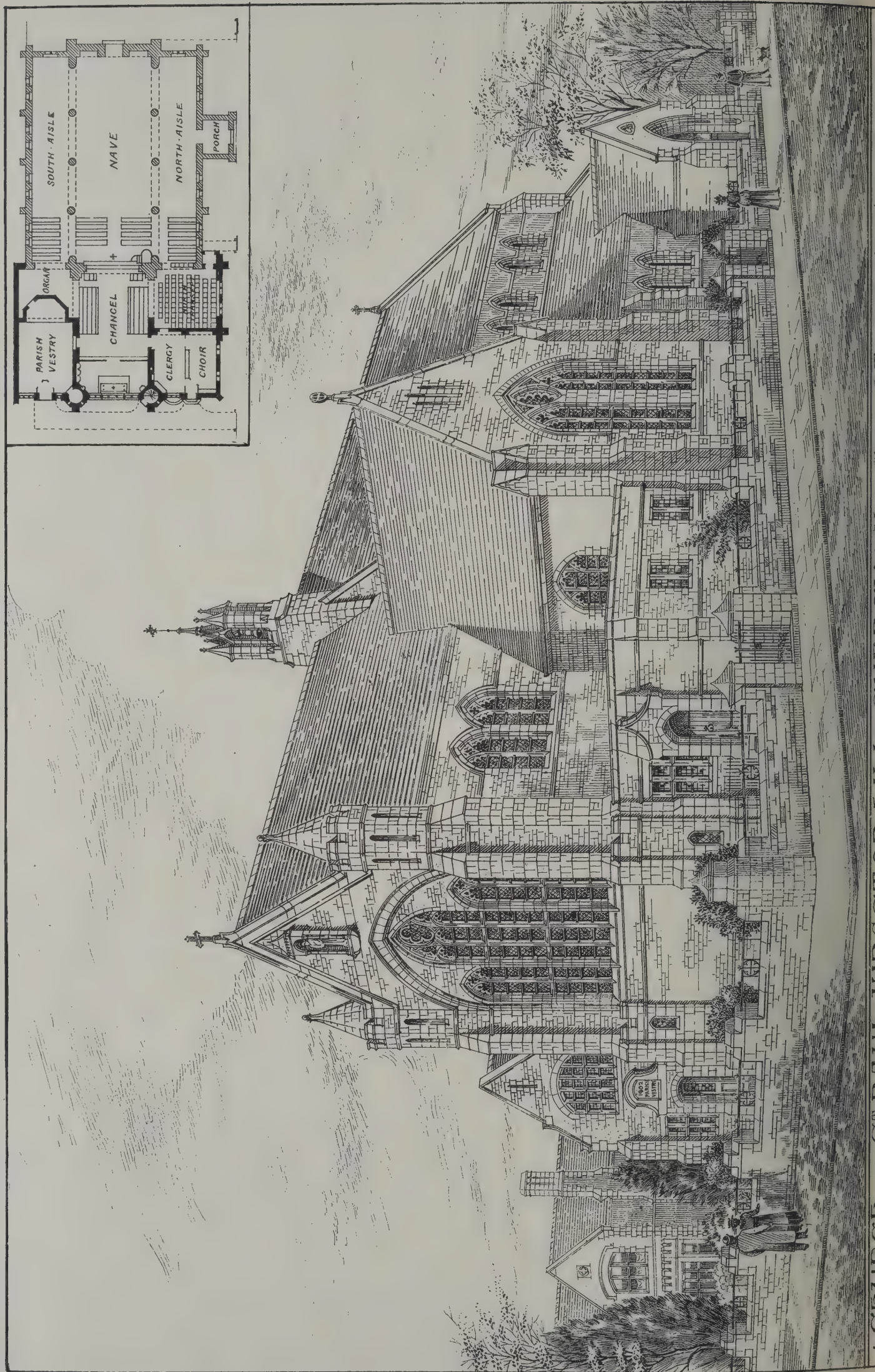
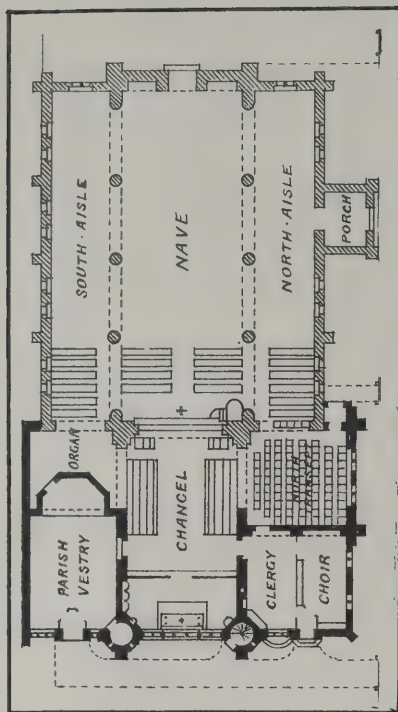
The Walker Engineering Laboratories, in connection with University College, Liverpool, have been enlarged by the addition of an annexe, consisting of a foundry fitted with a forge. The research laboratory has also been extended, and special scientific apparatus has been added for the advanced students. The cost of these extensions, which amounts to a considerable sum, is being borne by Sir John T. Brunner, M.P., Mr. E. K. Muspratt, Mr. C. W. Jones and Mr. R. Rathbone.

The Foundation-stone of the new St. Matthew's Church, Auckland (N.Z.), was recently laid. The edifice is to be built of Oamaru stone, and will cost 30,000*l.* It will provide seating accommodation for 1,000 worshippers, and is expected to be the finest church in the colony, though not quite so large as Christchurch Cathedral. The contract stipulates that the church be completed within three years.









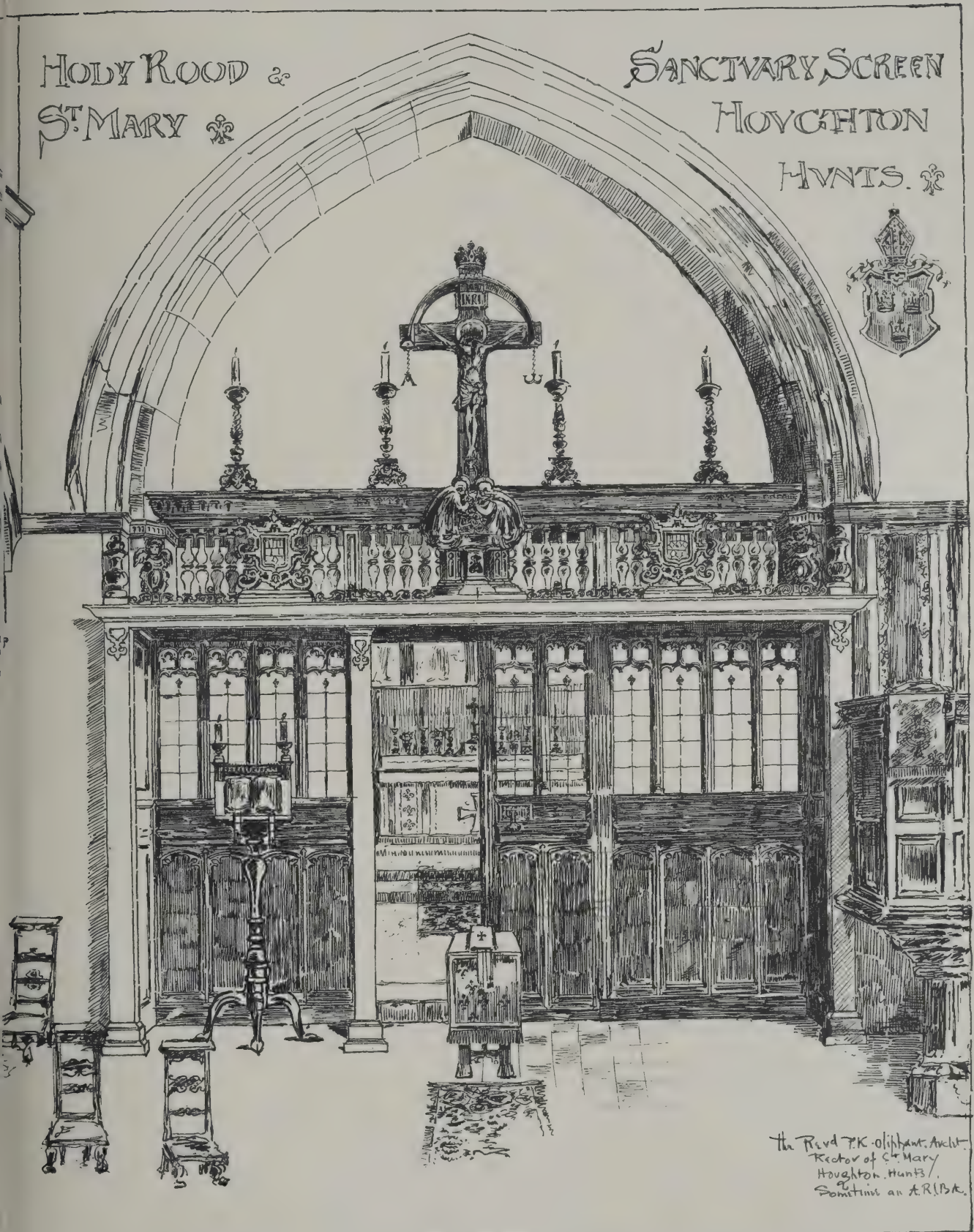


The Architect, June 27<sup>th</sup> 1902.

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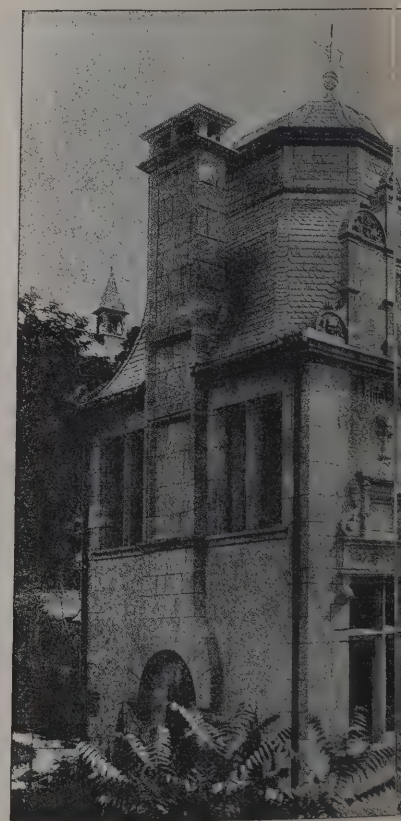
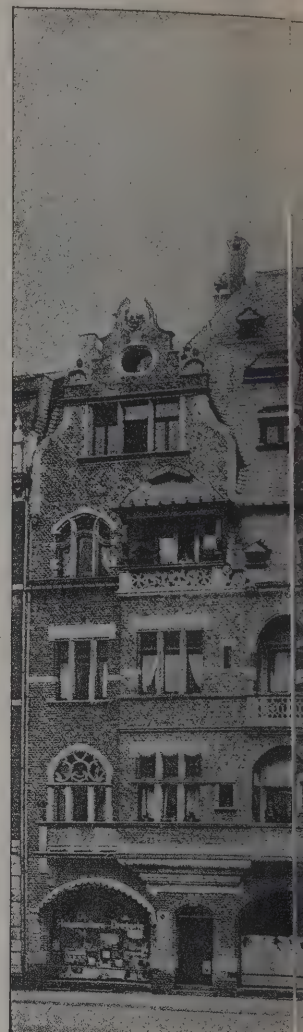






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THE

## Architect and Contract Reporter.

## NOTICE.

The publication of THE ARCHITECT on Wednesday, the 25th, instead of on the 27th inst., was announced some weeks back. The priority of date was rendered necessary owing to the celebration of His Majesty's Coronation. On Tuesday the lamentable announcement of the King's illness has changed the character of the week, and regret has supplanted the national joy. Owing to the arrangements entered into we are obliged to publish THE ARCHITECT at the time arranged.

ARCHITECT OFFICE:

3.0 p.m. on Tuesday.

## TENDERS, ETC.

\* As great disappointment is frequently expressed at the non-appearance of Contracts Open, Tenders, &c., it is particularly requested that information of this description be forwarded to the Office, Imperial Buildings, Ludgate Circus, London, E.C., not later than 2 P.M. on Thursdays.

## COMPETITIONS OPEN.

COOMBE HILL, NEAR AYLESBURY.—July 19.—Designs are invited for the Bucks War Memorial (a stone monument 50 feet high). Mr. R. J. Thomas, M.I.C.E., County Hall, Aylesbury.

DEPTFORD.—Aug. 30.—Competitive designs are invited for a town hall and municipal offices. Premiums of 100%, 75%, and 50% are offered for the three selected designs. Mr. Vivian Orchard, town clerk, Municipal Offices, 20 Tanner's Hill, Deptford S.E.

INDIA.—Nov. 1.—Competitive designs are invited for the erection of a memorial to Her Majesty the late Queen Victoria at Allahabad. A premium of 2,000 rupees will be awarded to the design selected by the committee. Mr. H. Nelson Wright, Indian Civil Service, honorary secretary, Queen Victoria Memorial Fund Committee, Allahabad, India.

LIVERPOOL.—June 30.—Designs are invited for a cathedral. Three hundred guineas will be paid to each competitor in the second competition, whether his design be accepted or not. The hon. secretaries to the committee are Messrs. R. Alfred Hampson, A. Earle, Os. Penrhyn, and J. W. Willink, Church House, Liverpool.

LIVERPOOL.—Sept. 15.—Designs are invited or new labourers' dwellings to accommodate about 2,500 persons, to be erected on the Hornby Street area. Premiums of 250%, 150%, and 100% respectively are offered for the first three selected designs. Particulars will be supplied by the Town Clerk.

SOUTHEND.—Sept. 7.—Designs are invited for a church to accommodate 500 persons, a clergy-house, and a parochial hall or parish-room about 50 feet by 30 feet. Mr. C. H. J. Talmage, Kathleen Villa, Southchurch Road, Southend-on-Sea.

SUNDERLAND.—Aug. 30.—Designs are invited for proposed police and fire-brigade buildings to be erected in Gill Bridge Avenue and Dun Cow Street. Premiums of 100%, 50%, and 25% are offered for first, second and third designs respectively. Mr. Fras. M. Bowey, town clerk, Town Hall, Sunderland.

TOTTENHAM.—July 15.—Designs are invited for municipal buildings, fire station, public baths, &c. Premiums of 200%, 100%, and 50% are offered for the three best designs in order of merit. Mr. W. H. Prescott, surveyor to the Council, Tottenham.

WEST HARTLEPOOL.—June 27.—Competitive designs are invited for a new higher-grade school to accommodate 1,200 children, schoolkeeper's house, &c., proposed to be erected in Elwick Road, Eamont and Belmont Gardens, West Hartlepool. Premiums of 75% and 35% respectively. Mr. J. Robson Smith, clerk, School Board Offices, West Hartlepool.

## CONTRACTS OPEN.

BARNARD CASTLE.—For erection of a small detached residence, Green Lane, Barnard Castle. Messrs. Pegg, De Burgh & Farrow, architects, 7 Market Place, Barnard Castle.

BASFORD.—June 30.—For alterations and additions at the workhouse. Mr. W. V. Betts, architect, Bank Offices, Old Basford.

BEXLEY HEATH (KENT).—July 4.—For erection of an electric generating station. Messrs. Mordey & Dawbarn, 82 Victoria Street, Westminster.

BODMIN.—June 28.—For alterations, reconstruction and repairs of business premises. Mr. W. J. Jenkins, architect, Bodmin.

BROWNHILLS.—July 2.—For erection of additional stabling to the Brownhills depot. Mr. W. B. Chancellor, town surveyor, Public Buildings, Brownhills, Staffs.

CARLISLE.—For erection of premises, English Street, Carlisle. Messrs. Oliver & Dodgshun, architects, Carlisle.

CHESHUNT.—July 9.—For erection of twelve cottages for workmen, in blocks of six, within one mile of Cheshunt railway station. Mr. A. Collingwood Lee, clerk, Manor House, Cheshunt.

CHOPWELL.—For erection of a butcher's shop and house and two four-roomed cottages, Westview, Chopwell, co. Durham. Mr. J. G. Burrell, architect, Market Place, Durham.

CRAWSHAWBOOTH.—For erection of Conservative club at Crawshawbooth, Lancs. Mr. John H. Spencer, architect, Crawshawbooth.

DEVONPORT.—June 28.—For construction of about 1,400 lineal yards of bridge culvert, 3 feet by 2 feet, from Ford Valley to the Fish Pond at Camel's Head, and about 210 lineal yards of 3 feet 6 inches diameter culvert on the Fish Pond site at Camel's Head. Mr. A. B. Pilling, town clerk, Municipal Offices, Devonport.

HEYWOOD.—For erection of a house in Rochdale Road, Heywood. Messrs. Openshaw & Gill, architects, Heywood, Lancs.

HEYWOOD.—For erection of new pavilion at Pot Hall Grounds. Messrs. Openshaw & Gill, architects, Heywood, Lancs.

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**IRELAND.**—June 30.—For erection of five single one-storey cottages at level crossings between Moira and Belfast, also one single-storey cottage near Belturbet, for the Great Northern Railway Company of Ireland. Mr. T. Morrison, secretary, Amiens Street Terminus, Dublin.

**KEYMER.**—For alterations and additions to Wentworth House, Keymer, Sussex. Mr. Clayton Botham, architect, 128 Queen's Road, Brighton.

**KINGSTON-ON-THAMES.**—June 30.—For erection of an ambulance and hearse shed. Mr. Jas. Edgell, clerk, Union Offices, Coombe Lane, Norbiton.

**KIRTON-IN-LINDSEY.**—For alterations to the boys' Board school at Kirton-in-Lindsey. Mr. H. H. Dunn, architect, Silver Street, Lincoln.

**LANGLEY MOOR.**—June 27.—For erection of St. Patrick's (Roman Catholic) schools at Langley Moor, Durham. Mr. H. T. Gradon, architect, 22 Market Place, Durham.

**LITTLEPORT.**—June 30.—For erection of a chapel at the new cemetery, Littleport, Ely. Mr. Heber G. Martin, surveyor, Littleport.

**MORLEY.**—June 30.—For erection of span-roof greenhouses at the cemetery in Bruntcliffe Lane. Mr. W. E. Putman, borough surveyor, Town Hall, Morley.

**MOULTON.**—For alterations and additions to premises at Moulton, Northants. Messrs. Brown & Mayor, architects, 63 Abington Street, Northampton.

**NEWCASTLE-UPON-TYNE.**—June 30.—For erection of public conveniences for ladies and gentlemen at St. Nicholas Street. Mr. Charles S. Errington, architect, Victoria Buildings, Grainger Street West, Newcastle-upon-Tyne.

**PONTEFRAC.**—June 30.—For erection of schools at Tan-shelf, Pontefract, to accommodate 300 children. Messrs. Tennant & Bagley, architects, Pontefract.

**PURTON.**—July 3.—For alterations at Purton workhouse, Wilts. Mr. R. J. Beswick, architect, 35 Regent Street, Swindon.

**ROCHFORD.**—June 30.—For erection of a laundry at the workhouse, Rochford, Essex. Messrs. Greenhalgh & Brockbank, architects, Bank Chambers, Southend-on-Sea.

**RUGBY.**—June 27.—For erection of a boundary wall on the south side of the Lodge estate, Rugby. Mr. J. T. Franklin, architect, Regent Street, Rugby.

**SCOTLAND.**—June 27.—For erection of a new central higher-grade public school in School Hill and Belmont Street, Aberdeen, and for removal of the buildings now on the site. Mr. Thomas Hector, clerk, 22 Union Terrace, Aberdeen.

**SCOTLAND.**—June 27.—For erection of a new school, Leadhills. Messrs. Traill & Stewart, architect, 1 Castlegate, Lanark.

**SCOTLAND.**—July 5.—For erection of a college in George and Montrose Streets, Glasgow. Mr. H. F. Stockdale, 38 Bath Street, Glasgow.

**SCOTLAND.**—July 5.—For erection of buildings for a college in George and Montrose Streets, Glasgow. Mr. H. F. Stockdale, secretary, Glasgow and West of Scotland Technical College, 38 Bath Street, Glasgow.

**SEACOMBE FERRY.**—June 30.—For erection of new waiting-rooms, &c., the conversion of existing waiting-rooms into ferry offices and the erection of tramways cash office, at Seacombe Ferry, Cheshire. Mr. W. H. Travers, surveyor, Public Offices, Egremont, Cheshire.

**SOUTHMINSTER.**—July 4.—For erection of coastguard buildings, consisting of quarters for an officer and six men, with watch-room, &c., at Bradwell, near Southminster, Essex. Particulars may be obtained at the Coastguard Stations at Bradwell and Burnham-on-Crouch.

**SWINDON.**—July 5.—For erection of infant school, Clarence Street. Messrs. Bishop & Pritchett, architects, Swindon.

**THORNTON.**—June 27.—For erection of twenty-nine houses, &c., at Thornton, Yorks. Mr. Medley Hall, architect, 29 North Gate, Halifax.

**WALES.**—For additions to the Clive Arms hotel, Cowbridge Road, Cardiff. Messrs. Jones, Richards & Budgen, architects, 95 St. Mary Street, Cardiff.

**WALES.**—June 28.—For erection of fifteen or more dwelling-houses at New Tredegar. Mr. Geo. Kenshole, architect, Station Road, Bargoed.

**WALES.**—June 28.—For erection of a vicarage-house at Llanbedr, Painscastle, Radnorshire. Mr. R. Wellings Thomas, architect, Llandrindod Wells.

**WALES.**—June 28.—For alterations and additions to the Bedwas Bridge school, Bedwas, Mon. Mr. John H. Phillips, architect, Clive Chambers, Windsor Place, Cardiff.

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WALES.—June 30.—For erection of a gallery and glass screen at the Abersychan Board schools. Mr. Henry Bythway, clerk, Pontypool.

WALES.—July 1.—For altering and remodelling the Clarence hotel, Pontypool. Mr. Thomas Roderick, architect, Clifton Street, Aberdare.

WALES.—July 3.—For erection of a chapel, Cymmer, Port Talbot The Rev. D. Jones, Congregational minister, Cymmer, Port Talbot.

WALES.—July 4.—For extension of schools at Gilfach Goch, Llantrisant. Mr. Jacob Rees, architect, Pentre Rhondda.

WALES.—July 4.—For extension of schools at Gilfach Goch. Mr. Jacob Rees, architect, Pentre Rhondda.

WALES.—July 7.—For erection of sixty workmen's cottages at Gellifaelog, Penydarren. Mr. T. Roderick, architect, Aberdare.

WALSALL.—June 28.—For alterations and additions to carshed and repairing and painting shed, and the construction of workshops, stores and outbuildings at rear of same, the construction of manager's office and caretaker's residence, and erection of boundary walls and entrance gates and piers. Mr. Richard Henry Middleton, borough surveyor, Walsall.

WENDRON.—June 28.—For erection of a stable, cattle-house and root-house at Boderluggan Farm, Wendron, Cornwall. Messrs. Pearse, Jenkin & Son, Trewirgie, Redruth.

WINCHESTER.—July 1.—For additions to the High School for Girls, North Walls, Winchester. Mr. Thomas Stopher, architect, 57 High Street, Winchester.

WOOLWICH.—July 3.—For erection of twenty-five houses in Barge House Road and Woolwich Manorway, North Woolwich. Mr. Arthur B. Bryceson, town clerk, Town Hall, Woolwich.

YARDLEY.—July 3.—For taking-down and rebuilding Greet Bridge, on the Warwick Road, over the river Cole, in the parish of Yardley, Worcs. Mr. J. H. Garrett, county road surveyor, Shire Hall, Worcester.

THE foundation-stones of a new Congregational place of worship were laid at Stainton, in the Furness district, on the 18th inst.

## TENDERS.

### AXBRIDGE.

For erection of an infirmary (about sixty beds) adjoining the workhouse, Axbridge, Somerset. Mr. A. POWELL, engineer, 3 Unity Street, College Green, Bristol.

Stephens, Bastow & Co.	£6,997	0	0
A. Wills & Sons	6,970	0	0
R. H. B. Neal	6,886	0	0
A. J. Bevan	6,300	0	0
Pollard	6,200	0	0
Walters	6,200	0	0
J. Ford & Sons	6,045	15	0
C. ADDICOTT, Weston-super-Mare (accepted)	5,720	0	0
C. Bryer	5,680	0	0
A. J. Colborne	5,568	8	0
G. Sprake	5,523	0	0

### BRADFORD.

For erection of a shed at Eastwood Mills, Bradford. Messrs. EMPSALL & CLARKSON, architects, 7 Exchange, Bradford.

#### Accepted tenders.

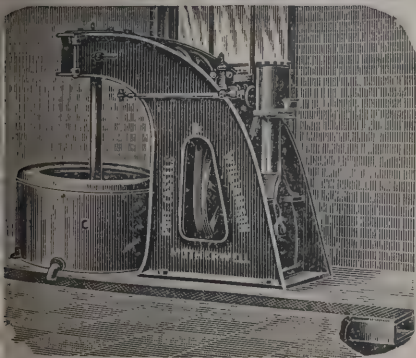
S. Wray & Co, mason and bricklayer.  
J. Taylor, carpenter and joiner.  
H. Barrett & Sons, iron and steelwork.  
A. Ross, plumber and glazier.  
A. Taylor, plasterer and concreter.  
W. Thornton, slater.  
J. Batty, painter.  
Total, £3,500.

### BRENTWOOD.

For erection of twenty-nine workmen's dwellings. Mr. JAMES E. FOTHERGILL, surveyor.

J. Smith & Sons	£7,395	0	0
S. Parmenter	7,109	0	0
Willmott	6,947	0	0
H. Potter	6,900	0	0
E. West	6,797	0	0
J. Pavitt & Sons	6,703	2	6
Legg & Clarke	6,525	0	0
Oak Building Company	6,299	0	0
Myall & Upson	5,883	9	0
HARRIS & ROW, LTD, Shoeburyness (provisionally accepted)	4,900	0	0

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For supply and fixing furniture and fittings at the public library and art galleries. Mr. FRANCIS J. C. MAY, borough engineer.

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Field & Co.	1,382	16	6
General Builders Co.	1,331	4	6
Shoolbred & Co.	1,255	2	0
Library Supply Co.	1,186	10	6
HAMPTON & SONS, London, S.W. (accepted)	1,154	10	6
North of England Furnishing Co.	1,125	5	8

**BRISTOL.**

For conversion of two dwelling-houses into business premises Mr. T. J. MOSS-FLOWER, architect, 28 Baldwin Street, Bristol.

Denby & Co.	£958	0	0
J. Perkins	685	0	0
Walters & Son	681	0	0
E. Preece	628	0	0
A. WAITE, Easton (accepted)	482	10	0

**CANNOCK.**

For reconstruction of the bridge over Mitton Brook, on the Penkridge Road. Mr. HERBERT M. WHITEHEAD, surveyor, Penkridge, Stafford.

B. Stacey	£142	0	0
F. Sprenger	138	0	0

**CASTLEFORD.**

For laying a sewer in Lower Glebe Street. Mr. W. GREEN, surveyor.

J. L. RODGER, Castleford (accepted)	£85	17	0
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**COVENTRY.**

For erection of a removable floor in the gentlemen's first-class swimming-bath at public baths, Priory Street. Mr. J. E. SWINDLEHURST, city surveyor.

T. P. Jackson	£490	15	8
J. Worwood	480	0	0
Hallam & Co.	325	0	0
Isaacs & Son	318	8	6
Kelly & Son	290	8	5
T. Lines	272	11	0
C. CHAMBERLAIN, Coventry (accepted)	249	10	0

**DAWLISH.**

For proposed stable and coachhouse buildings, &c., at Holcombe Hall. Messrs. J. W. ROWELL & SON, architects, Newton Abbot. Quantities by Mr. VINCENT CATERMOLE BROWN, Paignton.

Lamacraft & Sons	£2,400	0	0
F. Friend	2,379	0	0
F. C. Francis	2,214	0	0
E. Andrews	2,202	10	0
G. LEE, Teignmouth (accepted)	1,999	17	0

**DURHAM.**

For erection of a C.E. infants' school at Belmont. Mr. H. T. GRADON, architect, 22 Market Street, Durham.

Draper & Sons	£875	0	0
T. Coates	857	0	0
G. T. Manners	829	0	0
J. Shepherd	815	0	0
D. Hall	781	0	0
W. Walton	780	0	0

**EPPING.**

For erection of new infants' school, St. John's Road, Epping. Messrs. HARRINGTON & LEY, architects and surveyors, 65 Bishopsgate Street Without, E.C., and Romford.

Stephens & Bastow	£4,282	0	0
General Builders, Ltd.	4,279	0	0
Thomas & Edge	4,217	0	0
J. Smith & Son	4,195	0	0
Wilson & Lamplough	4,103	0	0
Chessum & Sons	3,962	0	0
H. Wells & Son	3,950	0	0
Hawkins & Son	3,943	18	0
A. W. Robins	3,930	0	0
Oak Building Co.	3,902	0	0
C. S. Foster & Son	3,901	0	0
Hawkey & Oldman	3,820	0	0
A. Knight	3,812	0	0
Foster Bros.	3,749	0	0
B. E. Nightingale	3,748	0	0
J. Hammond & Son	3,729	0	0
T. Keen & Sons	3,620	0	0
E. West, Chelmsford*	3,592	0	0

\* Accepted subject to the approval of the Education Department.

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Barker & Co.	£27,950	£26,600
Spencer, Santo & Co.	27,610	26,562
Patrick	26,130	24,500
Saint	25,911	24,788
Willmott	25,890	24,990
Appleby	25,320	24,560
McCormack & Son	24,876	23,456
Hockley & Son	24,750	23,500
Stephens, Bastow & Co.	24,647	23,222
Wall & Co.	24,595	22,992
Nightingale	24,441	23,197
E. Lawrence & Sons	24,358	22,974
Stimpson & Co.	24,313	22,922
Dearing & Son	24,275	22,861
Shillitoe & Son	24,000	22,900
Tonge	23,855	22,500
W. Lawrence & Sons	23,813	21,989
Wisdom	23,711	22,448
Knight & Son	23,389	21,987
Johnson & Co.	22,976	21,419*
Porter & Son	22,962	21,671
Oak Building Co.	22,820*	21,780
Architect's estimates	23,163	21,319

\* Tender accepted.

## GREENWICH.

For structural alterations and decorative repairs at the lecture hall, Royal Hill.

W. MILLS, St. George's Road, Westcombe Park, S.E. (accepted) . £1,807 0 0

## GRIMSBY.

For supply and erection of 842 lineal yards of unclimbable hurdle 6 feet high, three sets of carriage gates, with side gates, and 570 yards of internal fencing. Mr. H. GILBERT WHYATT, borough engineer.

M. MARSHALL, Queen Street (accepted) . £732 13 9

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For supply of boilers and water-softening plant.

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E Danks & Co.	£9,594	0	0
R. Hornsby & Sons	7,620	0	0
J. Thompson	7,385	0	0
W. R. Renshaw & Co.	6,995	0	0
Hughes & Stirling	6,954	0	0
Babcock & Wilcox*	6,910	5	0
Stirling Boiler Company	6,653	0	0

## Water-softening plant.

J. Thompson	2,485	0	0
J. Wright & Co.	2,442	0	0
Porter-Clark Water-Softening Company	2,201	0	0
Sir Hiram Maxim Electric and Engineering Company	2,140	0	0
Mather & Platt	1,795	0	0
Potter & Co.	1,725	0	0
Doulton & Co.	1,696	0	0
Stanhope Water Engineering Company	1,626	0	0
Masson, Scott & Co.	1,540	0	0
Desrumaux's Automatic Water-Softener and Purifier, Ltd.	1,489	10	0
Lesson & Hjort	1,300	0	0
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\* Recommended for acceptance.

For wiring of offices for electric lighting, for the Borough Council.

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J. H. Golding	184	13	3
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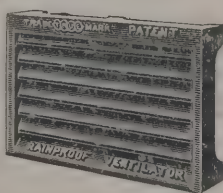
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N. Stephenson	£116	0	0
G. E. Wray	95	16	10
R. Swales	94	14	0
H. Speck	82	0	0
R. Fisher	80	6	3
J. Kirby & Son	76	0	0
W. L. Harrison	68	7	0
T. BELL, Market Weighton (accepted)	61	12	10

**ILKESTON.**

For erection of car-shed, offices and transforming station, &c, for the tramways and electricity committee.

Shaw & Co.	£8,360	0	0
A. Earnshaw	7,885	0	0
Donnelly & Sons	7,609	0	0
W. V. Ireson	7,590	0	0
MOSS & SONS, Loughborough (accepted)	6,950	0	0

**IRELAND.**

For erection of town hall at Macroom.

J. Ring	£1,550	0	0
D. Murphy	1,460	0	0
BUCKLEY BROS., Ovens, co. Cork (accepted)	1,320	0	0

**LAMBETH.**

For painting at the infirmary, Brook Street.

Markham & Brilmayer	£2,873	0	0
J. Ham	1,359	0	0
B. Young	1,090	0	0
Holliday & Greenwood	945	0	0
W. Dudley	936	5	10
Strang & Sons	957	0	0
J. Selway & Sons	915	0	0
C. McArthur & Co.	890	0	0
H. Kent	887	0	0
H. Bragg & Sons	854	0	0
B. E. Nightingale	850	0	0
P. McCarthy	817	0	0
J. J. Richards	790	0	0
E. MILLS, Siebert Works, Westcombe Park, Blackheath (accepted)	688	0	0

**LANCASTER.**

For taking-down and rebuilding the walls and railways in connection with the Westbourne Road widening. Mr. J. C. MOUNT, borough surveyor.

R. L. DILWORTH, Andrew's Lane (accepted).

**LEE.**

For street works in Lansdown Road (south side).

F. HOFFMAN, 6 St. Fillans Road, Catford (accepted) £210 13 9.

**LONDON.**

For construction of a concrete river wall, about 1,080 feet in length, in connection with the Fielder's Meadow extension of Bishop's Park, Fulham, facing the river Thames and adjoining Putney Bridge. Mr. FRANCIS WOOD, surveyor.

Fasey & Son	£14,670	9	0
G. Osenton	13,132	0	0
F. Osman	12,800	0	0
J. Dickson	11,964	0	0
Cochrane & Sons	11,350	0	0
F. G. Minter	11,130	0	0
Mayoh & Haley	10,500	0	0
C. Ford	10,238	0	0
J. Mears	10,000	0	0
T. W. Pedrette	9,950	0	0
Cooke & Co.	9,562	0	0
Nowell & Co.	8,875	0	0
H. J. Greenham	8,765	0	0
Parry & Co.	8,375	0	0
G. Wimpey	8,345	0	0

For erection of two houses in Bolton Street, Piccadilly, London, W. Mr. W. WONNACOTT, A.R.I.B.A., architect, Berkeley House, Berkeley Square, W.

			A.
J. Andrews & Sons	£13,750	0	0
G. H. Bywaters & Sons	13,519	0	0
Prestige & Co.	12,983	0	0
J. Carmichael	12,760	0	0
Colls & Sons	12,560	0	0
W. Johnson & Co.	12,205	0	0
PATMAN & FOTHERINGHAM (accepted)	11,950	0	0

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LONDON—continued.

For new factory, London Road, Plaistow, for Messrs. H. Wheeler & Co. Mr. A. J. WADE, architect, 36 Fifth Avenue, Harrow Road, W.

W. M. Norton . . . . .	£3,295	0	0
G. J. Hosking . . . . .	3,027	0	0
A. Daniels . . . . .	2,990	0	0
J. Groves . . . . .	2,698	0	0
J. W. Jerram . . . . .	2,629	0	0
Sumpter Bros. . . . .	2,599	0	0
H. G. Horswill . . . . .	2,580	0	0
W. J. Cottle . . . . .	2,500	0	0
EDWARDS & MEDWAY* . . . . .	2,455	0	0
W. Crouch . . . . .	2,450	0	0
Architect's estimate . . . . .	2,500	0	0

\* Accepted, with basement added, at £2,660.

LOUGHBOROUGH.

For alterations and additions to property on Derby Road, Loughborough. Mr. W. T. HAMPTON, architect, Ashby Road, Loughborough.

J. T. Ball . . . . .	£358	0	0
Moss & Sons, Ltd. . . . .	335	0	0
Kirk & Fletcher . . . . .	333	0	0
Watson & Camm . . . . .	329	0	0
T. Barker & Son . . . . .	329	0	0
W. Tailby . . . . .	327	18	0
A. Simpson . . . . .	316	6	6
W. A. Lovitt . . . . .	315	0	0
J. G. Parker . . . . .	313	0	0
W. F. Harding . . . . .	312	6	0
C. Wheatley & Son . . . . .	307	16	0
W. Corah . . . . .	299	0	0
A. J. WILEMAN (accepted) . . . . .	295	16	0

MANCHESTER.

For erection of a house, Didsbury. Messrs. C. K. & T. C. MAYOR, architects, 41 John Dalton Street, Manchester.

Padmore & Sons . . . . .	£1,652	0	0
McFarlane & Son . . . . .	1,565	0	0
Megarthy & Co. . . . .	1,546	0	0
E. Jackson . . . . .	1,500	0	0
Burgess & Galt . . . . .	1,430	0	0
A. MASON, Didsbury (accepted) . . . . .	1,385	0	0
R. Carlyle . . . . .	1,377	0	0

MANSFIELD.

For construction and erection of electric plant at the municipal electricity works.

CROMPTON & CO, LTD., Salisbury House, London Wall, E.C. (accepted) . . . . .	£2,486	0	0
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NORTHUMBERLAND.

For construction of about 5,000 lineal yards of 21-inch, 24-inch and 27-inch main sewers from Scotswood to Fenham, with manholes, storm overflows, &c. Mr. HENRY W. TAYLOR, engineer, St. Nicholas Chambers, Newcastle-on-Tyne.

G. E. Simpson . . . . .	£21,591	0	0
G. Bell . . . . .	17,899	0	0
J. Carrick . . . . .	16,835	0	0
J. Bewley . . . . .	15,296	0	0
J. Thompson . . . . .	14,950	0	0
M. D. Young . . . . .	13,957	0	0
W. J. Foster . . . . .	13,500	0	0
J. Robson . . . . .	12,995	0	0
E. & A. STOREY, Benwell, Newcastle (accepted) . . . . .	12,512	0	0
M. A. Armstrong . . . . .	8,252	0	0

PONTEFRACT.

For erection of four houses in Beechwood Avenue. Mr. WILLIAM HURST, architect, Pontefract.

A. Taylor, bricklayer and mason . . . . .	£460	0	0
J. R. Goodill, carpenter and joiner . . . . .	280	10	0
M. H. Pennington, plumber and glazier . . . . .	94	12	0
T. W. Senior, plasterer . . . . .	74	0	0
Stewart & Sons, slater . . . . .	58	0	0
Burton & Sons, painter . . . . .	12	0	0

Note.—Railing, ranges and stoves supplied by proprietor.

ROCHDALE.

For erection of two bridges, each about 23 feet span, carrying a road 15 yards wide, over the river Spodden.

J. BENTLEY, 45 Grange Road, Bradford (accepted) . . . . .			
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For construction of about 250 lineal yards of boundary and retaining walls in new street between Bury Road and Spotland Bridge. Mr. S. S. PLATT, borough surveyor.

T. ASHWORTH & SON, Norden, near Rochdale (accepted) . . . . .			
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## SCOTLAND.

For painting of the new general hospital now being erected at Stobhill, Springburn, Glasgow. Messrs. THOMSON & SANDILANDS, architects, 241 West George Street, Glasgow.

J. R. Donald	£7,100	0	0
A. L. Anderson & Co.	6,970	2	2
W. Thomson	6,544	1	8
A. Kemp	6,435	14	5
C. Paton	5,725	12	11
W. D. Horne	5,673	11	9
Macfarlane & Smith	5,495	0	0
T. C. Wilson	5,307	6	4
C. Carlton & Co.	4,997	0	0
McCulloch & Co.	4,973	11	3
A. Stirling	4,925	14	3
R. Henderson	4,906	0	0
J. Duncan	4,774	19	3
A. Anderson	4,770	0	0
J. Carruth	4,505	0	0
J. F. EDGAR, 116 Eglinton Street (accepted)	4,376	0	0

For taking-down and rebuilding gable and making alterations on tenement, 5 Kirkwood Place, Edinburgh.

W. C. Aitken	£731	0	0
W. Maclauchlan	595	6	0
Wright & Davie	586	13	5
A. Waddell & Son	583	0	0
Crerar & Swanson	561	14	7
J. Kinnear, Sons & Co.	547	17	11
J. Duncan	532	18	7
J. Brown	526	0	0
MELROSE & THOMSON, Dalmeny Street (accepted)	515	0	0

## ST. ALBANS.

For erection of a Congregational church at the junction of Victoria Street and Beaconsfield Road, St. Albans. Messrs. SMEE, MENCE & HOUGHIN, architects, 14 London Road, St. Albans. Quantities by Messrs. J. B. COLWILL & SON, 6 Alma Road, St. Albans.

Whibley & Jervis	£8,862	0	0
Battley, Sons & Holness	8,600	0	0
Boff Bros.	8,450	0	0
Wilmot	8,300	0	0
Dunham	8,181	0	0
Miskin & Sons	8,173	0	0

## TOTTENHAM.

For repair of the tar and asphalt paving throughout the district. Mr. W. H. PRESCOTT, engineer. BRADSHAW & Co., London (accepted).

## WALES.

For erection of outbuildings and walling in connection with the Gwyrfaï isolation hospital, near Caeathraw. Mr. JOHN GRIFFITHS, surveyor, Segontium Terrace, Carnarvon. JONES BROS., Bont Newyd, Caernarvon (accepted) £587 0 0

For erection of a chapel in Cathedral Road, Cardiff. Mr. EDGAR G. C. DOWN, architect, 31 High Street, Cardiff.

W. Thomas & Co.	£6,970	0	0
G. Griffiths	6,778	5	0
D. W. Davies	6,632	0	0
Shepton & Sons	6,455	10	0
F. Williams	6,332	0	0
Llaty & Co.	6,240	0	0
C. C. Dunn	6,200	0	0
D. Thomas & Son	6,149	0	0
E. Turner & Sons	6,141	0	0
Price Bros.	6,051	6	4
E. R. Evans Bros.	5,799	9	8
W. T. MORGAN, Cardiff (accepted)	5,680	0	0

For erection of a drill hall for the 1st V.B. R.W.F., Wrexham. Mr. M. J. GUMMOW, architect, Egerton Street, Wrexham.

H. A. Jones	£3,350	10	6
J. Hughes	3,288	0	0
Lewis Bros.	3,259	10	0
P. Edwards	3,250	0	0
W. E. Samuels	3,200	0	0
DAVIES BROS., 3, 4 and 5 Hill Street, Wrexham (accepted)	3,118	10	0

For erection of a schoolroom, &c., at Abertwsswg. Mr. GEO. KENSHOLE, architect, Station Road, Bargoed.

Williams & Sons	£894	17	6
H. R. Paull	851	10	0
S. J. Smith	718	0	0
A. WARN, Abertwsswg, near New Tredegar (accepted)	595	4	0

For additions to Trefach, Clynderwen. Messrs. GEORGE MORGAN & SON, architects, Carmarthen. YOUNG BROS., Mynachlogddu (accepted) : £294 0 0

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**WATFORD.**

For erection of children's homes in Ashby Road, Leavesden Road.

S. Swann . . . . .	£2,258	18	0
G. J. Waterman . . . . .	2,244	0	0
Reed . . . . .	2,140	0	0
G. A. Judge . . . . .	2,100	0	0
Clark Bros. . . . .	2,075	0	0
Clifford & Gough . . . . .	2,069	0	0
W. King . . . . .	2,050	0	0
Tyler & White . . . . .	2,000	0	0
R. L. Tonge . . . . .	1,988	0	0
G. Wiggs . . . . .	1,960	0	0
H. B. Watkins . . . . .	1,949	0	0
C. BRIGHTMAN, Queen's Road, Watford (accepted) . . . . .	1,928	0	0

**WILLENHALL.**

For erection of classrooms and cloakrooms at the Short Heath Board schools, near Willenhall. Mr. JOSEPH P. BAKER, architect, Willenhall.

H. Gough . . . . .	£1,530	0	0
R. Speake & Sons . . . . .	1,492	0	0
A. Griffiths . . . . .	1,475	10	0
J. M. Tildesley . . . . .	1,469	0	0
Hammonds Bros. . . . .	1,426	0	0
T. Tildesley . . . . .	1,395	0	0
J. Walters . . . . .	1,390	0	0
J. Hickin & Sons . . . . .	1,350	0	0
F. Mossley & Sons . . . . .	1,277	15	0

Note.—The matter has been referred back to committee for further consideration.

**YORK.**

For street works in Skelton Street, Clifton, and back road behind Rosary Terrace and Mount Ephraim. Mr. ALFRED CREER, city surveyor.

T. LANE, 8 Telford Terrace (accepted) . . . . .	£148	2	0
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**FULHAM.**

For erection of engine and accumulator-room, &amp;c.

Contract No. 8.

W. Neil & Co. . . . .	£2,632	10	0
Myles & Warner . . . . .	2,518	11	8
W. Gilbert . . . . .	2,518	9	8
J. Smith & Sons, Ltd. . . . .	2,287	0	0
B. E. Nightingale . . . . .	2,268	0	0
Wilson & Lamplough . . . . .	2,189	0	0
F. G. Minter . . . . .	2,170	0	0
W. J. Renshaw . . . . .	2,090	0	0
J. O. Richardson . . . . .	1,942	0	0
H. Windsor & Co. . . . .	1,903	7	11
T. G. SHARPINGTON, Machell Road Works, Nunhead* . . . . .	1,895	0	0

\* Accepted, subject to a satisfactory report from the Guardians' engineer.

**MARGARETTING.**

For erection of a pair of cottages. Bricks and sand provided free on the site. Mr. R. MAWHOOD, architect.

C. Jennings . . . . .	£430	0	0
J. GOWERS, Chelmsford (accepted) . . . . .	420	0	0
F. Weight . . . . .	412	0	0
Moss & Son . . . . .	395	0	0
Baker & Sons . . . . .	370	0	0
Lummis & Son . . . . .	355	0	0

**TRADE NOTES.**

THE Farningham Board schools, Swanley Junction, are being warmed and ventilated by means of Shorland's patent Manchester grates and exhaust roof ventilators, by Messrs. E. H. Shorland & Brother, of Manchester.

IN connection with the new railway to Bexhill, Messrs. Handyside & Co., Ltd., bridge and roof builders, of Derby, supplied and erected six bridges on this line, weighing about 230 tons.

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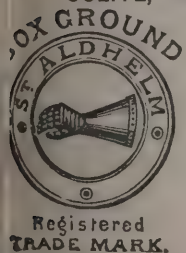
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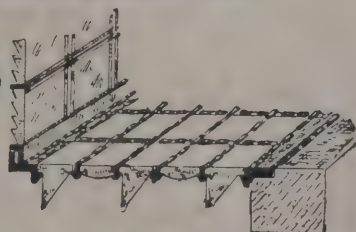


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sary to extend their studios and largely increase their staff at 58 Farringdon Street.

THE Rev. Fras. Grant-James, M.A., vicar of Marske-by-Sea, Yorkshire, and chairman of the restoration committee, has given instructions to Messrs. Wm. Potts & Sons, clock manufacturers; Leeds, to make and fix a new Cambridge quarter-chime clock, with four illuminated dials, to replace the fine clock recently destroyed by fire, and made by the firm, who also manufactured the clock presented to Houghton Church, Carlisle, by Mrs. Fell, of The Knells, Carlisle, sister of Lord Grimthorpe, which was set going on Sunday last.

MESSRS. EASTON & COMPANY, LTD., successors to Easton, Anderson & Goolden, Ltd., engineers, Broad Sanctuary Chambers, S.W., inform us that they have appointed Messrs. Reunert & Lenz, of Johannesburg and elsewhere, sole agents for the whole of South Africa for the sale of the Schmidt patent superheaters, and also for the sale throughout the same territory, except Cape Colony, of their electric and hydraulic lifts. In future, therefore, all communications with regard to either superheaters or lifts for the districts in question should be addressed either to Messrs. Reunert & Lenz, or to their London representatives, Messrs. Findlay, Durham & Brodie, of 110 Cannon Street, E.C. Messrs. Easton & Co. also mention that they have engaged Mr. Francis G. Cowdrick, of 37 West Dulwich Mansions, S.E., as their representative for the South of England.

#### BUILDING AND BUILDERS.

CONSIDERABLE alterations are being made to the Church schools at New Barnet; the architect is Mr. F. Child, of Chancery Lane, E.C.

IT has been decided to erect a tablet in the London Stock Exchange in memory of those members who have fallen in the late war in South Africa.

MESSRS. GORDON & GUNTON, of Finsbury House, Blomfield Street, London, are the architects for the new Wesleyan church and schools which are being erected at Petersfield.

A COUPLE of houses in Canal Road, Armley, collapsed, and the nine men who were working about the premises—engaged in converting them into lock-up shops—ran for their lives. Nobody was injured.

THE foundation-stone of a new building designed to meet the growing needs of the Church at Beeston Hill was laid on

the 21st inst. The new church, which is to cost 4,500*l.*, will adjoin the old one erected some twenty-six years ago on the low side of Cemetery Road, near Elland Road.

AT Hinton, Northants, the foundation-stone was laid on the 17th inst. of a new Wesleyan chapel which is to cost 1,250*l.*, to seat 270 people, and is so arranged that extensions can be made to accommodate 120 more. The contract has been placed in the hands of Mr. G. Johnson, builder, Hinton.

THE foundation-stone of the buildings in connection with the school-chapel at Felsted was laid on the 19th inst. These when finished will consist of a big school and eight classrooms, of which the classrooms are nearly completed. The foundations of the big school have been laid, and the whole building will be finished as soon as the necessary funds have been obtained. The new block was designed by Sir Arthur Blomfield & Sons, the builders being Messrs. Hunt, of Hoddesdon.

ON Friday last, in the Lord Mayor's Court, before the Common Serjeant, Mr. Bosanquet, K.C., and a jury, the case of compensation for damage to the premises of Messrs. D'Almaine in consequence of a settlement alleged to be caused by the building of the Great Northern and City Railway Company was part heard, but before the whole case had been opened a settlement was arranged by which the plaintiffs receive the sum of 450*l.* as compensation. The counsel engaged were Mr. Dickens, K.C. and Mr. Stevenson for the claimants, and Mr. McCall, K.C. and Mr. Cave for the railway company.

THE water committee of the Birmingham City Council had before them on the 20th inst., at a meeting presided over by Alderman Lawley Parker, a set of plans showing the complicated details which have to be worked out in the construction of a valve tower which is being provided for the new water-works. This tower will contain the apparatus for regulating the flow of water from the reservoir at the Elan Valley into the aqueduct. The plans, which number about a dozen, are very elaborate and minute, and they illustrate the construction of the various sections of the ironwork. Without taking into consideration the expense of the erection of the tower, the ironwork alone costs about 6,000*l.*

AT a meeting of Walsall Board of Guardians a long discussion took place on a recommendation by the building committee that the old board-room at the workhouse be demolished in order to admit light and fresh air to the other buildings. Against this several members urged that the workhouse was at

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- LA ROCHELLE (HOTEL DE VILLE).

present so cramped that if any of the existing accommodation was dispensed with it might result in the Local Government Board pressing for the erection without further loss of time of an entirely new workhouse. Mr. Yardley, however, said the matter had been mentioned to Mr. Wethered, Local Government Board inspector, who entirely approved of what it was proposed to do. The committee's recommendation was approved by eleven votes to eight.

VARIETIES.

THE new St. Andrew's United Free Church, Blairgowrie, was opened last week. It is built in the Early English Gothic style, with seating accommodation for over 900, and, with the halls, will cost about 7,000.

AT the engineering works of Messrs. Goddard, Massey & Warner at Nottingham a casting was being moved by a crane when the chain slipped, and the enormous weight fell on a young man named Edward Tatton, who was crushed to death.

IN the course of some repairs at one of the poor houses at Helpringham, near Sleaford, it was discovered that the floor bricks of the house were forced up by a large root of an elm tree growing in a garden 10 feet away. It penetrated under the path, under the wall and under the floor of the house, and into an adjoining garden, extending in all some 40 feet.

THE gable and part of the roof of an old house at the junction of Exchequer Row and Castle Street, Aberdeen, has fallen in. The house was about to be pulled down in connection with city improvements. There have been no tenants in it for some time. The premises were at one time known as the Bursars' hotel. The adjoining property to the west has just

been removed as part of the improvement scheme in the Exchequer Row area.

AMONG the improvements now being carried out in Ripon Cathedral are new stalls for the clergy and choir in the nave. These have been designed by Mr. J. Oldrid Scott, and the work has been carried out by Messrs. Thompson & Son, of Peterborough. The stalls are in wainscot oak, and are elaborately carved with tracery in front, and carved bench ends. The book-boards are designed in canopy form, the fronts having groined carving. A new lobby is being erected for the west doors, this also being in wainscot oak, with suitable carving.

THE first summer excursion of the Berks Archaeological Society for the present session took place on the 18th inst., when the itinerary was one of peculiar interest, comprising visits to Westbury, the White Horse and Bratton Castle, Edington (where luncheon was taken in the monastery garden), Keevil, Potterne and Devizes. Before leaving Devizes the party, which was a large one, was entertained to a meat tea on the kind invitation of the president (Mr. C. E. Keyser, M.A., F.S.A., of Aldermaston Court). The President acted as cicerone during the day, and himself described the picturesque church of Bratton, the fine Decorated church of Edington, the fifteenth-century church of Steeple Ashton, and the noble Early English church at Potterne. The day was fine, and the excursion was much enjoyed.

AT a special meeting of the Council of the Society of Architects, held on the 19th inst., the president, Mr. Silvanus Trevail, F.R.I.B.A., in the chair, the resolution passed at a meeting of the Council of the Royal Institute of Architects of Ireland on the 2nd inst. was considered. It was unanimously resolved that the sympathy of this Council be tendered to the Royal Institute of the Architects of Ireland in the attitude they have taken on the subject of the proposed selection of an architect by His Majesty's Treasury for the erection of the College of Science in Dublin, and it is the opinion of this Council that for an Irish work of this national character an Irish architect should be solely employed. It was further resolved that a copy of this resolution be forwarded to the First Lord of the Treasury.

AT the Town Hall, Dudley, Lieutenant-Colonel A. C. Smith, R.E., on behalf of the Local Government Board, held an inquiry on the 19th inst. relative to the application of the Town Council for sanction to borrow 2,613*l.* for public requirements

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and improvements. Among those present were Alderman G. H. Dunn, Messrs. H. C. Brettell, town clerk; J. Morris, deputy town clerk; J. Gammage, borough surveyor; A. W. Harley, borough accountant. The town clerk explained that the annual assessable value of the borough was 121,674*l.*, and the debt on the general district rate fund was 127,938*l.* including 39,174*l.* for electric-lighting purposes. Sanction for a loan of 10,721*l.* had been given, but the money had not yet been borrowed. The Council had also made application in respect of a further loan of 22,000*l.* for electric-lighting purposes, and an inquiry had been held, but the necessary permission for borrowing the amount had not yet been received. The 2,613*l.* which the Town Council now applied for sanction to borrow was made up as follows:—247*l.* for the purchase of a new Lancashire boiler at the public baths, 126*l.* for the provision of a scarifier which would be attached to one of the steam-rollers, 1,240*l.* for works of sewerage and street improvement in various parts of the borough and 1,000*l.* for the extension of the Grange Park by over five acres. Evidence having been given by the borough surveyor, the inquiry concluded.

A MEETING of the Aberdeen Public Library committee was held recently. Plans for the erection of a new reading-room at the central buildings and a branch reading-room at Torry were submitted. Considerable discussion took place over the question of the greatly increased expense that would be involved by the new plans. It was stated that whereas when the original plans were drawn up it was estimated that the extension of the central buildings and the erection of two branch reading-rooms would cost 6,000*l.*, the estimated cost of the central extension would alone amount to nearly 7,000*l.* Mr. William Johnston remarked that when Mr. Carnegie was communicated with on the subject, they had submitted plans to him estimating the cost of the new buildings at 6,000*l.*, and it was on that understanding that Mr. Carnegie had given a donation to cover the entire cost. As honourable men, he thought they should place the matter before Mr. Carnegie, and inform him how matters stood. It was eventually agreed to submit the whole position to Mr. Carnegie, and await his reply before proceeding further in the matter.

A NEW athletic pavilion, erected by Messrs. Cadbury Brothers, and presented by that firm as a Coronation gift to the Bourneville Athletic Club, has been formally opened. The new pavilion is built of brick in the picturesque half-timber style, and is erected on the bank of the south side of the Men's

Recreation Ground, which was opened in the spring of 1890 and handed over by Messrs. Cadbury to a body of trustees, to be used for purposes of recreation by the male employees of the firm. Should the firm at any time discontinue business the trust deed arranges for the ground to be taken over by the local authority, and to be retained as an open space for recreative purposes for all future time. An exactly similar arrangement is made in reference to the recreation ground used by the female employees of the firm, and Mr. George Cadbury intimated that the pavilion was given under similar conditions. It is a commodious and well-appointed building. The first floor contains a large luncheon room and refreshment bar, with kitchen accommodation; also two dressing rooms, lavatories and shower baths. A verandah overlooking the ground runs the whole length of the building, 60 feet. On the second floor there is a gymnasium, 60 feet by 40 feet, fitted up with all necessary appliances. From the gymnasium entrance is gained to a balcony 45 feet long, while at the north-west corner of the pavilion there is an octagonal tower which adds considerably to the appearance of the building. In the basement, which is on a level with the playing field, there are professionals' room, tool-house, heating-chamber and cellars. Entrance is gained from the ground to the verandah of the pavilion by two flights of stone steps.

THE land agents' committee of the Surveyors' Institution, Irish Branch, met on the 19th inst. at their offices, 110 Grafton Street, Dublin. Major H. G. S. Alexander, F.S.I., chairman of the Irish Branch, presided, and there were present Messrs. G. F. Stewart, D.L., Toler R. Garvey, J.P., W. D. Talbot, Crosbie, Charles Dickenson and A. B. Watson, LL.B., secretary. The minutes of the last meeting having been read and confirmed, questions affecting the position of receivers in connection with sales under the Purchase Acts in Land Judges Courts occupied the committee, and satisfaction was expressed with the favourable replies given by Judge Ross to the representations made him on this subject by a recent deputation. Communications by members on questions of difficulty arising out of the Land Acts, Purchase Acts and Local Government Acts were next submitted and dealt with. Of the other business before the meeting the conditions governing the election of land valuers, architects and engineers to membership were considered, the membership in Ireland and the diploma of the Surveyors' Institution being now open to these professions. Applications for election to membership from successful candidates at this year's examinations were passed. An address to

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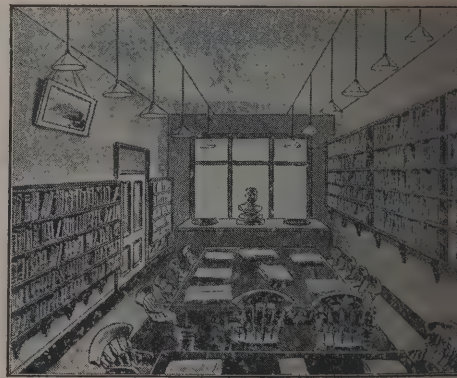
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the King on the occasion of the Coronation was decided upon, and the committee adjourned.

THE Incorporated Society for Promoting the Enlargement, Building and Repairing of Churches and Chapels held its usual monthly meeting on Thursday, the 19th inst., at the Society's house, 7 Dean's Yard, Westminster Abbey, S.W., the Rev. Canon C. F. Norman in the chair. There were also present Viscount Clifden, Lieut-Colonel the Hon. G. H. W. Windsor-Clive; the Revs. Canon J. Allen, D.D., Canon J. Erskine Clarke, S. A. Donaldson, A. G. Ingram and Prebendary C. J. Ridgeway; Messrs. A. Baldwin, M.P., E. Lee-Warner, H. W. Mozley, C. K. Norman, J. E. Ollivant, F. H. Rivington, W. E. M. Tomlinson, M.P., and the Rev. W. B. L. Hopkins, secretary. Grants of money were made in aid of the following objects, viz.:—Building new churches at Weston-super-Mare, All Saints, 240*l.* in lieu of former grant of 200*l.*; Blackham, All Saints, in the parish of Withyan, near Tunbridge Wells, 40*l.*; Fulham, Christ Church, Middlesex, 100*l.*; and Goodmayes, St. Paul, in the parish of Chadwell Heath, Essex, 40*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Godney, Holy Trinity, near Wells, Somerset, 25*l.*; Hemblington, All Saints, near Norwich, 30*l.*; North Stoke, St. Mary, near Wallingford, Oxon, 25*l.*; Princetown, St. Michael, Devon, 60*l.*; Saltfleetby, All Saints, near Louth, Lincs, 10*l.*; and Snargate, St. Dunstan, near Folkestone, 15*l.* A grant was also made from the special Mission Buildings Fund towards building a mission church in the parish of Weaste, near Manchester, 40*l.* The following grants were also paid for works completed:—Goole, St. Paul, Yorks, 60*l.* on account of a grant of 100*l.*; Mexborough, St. George, Rotherham, Yorks, 50*l.*; Clapham, St. Peter, Surrey, 70*l.*; and Peterborough, St. Barnabas, 130*l.* In addition to this the sum of 202*l.* was paid towards the repairs of twelve churches from trust funds held by the Society.

THE new Britannia Pier at Yarmouth, which has been erected at a cost of 70,000*l.*, was formally opened on Saturday last. It has been erected opposite the main thoroughfare to the beach, Regent Road, and on either side of the entrance are tastefully laid-out gardens. The pier, which is 810 feet in length from the entrance gates to the head of the landing stage, has cost 70,000*l.* It is 125 feet longer than the old pier, and is 45 feet in width, extended by ornamental bays to 55 feet, and upon reaching the pavilion it expands to a width of 144 feet and continues thus for 200 feet. At the head of the pier there is a fine landing stage, 16 feet wide by 165 feet long, from

which sea trips will be run. For the greater part of its length the pier is carried on steel screw piles with girder supports, all braced together, and at the landing stage head, where much deeper water was met, logs of Australian Karri wood, 50 feet to 70 feet in length, have been used. Each of these huge logs has a weight of between three and four tons. No fewer than 104 steel piles are used in the pier, and they are screwed to an average depth of 15 feet, and 200 wood logs, which have been driven to an average depth of 22 feet. The pavilion, which is so prominent a feature of the new structure, has been built by Messrs. Boulton & Paul, of Norwich, at a cost of about 15,000*l.* It is a lofty edifice, surmounted with both dome and turrets, and has interior and exterior balconies. The walls and ceilings have been tastefully decorated with ornamental plastic work. There will be seating accommodation in the pavilion for upwards of 2,000 people, while it is estimated that the building will easily hold 3,000. A commodious stage has been erected. From the balcony running outside the promenade an admirable view of the surrounding scenery is to be obtained. Refreshment and tea rooms have been provided. Shelter accommodation has also been secured, to meet the exigencies of the weather. The contractors for the pier were the Widnes Foundry Co., and the engineers Messrs. Mayoh & Haley, of London.

At Scarning, in Norfolk, on the 18th inst. a pleasing ceremony inaugurated a new parish hall which forms part of a scheme whereby the village would be provided with a substantial parish hall or public room where all classes could spend their evenings in rational amusement, where a small library could be provided, where newspapers and periodicals could be perused, and where would be found all the comforts of a good club. The scheme also included the erection of four model cottages, to be let at a low rent, the proceeds to go to the maintenance and upkeep of the hall, and when the first part of the happy scheme has been accomplished the parish would be next furnished with five or six almshouses as homes for those who had earned their livelihood by honest labour while they could, and who, through no fault of their own, had become unable to do so in their old age. The hall and the model cottages have now been erected, and the former was formally opened on the date named. It is substantially built of red brick, supported by red-brick piers or buttresses; it has a high-pitched roof, and is capitolly lighted by large leaded windows. The hall proper is most commodious and well arranged—it is in length 40½ feet and in

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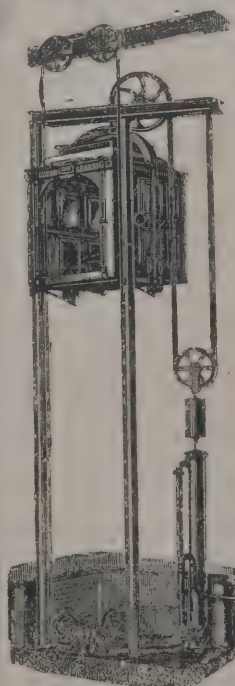
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breadth  $27\frac{1}{2}$  feet, the height to the ceiling being 15 feet. By a folding partition the hall is readily converted into two rooms, but this partition is easily moved back when the whole hall is required. At the east end is a small gallery which can be used for an orchestra or choir. There are also committee-rooms and suitable offices attached. One of the features, however, is the kitchen, which has been fitted up with all modern culinary conveniences, and will doubtless prove a great boon when dinners or teas have to be provided for public gatherings. On either side of the hall are built two capital model cottages, which will be let and the rent applied to the maintenance of the hall. Mr. W. J. Larner, of Dereham, was the builder, and Messrs. E. Boardman & Son, of Norwich, the architects.

IN a competition for a statue of the late Alderman John Lucas, to commemorate his services to the borough of Gateshead, the committee have selected the design submitted by Mr. W. Grant Stevenson, R.S.A., Edinburgh. The model represents the late alderman in his mayor's civic robe, part of which, lying over the right arm, affords an opportunity for giving a dignified outline to the figure. The left arm hangs easily by the side, while the hand pushes back the cloak, giving further variety to the drapery. The statue, which is to be life-size in bronze, is to be placed in the town hall, Gateshead.

### ELECTRIC NOTE.

IMPORTANT extensions to the Corporation's electric-light works were inaugurated at Taunton on Monday last. Taunton was the first town in the United Kingdom to adopt a system of public lighting by electricity. The works have now been brought thoroughly up to date at a cost of 18,000*l.*, and the capacity of the station is 1,600 horse-power. The inaugural proceedings included an "At home," followed by a banquet.

### BRISTOL BUILDING TRADE DISPUTE.

ON the 21st inst. Mr. A. A. Hudson, K.C., acting for the Board of Trade, had a private conference with representatives of Bristol builders and of various operative societies with a view to the settlement of differences which had recently arisen. The Bristol Master Builders' Association had served notices upon sundry operative societies in the building trade for certain alterations in the rules to come into effect on the 30th inst. Thereupon a conference was held between the various organisa-

tions concerned, but no amicable arrangement could be arrived at, and application was consequently made to the Board of Trade to appoint a conciliator under the Trade Disputes' Act. Preliminaries having been arranged, Mr. Hudson attended at the office of the Chamber of Commerce, and submitted the various documents that had been received by the Board of Trade from the Master Builders' and Operatives Societies.

The representatives at the Conference were as follows:—Master Builders' Society: Messrs. George Wilkins, A. Dowling, F. N. Cowlin, R. F. Ridd, E. Walters, J. Lovell, and H. J. Spear, secretary. Amalgamated Society of Carpenters: Messrs. E. H. Jarvis and G. H. Vorsey. General Union of Carpenters: Mr. F. Peters. Labourers' Society: Messrs. H. Brabham and J. B. Beckerton. Amalgamated Society of Painters: Messrs. F. Clothier and Timpson. City of Bristol Painters' Operative Society: Messrs. T. W. Davies and J. Langley. Plasterers' Society: Messrs. A. Wilmot and H. Davis. Plumbers: Messrs. E. Cram and P. N. Biggs.

Mr. George Wilkins opened the case for the Masters' Society, and detailed the reasons for the notice given to the operatives, more especially with regard to the wages.

Mr. Cowlin supported Mr. Wilkins's statement, and mentioned that in 1899 a halfpenny per hour advance was granted without discussion, but at present the labour market was full and the rate of wages very high, the consequence being that speculative building was practically at a standstill.

Mr. Jarvis replied on behalf of the operatives generally, leaving points affecting particular trades to be dealt with by the representatives of those trades.

In the course of the explanations that followed there was an opinion generally expressed that many jobs were hanging fire waiting until this dispute was settled, and that there were great prospects of a prosperous time in the near future. Messrs. H. Davis, G. H. Vorsey and F. Clothier all endorsed the contention of Mr. Jarvis.

The Conciliator then intimated that he considered it would be very unwise to dislocate the rule as to wages.

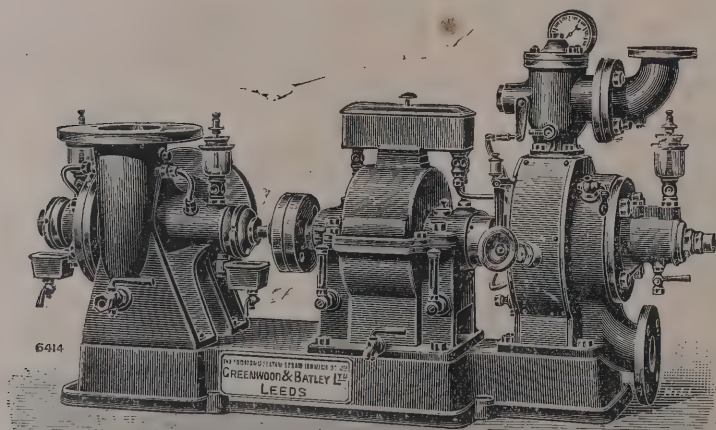
After further discussion, the Masters' Society representatives concurred with Mr. Hudson's view.

Mr. Hudson also explained that he considered the employers, when they gave notice in December last, were quite justified in doing so, considering the state trade was in at that time; then the war showed no prospect of early settlement, and things did not look very hopeful as far as the near future was concerned. But undoubtedly trade had revived, and the

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look was more hopeful than it was expected to have been. He considered the operatives had made out a case for no reduction of wages taking place, and he complimented Mr. Jarvis upon the able statement he made of the operatives' case. This was of so lucid a character that it convinced him that the operatives were fully justified in resisting any reduction of their wages.

Notices served by the Masters' Society and certain other notices of alteration of various rules were, after full discussion, withdrawn. One of the representatives of the Amalgamated Society of Carpenters agreed to submit a proposal for the withdrawal of that Society's counter notice to a meeting of his committee, in order that advice of the conciliator might be accepted.

Upon the motion of Mr. Wilkins, seconded by Mr. Jarvis and supported by Mr. Cowlin, those present heartily thanked Mr. Hudson for his helpful services. Mr. Hudson, in response, expressed pleasure that he had been instrumental in bringing the two parties to an understanding, and alluded to the interesting circumstance that his first arbitration was in Bristol, and he looked back with pride to the fact that he was able on that occasion to bring about a satisfactory conclusion to the dispute.

### THE THORESBY SOCIETY.

MEMBERS of this Society had an enjoyable excursion on Saturday. A party of about fifty, including lady friends, journeyed by train from Leeds to Gilling, drove thence *via* ampleforth to Byland Abbey, and afterwards proceeded to Coxwold. Mr. Edmund Wilson, president of the Society, was of the party. The object was to visit interesting ruins in the district.

Gilling Castle, consisting of a basement storey of fourteenth-century work, being the remains of a fortified manor house, and of a superstructure of late sixteenth-century and early eighteenth-century work, was first visited. The great parlour, built by Sir William Fairfax between 1580 and 1585, is perhaps the finest Elizabethan room extant. Panelled in oak, its windows are filled with magnificent glass displaying the arms of the Fairfaxes, the Stapletons and the Constables, and there is a no less interesting contemporary frieze bearing the arms of all the leading Yorkshire families, arranged in wapentakes. The castle was described by Mr. John Bilson, F.S.A., the leading authority on the ancient structure.

Having inspected Gilling Church, the party drove to Byland. Here the chief attraction was the Cistercian abbey, founded during the reign of Stephen. The ruins, which are exceedingly interesting, were described by Mr. Sydney Kitson. Proceeding thence to Cotswold, tea was taken at the Fauconberg Arms, and the church was afterwards visited, the Rev. Ernest Hedger, rector, explaining the monuments of the Fauconberg family. Of the seventeenth century, these included the monument of the Lord Fauconberg who married Cromwell's daughter.

The party also inspected the Old Hall, formerly the Grammar School, built in 1610 by Sir John Hart, who was a native of Coxwold. As a poor lad he went to London and there made his fortune, and he showed his interest in the village by erecting the school. The last place visited was Shandy Hall, a seventeenth-century house, where Laurence Sterne lived and where he wrote "Tristram Shandy."

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Again, in the West End an exceedingly elaborate and clever display of the System is on the Hippodrome building, another on Messrs. Marshall & Snelgrove's big frontages, and another at Messrs. Liberty, in Regent Street. Looking over the various banking houses, we noticed Lloyds Bank and Martin's Bank equipped with this System.

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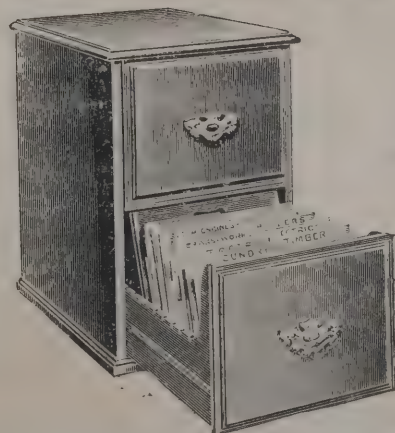
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applied to ordinary business premises in the City, in the West End, and also on quite a number of private residences in Mayfair.

It has been interesting to observe how the prejudiced contractor and wireman (after much opposition), when pressed to do the work rapidly, eventually appreciated its advantages and the contractor suddenly found its labour-saving qualities. It was also curious to observe how certain contractors were able to appreciate the facility with which the System could be applied to all kinds of purposes, notably Messrs. Drake & Gorham, who used the material considerably, and the engineers of the aforesaid Hippodrome.

### THE BUILDING TRADES' GIFT TO THE NATION.

A FIRM of builders' merchants have written to the *Times* as follows:—"We notice letters to the press regarding cottage homes for the soldiers on their return from South Africa. We think it would be generally interesting to know what has become of the plan of the 'Building Trades' Gift to the Nation,' regarding which a great deal was heard in the early part of 1900, and in respect of which free gifts, we believe to a considerable extent, were promised, a proportion having been actually delivered. Part of such material has been used; we believe we are right in saying that a lot more has not been used, and that the work is at a complete standstill. Possibly some of those who devoted their time to the furtherance and carrying on of this project will explain through your columns the cause of the delay in proceeding with the work, and when, if at all, it is intended to complete the scheme; in the alternative, what it is proposed should be done with the material that has been presented and not used, and with the buildings partially erected."

### BUILDING BYE-LAWS IN HANDSWORTH.

IN Handsworth, one of the Birmingham suburbs, building bye-laws have to be respected. The following report from the *Birmingham Daily Post* of a single day's proceedings will show the vigour of the action displayed by the Urban District Council against local builders for alleged contravention of the bye-laws.

Evan Thomas, of Hamilton Road, Handsworth, carrying

on the business of a builder and contractor in Carpenter Road, as Evan Thomas & Sons, was summoned for not depositing a plan, in accordance with the bye-laws, of son stables which he had erected. Mr. Ernest Ward, assistant clerk to the Handsworth District Council, prosecuted, and Mr. Norton defended.

Mr. Ward said two brick stables had been erected at the back of a house in Leslie Road, which led off the Wellington Road, on the site of what was once the Aston Villa football ground.

Mr. Norton admitted he was in fault, and was prepared to plead guilty to this case.

Mr. Ward remarked that they were taking the proceedings under Bye-law 29, which required every person to deposit plans of any proposed new building. In this instance no plans were deposited.

Harry Martin, building inspector for the Handsworth Urban District Council, said he went with Mr. Richardson on April 16 to inspect some houses belonging to the defendant in Leslie Road. In the yard at the rear of the house were two stables, which had not been erected in accordance with the bye-laws. The plans for these stables were received on May 2, and it was pointed out where they were not in accord with the bye-laws. On June 17 he again inspected the place, and found nothing had been done to remedy the defect.

By Mr. Norton: Plans were deposited after the stables were erected. They were considered on May 6, and disapproved of. An intimation to that effect was sent to the defendant. There was a drain in connection with the stable which was not in accordance with the bye-laws.

Mr. Norton contended that his client had committed a purely technical offence. The bye-laws were extremely minute, and difficult for any person, even with the best possible intentions, to follow. In regard to the drain, he had no doubt his client would undertake to have it put right as soon as practicable. The building might not comply with the strict regulations of the bye-laws, but it had not been suggested that it was a public nuisance or a detriment to the neighbourhood, and he thought justice would be met by a nominal penalty.

Mr. Ward observed the bye-laws were only similar to those in universal force.

The Chairman remarked that plans should have been deposited with the authority charged with the maintenance and promotion of the public health, and the Bench could not do less than impose the full penalty of 5% and costs, 10s.

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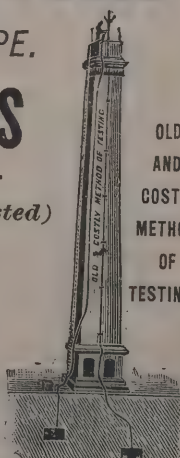
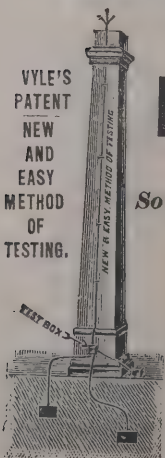
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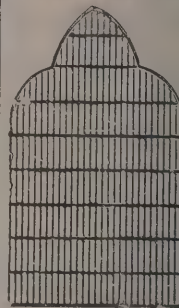
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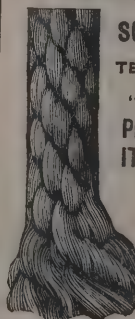
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Defendant was then summoned under the Council bye-laws for erecting a shed of material other than of bricks, stones, or other hard and incombustible substances.

Mr. Ward stated a shed had been erected in the yard of wood and corrugated iron, whereas the bye-law read, "Every person constructing a new building shall construct every external wall of brick, stone, or other hard incombustible substances."

John Grimley, a cab proprietor, of 4 Leslie Road, was subpoenaed to give evidence. He said he was a tenant of Mr. Thomas. The shed was an open one. It consisted of upright poles placed there by defendant, and witness added the corrugated iron roof. There were no boards at the sides or in front.

Harry Martin, building inspector, deposed it was a lean-to shed, and when he saw it on May 14 the end nearest the stable and one of the front lays were boarded up. He served notice to take the shed down, but the notice was not complied with.

Mr. Richardson, surveyor, said he had to survey the building over an 8-foot fence, as he could not get through to the yard.

Mr. Norton contended there was no case to answer, and that the shed could not in any sense be termed a building within the meaning of the bye-laws.

The Chairman said the Bench was clearly of opinion that the building in question was a new building, and that a part of the wall was of wood. Defendant would be fined 3*l.* and costs.

John Davies, 111 Murdoch Road, Handsworth, was summoned for erecting houses in Hamilton Road, on the Farcroft estate, without having submitted plans to the Urban Council. Mr. Ward stated that plans had been deposited of a house intended to be built, but the plans had been departed from. Consequently they had not built the houses on the plans as deposited, and the bye-law on the subject had been evaded. Mr. Hazel defended. The magistrates found that the defendant had complied with the bye-laws in depositing plans, and dismissed the case.

Defendant was then summoned for not "properly bonding and solidly putting together every brick wall with good mortar or cement as required by the bye-laws." Evidence of a technical nature was given by Harry Martin, the building inspector, the defendant, and a man in his employment. The Bench inflicted a fine of 3*l.* and costs.

Sidney John Davies, Soho Pool, Hockley, was summoned for an offence under the bye-laws in respect of two houses in

Regent Road. Evidence was given that a wall of the bedroom over the kitchen was only 4½ inches in thickness as against 9 inches required by the bye-laws. The plan deposited showed that the wall in question would be 9 inches thick.

Mr. Hazel explained that the work had been sub-contracted for, and it was not his client's fault that the wall was only 4½ inches in thickness. Fined 3*l.* and costs, 8*s.* 6*d.*

Humphrey Roberts, of Farcroft Avenue, was summoned for using bad mortar in the building of eleven houses on the Farcroft estate. Harry Martin, building inspector, deposed that when he went to the buildings some very inferior mortar was being used. He stopped while they made some better mortar. On a second visit he took a sample of the mortar, and it "consisted largely of garden soil." Mr. Sylvester, borough analyst, West Bromwich, stated he analysed a sample of the mortar. It was very bad, and there was a deficiency of lime.

Mr. Hazel called the defendant, who explained how the mortar came to be made. The building had now been done to the satisfaction of the building surveyor. Fined 3*l.* and costs, 1*l.* 11*s.* 6*d.*, including the analyst's fee. There were two other summonses against the defendant, but they were adjourned for a fortnight, defendant agreeing to pay the costs and carry out the work in accordance with the bye-laws.

George Gee, Brunswick Road, Handsworth, was summoned for not depositing plans, and for using other materials than provided for in the bye-laws. Defendant pleaded guilty to not depositing plans, and was fined 5*l.* and costs, 8*s.* 6*d.* The second case was adjourned for a fortnight to allow of defendant complying with the bye-laws.

## STEAM AND HOT-WATER HEATING ON THE AMERICAN SYSTEM.

WE have received from the Wolff Dryer Company, of 89 and 91 Sumner Street, Southwark, S.E., their new illustrated catalogue of steam and hot-water heating apparatus, which forms an interesting little guide book on the subject that will, as occasion arises, be found useful for reference. Members of the firm in question have, we are informed, made the science of heating and warming their principal study, extending over a very long period, and having devoted their entire time to the subject in the United States, they are in a position to give anyone consulting them the benefit of their experience in carrying



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out heating installations with the view of securing the utmost efficiency at the least possible cost.

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The respective merits of the high-pressure and low-pressure systems of hot-water heating are clearly set forth. The requirements suitable for each individual case are matters regarding which the Wolff Dryer Company, with the fine apparatus at their command, are prepared, it seems, to give their best consideration for the benefit of clients.

### FIRE PREVENTION COMMITTEE'S INDUSTRIAL SECTION.

WE have received a letter from the British Fire Prevention Committee which says:—

The terrible fire in Queen Victoria Street, following so shortly upon the Hackney fire, where seven lives were lost, and upon the Barbican conflagration, where so much property was destroyed, has led many City firms to communicate with the British Fire Prevention Committee either for the purpose of mutual co-operation, or with the view of obtaining advice, and we hence inform you that special arrangements have now been made by which the industrial and commercial establishments of the Metropolis can benefit from the results of the committee's investigations, which have so far only mainly served the purpose of assisting the members of the technical professions.

A special industrial section (the scheme for which has already been under consideration for some time) has now been started in connection with this committee, and is open to all firms of ordinary business standing as well as to responsible representatives of such firms.

The main objects of the Fire Prevention Committee—as we believe is generally known—refer primarily to the protection of life and property from fire by the adoption of *preventive*

measures. The committee uses its influence in every direction towards minimising the possibilities and dangers of fire, and to bring together those scientifically interested in the subject, and to arrange periodical meetings for the purpose of discussing practical questions bearing on the same. The committee's scope includes *independent* testing of fire-resisting materials, methods and appliances, no less than sixty of such tests having been undertaken since its incorporation. Papers on the subject are published periodically, no less than sixty-eight of the committee's red books having been issued.

To meet the particular requirements of business men with regard to the better protection of life and property from fire, the special industrial section now formed will mainly deal with everyday practical requirements of the community rather than with the research side of the question, and the programme of this industrial section may be summarised as follows, namely:—

1. To assist the movement for better fire protection inaugurated by the committee, having special regard to the advantage of practical preventive measures.

2. To bring together those interested in the management of offices, works, factories, mills, refineries, warehouses, &c., in order that special facilities for obtaining immediate information shall be available to all concerned: (a) as to the requirements of public authorities; (b) as to approved methods of construction and equipment; (c) as to tests or experiments with fire-resisting materials or fire appliances; (d) as to the experience gained at actual fires, and (e) as to the organisation of fire watches, private fire brigades, &c.

3. To afford facilities for combined action in respect to the requirements of the public authorities.

4. To arrange periodical meetings for the purpose of discussing practical questions bearing on the subject, to publish and distribute such papers as are of special interest to members of the section, and to form such collections of models, appliances, records and statistics as may be useful for reference.

5. To issue periodical warnings and notices to members, calling attention to specific risks or safeguards.

Each firm joining the section will be represented by one representative, who shall either be a principal, a director, manager, secretary, or skilled adviser to the firm in question. Individual principals, directors, &c., are, however, eligible as members quite apart from the membership of their firm, but at no time shall more than three members of the same firm belong to the section, and for all resolutions relating to the business of the section no one firm shall have more than one vote.

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The annual subscription for every firm or individual becoming a member has been fixed at two guineas per annum, and for any individual member whose firm is already associated with the section the subscription will be one guinea per annum. The committee's auditors include Mr. James (Messrs. James Edwards), president of the Institute of Chartered Accountants, and all members of the committee give their services voluntarily.

The section will elect its own chairman and vice-chairman, who will also have seats on the council of the general committee, where they will represent the section in all matters relating to its particular interests.

We think that the scientific side of the committee's work has been successful and of value for the members of the professions for whom it was originally mainly intended, and we hence trust that the many City firms interested will also now be able to likewise benefit from practical application of the committee's labours.

We believe that if the business men were to look upon questions of safety from fire in the same way as they realise the importance of attending to questions of hygiene, they will soon—partially by self-help and partially by using their influence with the authorities—be able to rely on that measure of security both for life and property as they to-day enjoy and are officially safeguarded against in respect to bad drainage and its effects.

A SPINNING SCHOOL.

The new Textile School at Ashton-under-Lyne will be opened early next month. The building is close to the Heginbottom Technical School and Free Library. It will supplement and not supplant the old one. The classrooms in the Heginbottom school are too small to hold all the students, and classes have been held in the town hall at some inconvenience to the municipal authorities. The instruction in spinning and weaving has been mainly theoretic hitherto, although it is true that a few spinning machines and also looms are used by the students. Next session the students of Ashton and the district will be able to enter one of the finest schools of spinning in this part of Lancashire. It occupies the ground floor of the new building. The spinning-room measures about 80 feet by 60 feet and the weaving-room 40 feet by 40 feet. A great part of the valuable machinery which fills these rooms has been

given to the school by three townsmen. The equipment is up to date and complete in every way, and comprises all the processes of spinning and weaving, so that a bale of raw cotton brought into the spinning-room can leave the looms as a piece of finished cloth. In the spinning department there is an elaborate series of machines, into the first of which the cotton is put, and it comes out of the last in the shape of "laps," without having been once touched by the hand. The weaving machinery is so arranged as to include processes which are not in general use in the district. On the first floor there are six good classrooms. The two largest measure 60 feet by 40 feet and 40 feet by 29 feet. One of the smaller rooms is to be used for the cookery classes, and in the others teaching in machine drawing, building construction, commercial subjects, &c., will be given. The cost to the technical instruction committee has been about 6,000*l.*, but this figure does not include the cost of the machinery, which has been presented to the school.

NEW WESLEYAN CHAPEL AT BURTON-ON-TRENT.

The Wesleyans of Stapenhill manifested considerable interest in the opening on the 11th inst. of a new chapel and school-room. The new buildings are set back from the street, and enclosed within a brick and iron palisading. The chapel is approached from Ferry Street by the two large entrance doorways which have been designed to make a central feature. These lead into a large vestibule extending the whole width of the chapel, and thus form a very convenient lobby for waiting, and hats and cloaks. The edifice affords accommodation for 400 adults—190 in the central nave, 136 in the side aisles, 50 in one transept, and 24 (together with the organ) in the second transept, this latter forming the choir. The roof is of pitch pine, and the whole of the constructional timbers are ornamented, wrought and varnished. The schoolroom is built at the back of the chapel, and connected thereto by means of a large archway filled in with a framed wooden screen, which may be easily taken down when the two buildings are used for special services, school anniversaries, &c. The chapel is lighted by means of one large four-light window in the front gable, two two-light windows in the transepts, and twelve single-light windows in the aisles. The transepts are divided from the nave by octagonal stone pillars and arches. The schools have the entrance from the Dingle, and provide accommodation for



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300 children. These are provided with two cloakrooms adjoining the entrance vestibule, and at the other end of the schools is separate lavatory accommodation for boys and girls. The other buildings comprise a minister's vestry, with a separate entrance to the school and chapel, and a kitchen (with heating apparatus) in the basement. The heating is on the low-pressure system, and ventilation is secured by means of numerous air-inlet panels and roof exhaust ventilating pumps. The drainage is absolutely perfect, and where the pipes in one place pass under the kitchen and passage they are cast-iron and lined with glass. The buildings are designed in the Early English style of architecture, and externally are of pressed red bricks with white stone dressings, and the roof is covered with red tiles. The glazing is of tinted cathedral glass, in plain ecclesiastical leadings. The contractors are Messrs. Thomas Lowe & Sons, whose estimate is 2,240*l.*, and the architect Mr. Thomas Jenkins, of 35 High Street.

### NEW HOSPITAL, EAST HAM.

THE Countess of Warwick visited East Ham on the 12th inst. in order to formally open the new Passmore Edwards Hospital, which has been erected in Shrewsbury Road, from designs and under the superintendence of Mr. Sylvanus Trevail, F.R.I.B.A., of Palace Chambers, Westminster, and Truro, who also designed the East Ham Public Library, and many others of Mr. Passmore Edwards's buildings.

The aim of the architect has been in the first place to give the greatest and most perfect accommodation for hospital purposes with the sum placed at his disposal by the donor; and after this to give, in a plain and simple way, the most "homelike" effect possible for a building devoted to such an errand of mercy. In too many instances hospitals have a coldness about them repellent to both the patient and their friends. In the present instance it is hoped that the cosy and snug appearance of the group will have the tendency of attracting, and so be productive of contentment among the sufferers, and incidentally of an earlier cure. In the development of this feature, Mr. Trevail has been very materially assisted by the natural situation and characteristics of the site, which leave little or nothing to be desired. It abuts on one of the favourite and principal thoroughfares of East Ham—Shrewsbury Road. The grounds and site of the pro-

posed hospital are well wooded, and will make a very effective setting to the building, as may be gathered by the general view. The hospital will comprise a central block, containing on the ground floor a spacious central entrance, with a reception or observation room (15 feet by 12 feet) to the left, and the matron's room on the right, each with a circular bay window. From the main entrance wide and well-lighted corridors extend right and left to the men's, children's and women's wards, whilst immediately across these corridors and to the rear is the administrative department, having a kitchen, 20 feet by 17 feet; dispensary, 11 feet by 9 feet; surgery or operating room, 15 feet by 11 feet, with both top and side lights, and in communication with the dispensary, besides having an external approach. Besides these are larders, pantry, coal store, washhouse, yard, and a mortuary. Over the main portion of the central block are five bedrooms for the matron, day and night nurses, and servants, with bathroom, store, closets, &c.

The wards proper of the hospital are arranged right and left from the administrative block, for economy of service, as well as for symmetrical appearance. That on the right of the main entrance contains a men's ward, 32 feet by 16 feet, accommodating seven beds; a children's ward, 17 feet by 14 feet, with four beds, and a single room for one bed, with a linen room. The sanitary annexe is a special feature, designed with great care, by being placed entirely external to the wards excepting by corridor, which has window openings on opposite sides, by which cross ventilation is secured, and all chance of offensive smell is quite cut off. It comprises patients' bathroom, w.c., and slop closet. The women's wing is to the left of the main entrance, and corresponds precisely in dimensions, accommodation and sanitary block, with that of the men, excepting that the corresponding room to that provided for the children on the other side is here made a nurses' room. The total accommodation at present proposed is for twenty patients. Provision is made for an extension by duplicating both principal wards on the ground floor, whilst it may be quadrupled by placing an upper floor over the whole of the extended wings to correspond with the central block, should the necessities of the future development of the district demand it. The architect, in considering this eventuality, has designed the kitchen and offices of ample dimensions, and the sanitary blocks in such a position as will admit of their equally convenient use for the first portion of the building, and its ultimate extensions. This will also apply to upper floor extensions.

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where these blocks can be duplicated by having another storey with similar means of approach and cross ventilation. In the matter of lighting, heating and ventilation, the greatest care has been exercised, and altogether the building, when finished, will be one of the most convenient and complete establishments of the kind to be found in the suburbs.

### PORTLAND CEMENT.\*

IN 1824 one Joseph Aspden, a bricklayer of Leeds, England, patented an artificial cement, which he called Portland cement, because of its supposed resemblance in colour and texture to the celebrated Portland building stone. Aspden appears to have established a factory for the manufacture of this cement at Wakefield, in Yorkshire, in 1825, and the mode of manufacture carried on thereat appears to have been, according to the specification of his patent, the mixing of specific quantities of argillaceous earths or clays with specific quantities of puddled and powdered limestone, the compound being dried and calcined. All the carbonic acid was expelled. The calcined mixture was ground to a powder, which was then ready for use. Although the article produced by Aspden differed greatly from that is to-day known as Portland cement, inasmuch that the calcination was not carried to the point of incipient vitrification, which is now recognised as essential, the principle underlying its manufacture—viz. the amalgamation of limestone and clay, and the subsequent calcination of the compound—was the same.

Aspden's cement appears, however, to have commended itself to engineers of his day, for we learn that in 1828 Sir J. Brunel used his product in constructing the Thames Tunnel. In 1825 a Mr. Frost commenced the manufacture of Portland cement from chalk and clay at Swanscombe, and carried on his business till 1833, when his interests were acquired by Mr. John Bazeley White, sen. From these small beginnings sprang the immense and important industry we now find, the vested interests in which in the Thames and Medway districts represent a capital of 5,000,000*l*.

Portland cement may be manufactured under two distinct

processes, viz. the wet and the dry. The choice of the process to be adopted depends entirely upon the character of the materials to be treated, and it should here be stated that either process may be subjected to considerable modification to suit local conditions. In the Thames district the raw materials—chalk and river clay—lend themselves to treatment by the wet process. The chalk and clay, after being carefully weighed in proportions which are regulated by the works' chemist, are tipped into a circular pit called a wash-mill, into which a small stream of water is constantly running. In the mill, which is some 15 feet or so in diameter by 3 or 4 feet deep, revolve a number of harrows. These revolving harrows, aided by the water, reduce the chalk and clay to a thick paste called "slurry," which is forced by the wash of the contents of the mill through narrow gratings extending along a portion of its circumference. From the wash-mill the slurry is conveyed by means of chutes and elevators to the wet mill, and is there passed through millstones or other suitable reducing machinery. This grinding of the slurry, which has for its object the reduction of any coarse particles that may have escaped from the wash-mill, is called the Goreham process, and is a modification of the original wet process, *i.e.* the "back" system, which is now practically abandoned. From the wet mill the slurry runs into a pit or sump, from whence it is pumped or elevated to floors, on which it is spread, and afterwards dried by means of waste heat from the calcining kilns or other suitable means. When sufficiently dry this slurry, then called "slip," is broken into lumps of suitable size and conveyed to the kilns.

I will here leave the wet process, and endeavour to give you a description of the other, *i.e.* the dry process up to the point of calcination, from which stage both processes are conducted upon similar lines. The dry process is adopted where raw materials, such as limestones and shales, cannot be treated by the simpler wet process. For example, at Rugby, in England, where cement is made from the blue lias deposits; at Fyansford, near Geelong, where the eocene limestone from the Moorabool district and alluvial clay are used; and at Richmond, Victoria, where cement is made from mountain limestone obtained from Lilydale, and fresh water limestone and marl from Lara. This process is the one generally adopted on the Continent of Europe, in America, and elsewhere, and is now more universal than the other. The limestone and marl clay or shale, after being dried either in air or by means of some suitable apparatus, such as the Cumber, or other drier, are, as with the chalk and clay, carefully weighed in the

\* A paper read before the Architectural and Engineering Association of Victoria (Incorporated) by Mr. John Gibson (Manager, Victorian Portland Cement Works, Richmond), and published in the *Building, Engineering and Mining Journal*.

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ROAD SANCTUARY CHAMBERS,

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required proportions, and thereafter passed through a succession of reducing machines, such as rock-breakers and pan mills for preliminary grinding, and mill stones or tube mills for finishing until they are reduced to a very fine powder. This raw powder, as it is now called, is next conveyed to a mixer, where it is slightly damped, and from the mixer to a suitable brick-making machine, where it is made into bricks or lumps. These bricks are then conveyed to drying chambers to be dried, as in the case of the slurry, by waste heat from the kilns or other suitable means, or, in cases where climatic conditions are favourable, to open drying sheds to be air-dried, or, again, if the material permits of a very small quantity of water being used for brick-making, they are taken direct to the calcining kiln.

The styles of calcining kilns vary greatly, each class having, as usual, its own distinctive merits and disadvantages. The usual, though now somewhat out-of-date class, is the old bell-shaped intermittent kiln. In this kiln the lumps of slip or dried bricks are placed in layers, or "covers," alternating with layers of fuel, generally gas coke. When full the kiln is lit, allowed to burn through, and when cool its contents are drawn, and the kiln again filled. Another class of kiln is the continuous, such as the "Dietsch." In these kilns the calcining chamber is kept continuously full, being fed with a supply of bricks from a vertical drying chamber situated above the kiln, the requisite amount of fuel, generally small coal, being introduced with each charge. The resulting clinker passes vertically into a cooling chamber below, from which it is drawn at intervals. The most modern method of burning is by rotary furnaces, and their use partly revolutionises the process of cement making, inasmuch that, instead of being made into bricks, the raw powder is conducted to the rotary kiln direct from the reducing machinery. The rotary furnace consists of a cylinder some 60 feet long by 6 feet in diameter. The cylinder, which is lined with fire-brick or lumps, is upon an inclined plane, and revolves slowly upon its axis. The powder enters the cylinder at its upper end, and is met by a strong flame, which is fed by means of finely-ground coal injected under pressure at the lower end. In its progress through the cylinder the raw powder becomes calcined, and emerges at the lower end of the furnace in the form of small lumps of cement clinker, which are therefrom conveyed to suitably arranged cooling chambers. The honour of applying the rotary furnace to cement burning belongs to an Englishman, a Mr. Ransome, who introduced the process some years ago. The Ransome

cylinder, although it created considerable sensation in the cement-making world at the time of its introduction, never got beyond the experimental stage, owing to some then apparently insurmountable difficulty in regulating the temperature.

After leaving the kiln the cement clinker, which has been calcined to the point of incipient vitrification, and from which all under-burnt portions have been removed to be returned to the kiln, is subjected to the last mechanical stage in the process of cement making, *i.e.* reduction to a fine powder. This is effected by passing the clinker through a succession of suitable reducing machines, such as rock breakers and ball mills for preliminary reduction, and mill stones or tube mills for finishing. The cement powder is then taken by means of elevators and conveyors to the warehouse, where it is allowed to remain until ready for bagging or casking. Portland cement making is an important branch of manufacturing chemistry. The selection of the raw materials to be used should be made with the greatest care, attention being paid not only to their chemical constituents, but also to their mechanical condition. The former with the object of ascertaining whether they contain sufficient quantities of necessary, and are free from undesirable, elements, and the latter with a view to their economical treatment. The constituents of a normal Portland cement usually vary within the following proportions:—

Ca O	from 58 to 65 per cent.
Si O <sub>2</sub>	" 20 to 27 "
Al <sub>2</sub> O <sub>3</sub>	" 4 to 9 "
Fe <sub>2</sub> O <sub>3</sub>	" 2 to 6 "
Mg O	not more than 3 "
S O <sub>3</sub>	" " 2 "
Alkalies	from traces to 2 "

The cement should be hard, in order that it may withstand crushing strains and abrasions, and tough, to withstand strains in tension. It should be of a cold grey colour, set comparatively slowly, but harden rapidly; should be free from expansion, and should be strongly adhesive as well as cohesive. To arrive at these desirable results, the cement maker must carefully regulate the proportions of his raw materials. He must see that they are thoroughly mixed, and ground as finely as possible, with the object of evenly distributing the constituents of his compound, and bringing the particles into the closest possible mechanical contact in order that perfect chemical combination may take place in the kiln.

(To be concluded.)



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